AECOM Environment

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Remedial Investigation/Feasibility Study Work Plan Newtown Creek

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Executive Summary

This Work Plan presents a comprehensive program to perform a Remedial Investigation (RI) and Feasibility Study (FS) for Newtown Creek, a body of water located on the border of Brooklyn and Queens in New York City (NYC), New York. The Study Area is defined as Newtown Creek, and its tributaries (Dutch Kills, Maspeth Creek, Whale Creek, East Branch, and English Kills) having an approximate 3.8-mile reach (Figure 1-1 and Figure 1-2) to the high water mark[1]. This work is contemplated to be performed under an Administrative Order on Consent (AOC) between the Respondents to this AOC and the United States Environmental Protection Agency (USEPA) in the USEPA *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* program, commonly known as Superfund. This Work Plan is being submitted on behalf of the Respondents to the AOC who are working cooperatively to comprehensively assess environmental conditions in the Study Area.

The Newtown Creek area of Brooklyn and Queens has a history of extensive industrial development stretching back to the 1800s. This development resulted in major reworking of the banks and channel for drainage, industrial and municipal discharges, and use for navigation purposes. The channelizing and deepening of Newtown Creek and its tributaries was largely completed to its current configuration by the 1920s and 1930s. This historical development has resulted in changes in the nature of Newtown Creek and its tributaries from a natural drainage condition to one that is largely governed by engineered and institutional systems. Currently the predominant land uses around Newtown Creek and its tributaries include industrial, manufacturing, transportation, and utility facilities. The majority of land around Newtown Creek and its tributaries is designated by NYC as one of the City's six Significant Maritime and Industrial Areas (SMIAs) to support a future use as a functioning industrial waterfront.

The RI/FS described in this Work Plan will be conducted following appropriate USEPA guidance documents and applicable New York State Department of Environmental Conservation (NYSDEC) guidance documents. The work described in this Work Plan is consistent with the requirements of various USEPA guidance documents including but not limited to: *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA, 1988) and *Contaminated Sediment*

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[1] The Newtown Creek Superfund Site Study Area is described in the AOC as encompassing the body of water known as Newtown Creek, situated at the border of the boroughs of Brooklyn (Kings County) and Queens (Queens County) in the City of New York and the State of New York, roughly centered at the geographic coordinates of 40° 42' 54.69" north latitude (40.715192°) and 73° 55' 50.74 west longitude (-73.930762°), having an approximate 3.8-mile reach, including Newtown Creek proper and its five branches (or tributaries) known respectively as Dutch Kills, Maspeth Creek, Whale Creek, East Branch, and English Kills, as well as the sediments below the water and the water column above the sediments, up to and including the landward edge of the shoreline, and including also any bulkheads or riprap containing the waterbody, except where no bulkhead or riprap exists, then the Study Area shall extend to the ordinary high water mark, as defined in *33 CFR §328(e),* of Newtown Creek and the areal extent of the contamination from such area, but not including upland areas beyond the landward edge of the shoreline (notwithstanding that such upland areas may subsequently be identified as sources of contamination to the waterbody and its sediments or that such upland areas may be included within the scope of the Newtown Creek Superfund Site as listed pursuant to Section 105(a)(8) of the *CERCLA).*

Remediation Guidance for Hazardous Waste Sites (USEPA, 2005a). The proposed approach for the program to complete the RI/FS for the Study Area is designed to be comprehensive and flexible. The natural complexity of the physical, chemical, and biological processes active in the Study Area, combined with the human dimension of the current and potential future uses of the Study Area, will require that an adaptive management strategy be evaluated and developed as part of the FS.

This Work Plan is organized into nine sections and three appendices. Table 1-1 provides a list of acronyms and abbreviations used in this Work Plan. Section 2 begins with a description of the conceptual site model (CSM) as it is currently understood. The CSM provides a description of the major environmental considerations in the Study Area, including sources, nature and extent of impacts, fate and transport of chemicals in the environment, exposure pathways, and receptors. The CSM will be used as a guide to identify information that needs to be researched and field sampling efforts necessary to complete the RI/FS. The CSM will also be used as a tool throughout the RI/FS and will be updated as new information is obtained.

The RI/FS will include risk assessments for both human health and ecological receptors. The approaches to conducting these risk assessments are also presented in Section 2.

Section 3 presents the major components of the RI/FS program with an overview of the major tasks. The approach to the RI/FS program includes two, or possibly more, primary phases of field investigation and the associated evaluating and reporting steps. These primary phases of field work include the Phase 1 RI Field Program, the Phase 2 RI Field Program, and the Baseline Ecological Risk Assessment (BERA) Field Sampling Program. The Phase 1 RI Field Program considers available pre-RI data and is focused on the collection of sediment samples, surface water samples, ambient air samples, and groundwater samples, and completion of physical, biological, and shoreline area surveys. The Phase 2 RI Field Program is focused on sampling significant contaminant loadings to the Study Area as necessary to fill data gaps identified after the review of existing historical data for the Study Area and based on Phase 1 RI results. This phase of field work will include sampling of the pipes, seeps, and, to the extent necessary to identify significant loadings of constituents of potential concern (COPCs), nonpoint source stormwater and groundwater (using in-creek techniques and/or land-based monitoring wells) and to the extent of available information, sources of such loadings to the Study Area. Should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in AOC Section XI[2], Paragraph 54.e and AOC Section XII, Paragraph 58.b[3]). The BERA Field

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[2] AOC Section XI, Paragraph 54.e: *"To the extent provided by the RI/FS Work Plan, if EPA or the Respondents propose to install a groundwater monitoring well on a facility which is situated upland of Newtown Creek and which is owned by or under the control of any of the Respondents, then such Respondent shall install such groundwater monitoring well."*

[3] AOC Section XII, Paragraph 58.b: *"Notwithstanding Paragraph 58.a, if access is sought to any upland facility situated outside of the Study Area which is not owned by or under the control of a Respondent, but which is suspected to be a significant source of groundwater impact or discharge to the Study Area such that EPA or Respondents propose to install a groundwater well or take other action is in connection with the RI/FS, Respondents will identify the current facility owner or operator to EPA for further agency action. If the facility owner cannot be identified, is no longer in existence, or fails or refuses to install any requested upland groundwater well or to take such other actions, then the Respondents may, but will not be required to, install such monitoring well or perform such action under this Settlement Agreement."*

Sampling Program will collect the information necessary to complete the Ecological Risk Assessment (ERA). The RI will also include a Historical Data Review of the available historical data regarding Study Area geology and hydrogeology and land use surrounding the Study Area; a Cultural Resources Survey; a Screening Level Ecological Risk Assessment (SLERA); a BERA; a Human Health Risk Assessment (HHRA); and modeling (hydrodynamic model, sediment transport model, water quality/fate and transport model, and food web model). In addition, the major deliverables and key decision points in the RI/FS program are discussed. A projected schedule and deliverables for the program are also presented.

Section 4 presents the first phase of the RI including specific strategies for sampling and analysis of sediments, surface water, ambient air, and groundwater. The specific sampling anticipated to be performed during this first phase of work is summarized in Table ES-1. Subsequent phases of the RI will be presented in plans which will be developed, subject to USEPA's review and approval, pursuant to the AOC and this Work Plan.

The approach to the FS, which develops and evaluates remedial alternatives and assesses whether they will meet the proposed remedial action goals and remedial action objectives (RAOs) for the Study Area, is presented in Section 5.

During the RI/FS process, a substantial body of data will be collected that will require an organized and quality-focused management system. Sections 6 and 7 describe how the data collected during the RI/FS program will generally be managed, presented, and reported. Section 6 explains how information will be reported to USEPA during the various phases of the RI/FS program. Section 7 discusses the data management system and methods of presentation.

In Section 8 of this Work Plan, the RI/FS program project management structure is presented, including the roles of the members of the project team.

References consulted in the preparation of this Work Plan are included in Section 9.

Appendix A provides a list of USEPA guidance documents. Appendix B contains tables of identified contaminated sites and other potentially relevant sites within the Newtown Creek watershed. Appendix C presents the SLERA Approach.

Specific procedures for the Phase 1 RI Field Program are compiled in a Field Sampling and Analysis Plan (FSAP) and will be submitted separately along with a Quality Assurance Project Plan (QAPP), a Health and Safety Plan (HASP), a Data Management Plan (DMP), and a Community Involvement Plan (CIP). These supporting plans to the RI/FS will be prepared and submitted in accordance with the AOC.

Table ES-1
Sampling Summary

Matrix	Type of Sample/Test	Locations	Sampling Intervals per Location	Sampling Events	Total Field Samples	Number of Different Chemical Analyses: For all Samples	For 25% of Samples	For 10% of Samples	For Select Samples	Total number of non-QA/QC Analytical Samples	QA/QC Analytical Samples (10%)[b]	Total Analytical Samples
Ambient Air	Analytical	29	1	1	29	2	--	--	--	58	6	64
Surface Sediment	Analytical - High DO Event[c]	127	1	1	127	8	5	--	1[a]	1,192	120	1,312
	Analytical - Low DO Event[c]	34	1	1	34	--	--	--	1[d]	34	3	37
	Ecological Macroinvertebrate[c]	34	1	2	68	--	--	--	--	--	--	--
Core Sediment	Analytical	95	7	1	665	7	5	1	1[a]	5,673	568	6,241
Surface Water	Ecological	34	1	2	68	1	--	--	--	68	7	75
	Analytical	15	2	12	360	14	1	--	--	5,130	513	5,643
	Current Meter/Sedflume	5	1	1	5	--	--	--	--	--	--	--
Totals		373			1,356					12,155	1,217	13,372

Notes:

- This Table shows the sample matrices, number of sample locations per matrix, number of sample intervals and sampling events per location, number of field and quality control samples, and number of analyses per sample. For the purpose of this overview table, the number of analytical samples is calculated by multiplying the number of field samples by the number of analyses and adding the quality control samples (as ten percent of that total number).
- Groundwater samples are not included in this table; sampling locations will be determined as described in Section 4 of this Work Plan.

DO – Dissolved Oxygen
QA/QC – Quality Assurance/Quality Control

[a] Geochronology at 17 locations (in core locations at 7 intervals).
[b] Applies to samples for analytical testing only; supplemental data analyses sample count for each matrix not included in estimate; high volume sampling will be considered after first three rounds of surface water sampling; therefore, not included in surface water sample count.
[c] Locations co-located with surface sediment samples, however, locations represent a different sampling type and are included separately in the count of total locations. During the high DO benthic macroinvertebrate sampling event, sediment samples will be collected for chemical analysis. During the low DO benthic macroinvertebrate sampling event, sediment samples will be collected for select analyses; samples will be archived for potential additional analyses.
[d] Includes general chemical parameters that are key determinants of benthic community structure.
-- Not applicable

1.0 Introduction

This Work Plan presents a program to perform a Remedial Investigation (RI) and Feasibility Study (FS) for Newtown Creek, a body of water located on the border of Brooklyn and Queens in New York City (NYC), New York. The Study Area is defined as the portion of the Newtown Creek Superfund Site that encompasses the body of water known as Newtown Creek, situated at the border of the boroughs of Brooklyn (Kings County) and Queens (Queens County) in the City of New York and the State of New York, roughly centered at the geographic coordinates of 40° 42' 54.69" north latitude (40.715192°) and 73° 55' 50.74 west longitude (-73.930762°), having an approximate 3.8-mile reach, including Newtown Creek proper and its five branches (or tributaries) known respectively as Dutch Kills, Maspeth Creek, Whale Creek, East Branch and English Kills, as well as the sediments below the water and the water column above the sediments, up to and including the landward edge of the shoreline, and including also any bulkheads or riprap containing the waterbody, except where no bulkhead or riprap exists, then the Study Area shall extend to the ordinary high water mark, as defined in *33 CFR §328(e),* of Newtown Creek, and the areal extent of the contamination from such area, but not including upland areas beyond the landward edge of the shoreline (notwithstanding that such upland areas may subsequently be identified as sources of contamination to the waterbody and its sediments or that such upland areas may be included within the scope of the Newtown Creek Superfund Site as listed pursuant to Section 105(a)(8) of the *Comprehensive Environmental Response, Compensation and Liability Act* [*CERCLA*]) (Figure 1-1 and Figure 1-2). This work is contemplated to be performed under an Administrative Order on Consent (AOC) between the Respondents to the AOC and the United States Environmental Protection Agency (USEPA) in the USEPA *CERCLA* program, commonly known as Superfund. This Work Plan is being submitted on behalf of the Respondents to the AOC who are working cooperatively to comprehensively assess environmental conditions in the Study Area.

The Respondents will perform the scope of work described in this RI/FS program Work Plan. It was initially anticipated that an RI/FS for Newtown Creek would be performed under a Consent Decree (CD) with the New York State Department of Environmental Conservation (NYSDEC); however, in a January 2009 letter (Grannis, 2009) New York State requested to USEPA that Newtown Creek and its tributaries be nominated for the National Priorities List (NPL). Subsequently, Newtown Creek was added to the NPL in September 2010. This Work Plan is a revision of a draft work plan submitted to NYSDEC in August 2007 (Anchor, 2007b) and revised and submitted to NYSDEC and the New York State Office of the Attorney General (NYSAG) in March 2008 (ENSR, 2008). This version of the Work Plan has been further revised to be compliant with *CERCLA*.

The work described in this Work Plan is consistent with the requirements of various USEPA guidance documents including but not limited to: *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA, 1988) and *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a). In addition, USEPA Region 2's *Clean and Green Policy* (http://www/epa.gov/region02/superfund/green_remediation/) will be considered during the performance of the RI/FS and in the analysis of alternatives in the FS. A more complete listing of the applicable USEPA guidance documents is included in Appendix A. In addition, this Work Plan is generally consistent with the requirements of the NYSDEC (2010) *DER-10 Technical Guidance Document* (*DER-10*). The Work Plan has been prepared by AECOM Environment, an environmental services company headquartered in Westford, Massachusetts. The proposed approach for the program to complete the RI/FS for the Study Area is designed to be comprehensive and flexible. The natural complexity of the physical, chemical, and biological processes active in the Study Area, combined with the human dimension of the current and potential future uses of the Study Area, will require that an adaptive management strategy be evaluated and developed as part of the FS.

This Work Plan is organized into nine sections and three appendices. Table 1-1 provides a list of acronyms and abbreviations used in this Work Plan. Section 2 begins with a description of the conceptual site model (CSM) as it is currently understood. The CSM provides a description of the major environmental considerations in the Study Area, including sources, nature and extent of impacts, fate and transport of chemicals in the environment, exposure pathways, and receptors. The CSM will be used as a guide to identify information that needs to be researched and the field sampling efforts necessary to complete the RI/FS. The CSM will also be used as a tool throughout the RI/FS and will be updated as new information is obtained. Any updates to the CSM will be subject to USEPA's review and approval, pursuant to the AOC.

Section 3 presents the major components of the RI/FS program with an overview of the major tasks. The approach to the RI/FS program includes two, or possibly more, primary phases of field investigation and the associated evaluating and reporting steps. These primary phases of field work include the Phase 1 RI Field Program, the Phase 2 RI Field Program, and the Baseline Ecological Risk Assessment (BERA) Field Sampling Program. The Phase 1 RI Field Program considers available pre-RI data and is focused on the collection of sediment samples, surface water samples, ambient air samples, and groundwater samples, and completion of physical, biological, and shoreline area surveys. The Phase 2 RI Field Program is focused on sampling significant contaminant loadings to the Study Area as necessary to fill data gaps identified after the review of existing historical data for the Study Area and based on Phase 1 RI results. This phase of field work will include sampling of the pipes, seeps, and, to the extent necessary to identify significant loadings of constituents of potential concern (COPCs), nonpoint source stormwater and groundwater (using in-creek techniques and/or land-based monitoring wells), and to the extent of available information, sources of such loadings to the Study Area. Should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in AOC Section XI[4], Paragraph 54.e and AOC Section XII, Paragraph 58.b[5]. The BERA Field Sampling Program will collect the information necessary to complete the Ecological Risk Assessment (ERA). The RI will also include a Historical Data Review of the available historical data regarding Study Area geology and hydrogeology, and land use surrounding the Study Area; a Cultural

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[4] AOC Section XI, Paragraph 54.e: *"To the extent provided by the RI/FS Work Plan, if EPA or the Respondents propose to install a groundwater monitoring well on a facility which is situated upland of Newtown Creek and which is owned by or under the control of any of the Respondents, then such Respondent shall install such groundwater monitoring well."*

[5] AOC Section XII, Paragraph 58.b: *"Notwithstanding Paragraph 58.a, if access is sought to any upland facility situated outside of the Study Area which is not owned by or under the control of a Respondent, but which is suspected to be a significant source of groundwater impact or discharge to the Study Area such that EPA or Respondents propose to install a groundwater well or take other action is in connection with the RI/FS, Respondents will identify the current facility owner or operator to EPA for further agency action. If the facility owner cannot be identified, is no longer in existence, or fails or refuses to install any requested upland groundwater well or to take such other actions, then the Respondents may, but will not be required to, install such monitoring well or perform such action under this Settlement Agreement."*

Resources Survey; a Screening Level Ecological Risk Assessment (SLERA); a BERA; a Human Health Risk Assessment (HHRA); and modeling (hydrodynamic model, sediment transport model, water quality/fate and transport model, and food web model). In addition, the major deliverables and key decision points in the RI/FS program are discussed. A projected schedule and deliverables for the program are also presented.

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In addition to these plans, the Respondents may propose supplemental work plans to address potential removal actions, as necessary, at any time in the RI/FS process.

1.1 Study Area Background

The Newtown Creek area of Brooklyn and Queens has a history of extensive industrial development stretching back to the 1800s. This development resulted in major reworking of the banks and channel for drainage and navigation purposes. The channelizing and deepening of Newtown Creek and its tributaries was largely completed to its current configuration by the 1920s and 1930s (NYCDEP, 2007a). This historical development has resulted in changes in the nature of the Newtown Creek and its tributaries from a natural drainage condition to one that is largely governed by engineered and institutional systems. Based on the current zoning around Newtown Creek and its tributaries, the current predominant land use includes industrial, manufacturing, transportation, and utility facilities (Figure 1-3).

The first survey of Newtown Creek was completed by Dutch explorers in 1613-1614, and the Dutch acquired the area from the local Mespatches tribe shortly thereafter. Initially, the Newtown Creek area was used primarily for agriculture, but following the Revolutionary War, it became industrialized with glue and tin factories, rope works, tanneries, and the Sampson Oil Cloth Factory operating along Newtown Creek and its tributaries. There was a shift to shipbuilding in the Pre-Civil War Period. Following the Civil War, textile manufacturing and oil refining replaced shipbuilding along Newtown Creek and its tributaries. Newtown Creek was home to the first kerosene refinery and the first modern oil refinery in the United States, paving the way for the area to become the most industrialized in the United States by the 1900s. With industry came the establishment of the Long Island Railroad Hub (1861), the Queensboro Bridge (1909), and the Interborough Rapid Transit (IRT) subway line (1917). Many of the industries in the Newtown Creek area discharged waste directly into Newtown Creek and its tributaries; upland spills of waste also eventually seeped into Newtown Creek and its tributaries. Following World War II, transport of raw materials and finished goods shifted from waterways to highways and the industrial activities along Newtown Creek and its tributaries declined. By the early 1980s the historical industrial activities had generally ceased along Newtown Creek and its tributaries and were replaced by industries such as cement plants, scrap yards, a construction supply company, bulk storage terminal, and liquid natural gas storage.

In the mid to late 1800s sewer lines that discharged into Newtown Creek and its tributaries were constructed. The lines in Queens were connected to the Bowery Bay Wastewater Treatment Plant (WWTP), which went on line in 1938, and the lines in Brooklyn were connected to the Newtown Creek WWTP, which went on line in 1967. Both sewer systems include combined sewer overflows (CSOs) that periodically discharge primarily stormwater mixed with sanitary sewage into Newtown Creek and its tributaries during certain wet weather events.

Table 1-2 provides a preliminary timeline of the development around Newtown Creek and its tributaries. Additional background and history information will be developed as part of the Historical Data Review (see Section 3.2.1) to provide more details on the timelines associated with the various industrial and municipal activities occurring in or near the Study Area and the potential contaminants associated with these activities.

1.2 Significant Maritime Industrial Area

Newtown Creek and its tributaries have a long tradition of maritime use extending back to the 1800s. This maritime use continues today. The majority of the area surrounding the Study Area is designated by NYC as one of the City's six Significant Maritime and Industrial Areas (SMIA), see Figure 1-4. The *New York City Comprehensive Waterfront Plan* (NYC Department of City Planning, 1992) and the *New York City New Waterfront Revitalization Program* (NYC Department of City Planning, 2002) describe SMIAs as areas where the City wants to support a future use as a functioning industrial waterfront. Specifically, the *New York City Comprehensive Waterfront Plan* (NYC Department of City Planning, 1992) states that the "[f]undamental objectives of the waterfront plan are to facilitate and encourage water dependent uses and to ensure the retention of sufficient manufacturing-zoned land to accommodate future needs." As part of the SMIA classification, the majority of the uplands adjacent to the Study Area are zoned M3-1, or heavy industrial. This relatively large area of heavy industrial zoning surrounding the Study Area provides sufficient industrial land to support a working waterfront. NYC's designation of the Study Area as a SMIA reflects NYC's determination that the anticipated future uses of surrounding property include maritime industrial uses as well as other compatible industrial uses.

1.3 RI/FS Goals and Objectives

The goal of the RI/FS is to conduct a scientifically sound, comprehensive investigation of the Study Area following the appropriate USEPA and NYSDEC guidance documents and the principles outlined in the USEPA *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a) for the purpose of providing the basis for sound scientifically-based decisions on the future condition of the Study Area. The following specific objectives have been established to achieve this goal.

1. Identify, quantify, and understand the vertical and horizontal distribution of COPCs in sediment and surface water, and other constituents and stressors that may impact the ecology and quality of the Study Area sediment, water, and biota. This will include a complete characterization of all substances in the Study Area, notwithstanding whether the initial release included petroleum or any other substance. The synergistic relationships among substances will be considered to the extent necessary for such characterization.

2. Identify and quantify ongoing significant loadings of COPCs and, to the extent of the available information, sources of such loadings to the Study Area surface water, sediments, groundwater, and biota. In the case of ongoing upland sources, refer future investigation of sources to the appropriate regulating agency (i.e., the USEPA, the NYSDEC, or the NYC Department of Environmental Protection [NYCDEP]). For more details on evaluation of upland sources, see Section 3.2.4. As stated in USEPA *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a), sources of contaminants to sediments must be controlled early and if recontamination is likely to occur, then sources should be controlled prior to establishing end points and prior to the implementation of sediment remedies. Therefore, it is important to identify and control significant sources of contaminants to the Study Area, prior to implementing an effective remedy.

3. Understand the key geomorphological, chemical, and biological processes affecting the stability of sediments and the fate, transport, and bioavailability of COPCs.

4. Identify complete and reasonably potentially complete (considering the urban nature of the Study Area and the impact of future contaminant loadings on the ecology and quality of the Study Area) exposure pathways and identify potential current and future human health and ecological risks posed by the COPCs present in the Study Area.

5. Identify and evaluate potential remedial actions that provide meaningful risk reduction and provide the highest, best possible use of the Study Area, and that also consider the urban nature of the Study Area and the impact of future contaminant loadings on the ecology and quality of the Study Area.

1.4 Phased Investigation Approach

The proposed approach for completion of the RI/FS includes phasing of field investigations and associated evaluations and reporting. Per USEPA *CERCLA* Guidance (1988, Section 1.4.2), "field sampling should be phased so that the results of the initial sampling efforts can be used to refine plans developed during scoping to better focus subsequent sampling efforts. Data quality objectives (DQOs) are revised as appropriate based on an improved understanding of the site to facilitate a more efficient and accurate characterization of the site and, therefore, achieve reductions in time and cost." The DQO process is described in *Guidance on Systematic Planning Using the Data Quality*

Objectives Process (USEPA, 2006). The proposed approach includes two, or possibly more, primary phases of field investigation and the associated evaluating and reporting steps, as described below.

- Phase 1 RI Field Program – The Phase 1 RI Field Program considers available pre-RI data and proposes collection of sediment, surface water, ambient air, and groundwater samples, and completion of physical, biological, and shoreline area surveys. This phase of work is intended to generally characterize the physical properties of the Study Area, identify areas of interest or significant features for future sampling during the Phase 2 RI Field Program or the BERA Field Sampling Program and characterize the nature and extent of COPCs in sediment and surface water. The ambient air sampling will evaluate baseline concentrations of specific airborne chemicals for current conditions, measure the level of ambient air concentrations that would be experienced within the breathing zone, in or adjacent to the Study Area, and estimate the portion of the measured concentrations that are potentially attributable to the Study Area and its shoreline. Groundwater samples will be collected to identify significant loadings of COPCs and, to the extent of the available information, sources of such loadings to the Study Area.
- Historical Data Review – This data review will be conducted prior to and concurrent with the Phase 1 RI Field Program. It will include an evaluation of the available historical data regarding geology, hydrogeology, and land use with the purpose of identifying sources of significant loadings of COPCs, and to the extent of the available information, sources of such loadings, that may impact Study Area biota, sediments, and surface water through groundwater discharge and point and nonpoint source discharges.
- SLERA and BERA Problem Formulation – These activities will be conducted concurrently with the Phase 1 RI Field Program using existing (pre-Phase 1) data and will incorporate the Phase 1 RI Field Program habitat survey and biological surveys. The SLERA and the BERA Problem Formulation are intended to be combined into one document. This document will be produced following a BERA Workshop where preliminary SLERA results and a BERA Problem Formulation outline will be discussed in detail with USEPA. These activities will be conducted prior to the completion of the BERA Work Plan to allow identification of data gaps that will be addressed in the BERA Field Sampling Program.
- Phase 2 RI Field Program – The Phase 2 RI Field Program will be completed following the review of historical data, e.g., existing reports on upland properties (including geology and hydrogeology), information on pipe discharges, and observations of pipe discharges, seeps, and nonpoint source stormwater flow in the Study Area. Phase 1 RI Field Program data (e.g., results of shoreline survey and groundwater sampling) will be incorporated into the design of the Phase 2 RI Field Program. This phase of work will include sampling of the pipes, seeps, and, to the extent necessary to identify significant loadings of COPCs, nonpoint source stormwater and groundwater (using in-creek techniques and/or land-based monitoring wells). Should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b. The objective of this phase of work is to complete the identification of ongoing sources of significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area.

  Specifically, the Phase 2 RI Field Program is intended to identify significant contaminant loadings from point and nonpoint source discharges to the Study Area (including groundwater) having potential significant impact on the implementation of an effective remedy. Identification of sources of significant contaminant loadings will use a multiple-lines-of-evidence approach consisting of: (1) information obtained from the aforementioned Historical Data Review, (2) Phase 1 RI Field Program data obtained from the shoreline survey and sampling of various media, and (3) Phase 2 RI Field Program in-creek assessment methodologies (including use of a Trident Probe, or similar sampling technology and/or groundwater monitoring wells). Additionally, the Phase 2 RI Field Program will include collection of physical and/or chemical data to fill data gaps identified at the end of the Phase 1 RI Field Program and will include the collection of the data needed to support the HHRA.

- BERA Field Sampling Program – The BERA Field Sampling Program will rely on pre-RI data and the initial findings of the Phase 1 RI Field Program, including the findings of the habitat survey, to focus ecological data collection to the appropriate locations, and the results of the SLERA and of the BERA Problem Formulation. This phase of field work will focus on collecting the information necessary to complete the ERA.
- RI Reporting – The results of the RI data collection activities will be summarized in several reports. A Phase 1 RI Interim Data Report will be prepared prior to the midpoint of the Phase 1 RI Field Program to summarize the results of the surveys performed (bathymetric, side-scan sonar, and magnetic surveys; aerial photography survey; and shoreline assessment) and the Historical Data Review information obtained up to that point in time, including the groundwater assessment. This interim data report will serve as the basis to identify potential significant loadings of COPCs and, to the extent of the available information, sources of such loadings to the Study Area for consideration of Phase 1 RI in-creek and/or land-based sampling. The results of the Phase 1 RI Field Program will be summarized in the Phase 1 RI Data Summary Report. As needed, additional interim data reports will be prepared during the various phases of RI field work. The combined results from the Phase 1 and Phase 2 RI Field Programs will be summarized in the RI Report.
- BERA – The BERA will rely on the results of the Phase 1 and Phase 2 RI Field Programs, the BERA Field Sampling Program, and the food web modeling (as described in Section 2.3.1.4).
- HHRA – The HHRA will be outlined for discussion and comment by USEPA in the Pathway Analysis Report (PAR-HHRA). The PAR-HHRA will include the HHRA CSM and details of exposure and toxicity data to ensure the approach for the HHRA is acceptable to USEPA. The HHRA will involve a review of sampling data for environmental media associated with the Study Area collected during the Phase 1 RI, Phase 2 RI, and BERA field programs and will also rely on the results of the food web modeling (as described in Section 2.3.1.4).
- FS Field Program – The FS Field Program, if necessary, will be scoped following the completion of the RI, ERA, and HHRA. This phase of field work will provide the information needed to complete the FS and may include additional sediment sampling in select areas of the Study Area for specific constituents, sediment sample collection to refine volumes for remediation areas, and treatability tests for candidate remedial technologies.

The field programs of the RI/FS are not intended to be completed sequentially, but will be scheduled and implemented as information is obtained to enable execution of the field programs and as USEPA approval of field program scope is obtained.

1.5 Federal and State Agencies' Involvement

This Work Plan will be conducted under an AOC with USEPA. Other agencies including NYSDEC, United States (US) Fish and Wildlife Service, National Oceanographic and Atmospheric Administration (NOAA), and New York State Department of Health (NYSDOH) will review appropriate documents and provide comments to USEPA.

During the course of the investigation, permits to perform the work may be required from various government organizations including the US Army Corps of Engineers (USACE) and the NYCDEP.

1.6 Community Involvement

Community involvement is a critical component of the RI/FS program. The Respondents will work with USEPA to develop and implement an effective community relations program. This program will be summarized in a CIP. Because the Study Area is in a highly urbanized setting, efforts at communication with the community will need to account for the large and varied number of stakeholders and include frequent updates to the community on progress of the work described in this Work Plan and other relevant activities.

Table 1-1
List of Acronyms and Abbreviations

Acronym	Description
^{o}C	Degrees Celsius
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
µg/m^3	Micrograms per Cubic Meter
µm	Micron
1,1,1-TCA	1,1,1-Trichloroethane
1,2-DCE	1,2-Dichloroethene
^{137}Cs	Cesium-137
^{210}Pb	Lead-210
^{7}Be	Beryllium-7
ACI	Analog Control Interface
AFS	Air Facility System
ALM	Adult Lead Model
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
AVS	Acid-Volatile Sulfide
AWQC	Ambient Water Quality Criteria
BAZ	Biologically Active Zone
BCP	Brownfield Cleanup Program
BERA	Baseline Ecological Risk Assessment
CARP	Contaminant Assessment and Reduction Project
CBS	Chemical Bulk Storage
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
CLP	Contract Laboratory Program
cm	Centimeter
cm/s	Centimeters per Second
CMB	Chemical Mass Balance
COC	Constituent of Concern
COPC	Constituent of Potential Concern
COPEC	Constituent of Potential Ecological Concern
CRS	Cultural Resources Survey
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
CSO	Combined Sewer Overflow
DER-10	DER-10 Technical Guidance Document

Table 1-1
List of Acronyms and Abbreviations

Acronym	Description
DGPS	Differential Global Positioning System
DMP	Data Management Plan
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DQO	Data Quality Objective
DRO	Diesel Range Organics
ECL	Environmental Conservation Law
EIS	Environmental Impact Statement
EPC	Exposure Point Concentration
EPCRA	Emergency Planning and Community Right-To-Know Act
ERA	Ecological Risk Assessment
ERP	Environmental Restoration Program
ESA	Endangered Species Act of 1973
ESI	Expanded Site Inspection
FEMA	Federal Emergency Management Agency
FOIL	Freedom of Information Law
FPOW	Former Pratt Oil Works
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
ft	Feet
FWRIA	Fish and Wildlife Resources Impact Analysis
GC/ECD	Gas Chromatograph/Electron Capture Detector
GC/MD	Gas Chromatographic/Multi-Detector Detection
GC/MS	Gas Chromatography/Mass Spectrometry
GIS	Geographic Information System
GRA	General Response Actions
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HRMS	High Resolution Mass Spectrometer
HRS	Hazard Ranking System
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
IEUBK	Integrated Exposure Uptake Biokinetic Model for Lead in Children
IPP	Industrial Pretreatment Program
IRM	Interim Remedial Measure
IRT	Interborough Rapid Transit
IUR	Inhalation Unit Risk
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LL	Liquid Limit

Table 1-1
List of Acronyms and Abbreviations

Acronym	Description
LNAPL	Light Non-aqueous Phase Liquid
LNG	Liquefied Natural Gas
LQG	Large Quantity Generators
m	Meter
MDL	Method Detection Limit
MG	Million Gallons
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MGP	Manufactured Gas Plant
MLLW	Mean Lower Low Water
MLW	Mean Low Water
MOSF	Major Oil Storage Facilities
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MTA	Metropolitan Transportation Authority
MTA	Metropolitan Transportation Authority
NAD83	North American Datum of 1983
NAVD	North American Vertical Datum
NFRAP	No Further Remedial Action Planned
ng/kg	Nanograms per Kilogram
ng/L	Nanograms per Liter
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NRWQC	National Recommended Water Quality Criteria
NTU	Nephelometric Turbidity Units
NWI	National Wetland Inventory
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYCDPR	New York City Department of Parks and Recreation
NYCRR	New York Codes, Rules and Regulations
NYSAG	New York State Attorney General
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OCR	Optical Character Recognition
OSHA	Occupational Safety and Health Administration
OU6	Operable Unit 6
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
PAR-HHRA	Pathway Analysis Report
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyl

Table 1-1
List of Acronyms and Abbreviations

Acronym	Description
pCi/g	Picocurie/gram
PDRC	Phelps Dodge Refining Corporation
pg/L	Picograms per Liter
PI	Plasticity Index
PID	Photoionization Detector
PL	Plastic Limit
POC	Particulate Organic Carbon
POM-SPE	Polyoxymethylene-Solid Phase Extraction
POSO	Project On-Site Safety Officer
PPE	Personal Protective Equipment
PPRTV	Provisional Peer Reviewed Toxicity Value
ppth	Part per Thousand
PRP	Potentially Responsible Party
PUF	Polyurethane Foam
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
RAGS	Risk Assessment Guidance for Superfund
RAL	Remedial Action Level
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSL	Regional Screening Level
SDG	Sample Delivery Group
SEM	Simultaneously Extractable Metals
SIU	Significant Industrial User
SLERA	Screening Level Ecological Risk Assessment
SMDP	Scientific/Management Decision Point
SMIA	Significant Maritime Industrial Area
SOCONY	Standard Oil Company of New York
SOP	Standard Operating Procedure
SPDES	State Pollutant Discharge Elimination System
SSC	Suspended Sediment Concentrations
SSD	Species Sensitivity Distribution
SSP	State Superfund Program

Table 1-1
List of Acronyms and Abbreviations

Acronym	Description
SU	Standard Unit
SVOC	Semivolatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TBC	To Be Considered
TBD	To Be Determined
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TIC	Tentatively Identified Compound
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TOGS	Technical & Operational Guidance Series
TPH	Total Petroleum Hydrocarbons
TRI	Toxic Release Inventory
TSS	Total Suspended Solids
UCL	Upper Confidence Limit
UFP	Uniform Federal Policy
US	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USCS	United Soil Classification System
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

Table 1-2
Timeline of Newtown Creek Area Development

Decade	<1820s	1830s	1840s	1850s	1860s	1870s	1880s	1890s	1900s	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	Current Status
				INCREASING INDUSTRIALIZATION											DECREASING INDUSTRIALIZATION					
Industrial Activities	Agricultural Use	1834-Whale oil refining established		1850s - Newtown Creek is an established industrial center 1854-First kerosene refinery	1866-First Operations at Laurel Hill Site 1867-First oil refinery	By 1870s-more than 50 oil refineries established in Newtown Creek Area		As of 1890s-Typical industries present: Oil refineries, petrochemical plants, fertilizer and glue factories, copper-smelting and fat-rendering plants, sugar refineries, shipbuilders, hide tanning plants, canneries, sawmills, paint works, lumber and coal yards	By 1900s-Newtown Creek is a key industrial artery to New York City, more than 500 enterprises lining Newtown Creek and its tributaries	By 1912, Newtown Creek is reportedly "the busiest avenue of water traffic of not greater length in the world" with roughly 5 million tons per year shipped through its waters	1928-MGP and coking operation started at Greenpoint Energy Center	1931-Crankcase oil refining began at Quanta Resources Site 1933-Petroleum distribution facility established on BCF Oil Site	1942 to 1944 Alcoa/Federal Defense Plan Corp Maspeth 90 acre plant, ceased in 1944. Later New York Navel Shipyard. 1948-Commerce begins diverting from Newtown Creek and its tributaries	1952-Greenpoint Energy Center ended use as MGP Site	1966-Brooklyn Refinery ceased operating, demolished the refinery and sold significant portions of property. Portions of the refinery used for petroleum bulk fuel storage		1980s-BCF Oil Site used for petroleum distribution 1983-Laurel Hill Site discontinued operations			Current use: cement plant, scrap yard, beverage distributer, construction supply company, ice manufacturer
						DREDGING FOR NAVIGATION AND FILLING OF ADJACENT STREAMBANKS TO CREATE USABLE LAND							MAINTENANCE DREDGING AND FILLING OF ADJACENT STREAMBANKS							
Physical Alterations	Relatively shallow estuary with numerous fringing marshes and side channels; natural stream draining uplands of Western Long Island		1844-Landfilling of areas along Newtown Creek and its tributaries initiated and continued until late 1800s		1863-Earliest available bathymetric map-relatively shallow channel approximately 8 to 11 feet below MLLW immediately adjacent to the Village of Laurel Hill, with considerable shoreline development and developing bulkhead construction		1880-First record of dredging (17,000 cy) 1882-Dredging (52,000 cy) 1884 - Dredging (51,468 cy) 1887-Additonal dredging (85,569 cy) 1889-Additional dredging (120,000 cy)	1890-Additional dredging (87,804 cy) 1893-Additional dredging (91,981 cy) 1894 to 1895-Additional dredging (72,400 cy and 150 tons boulders) 1896-Additional dredging (1,016,845 cy) 1899-125 foot-wide by 18 foot deep MLLW navigation channel established			1919 to 1930-Navigation channel depth increased to 23 feet MLLW, turning basin at former Mussel Island constructed. 1921 to 1922-Dredging (409,828 cy) 1923-Dredging (192,371 cy) 1924-Additional land filling 1928 to 1929-Maintenance dredging (76,098 cy)	1931-Newtown Creek mouth dredged (37,246 cy) and Mussel Island area dredged in two events (128,297 and 108,592 cy) 1932-Three dredging events (167,328 cy, 900 cy and unknown) 1932 to 1933-Two dredging events (150,889 cy and unknown) 1937-Two dredging events (unknown and 108,255 cy)	1943-Dutch Kills obstructions removed in two events (unknown volumes) 1945-Maintenance dredging (19,244 cy) 1946-Maintenance dredging (103,910 cy) 1947-Maintenance dredging (35,303 cy)	1950-Two maintenance dredging events (146,552 and 80,546 cy) 1952-Maintenance dredging event (63,387 cy) 1954-Dredging event (60,000 cy) and additional land filling 1956-Maintenance dredging (10,200 cy) 1958-Maintenance dredging (44,003 cy)	1961-Maintenance dredging (38,120 cy) 1964-Maintenance dredging (27,768 cy)	1971-Maintenance dredging (84,044 cy) 1974-Maintenance dredging (32,127 cy)				No maintenance dredging since 1974. NYCDEP proposed to perform maintenance dredging of the mouth of Newtown Creek and Whale Creek to allow sludge barge access to the Newtown Creek WWTP.
								SEWER SYSTEM DEVELOPMENT AND NONPOINT SOURCE DISCHARGES								COMBINED SEWER SYSTEM IMPROVEMENTS AND DECREASING NONPOINT SOURCE DISCHARGES				
Sewer Alterations					1866-First discharge of raw sewage				1909-NYC began water quality monitoring of New York City waters "to assess the effectiveness of New York City's various water pollution control program and their combined impact on water quality"			1930s-Untreated sewage and industrial discharges directly to Newtown Creek and its tributaries 1938-Bowery Bay WWTP began operation			1967-Newtown Creek WWTP began operation	1975 to 1977-NYC harbor-wide water quality study 1975-SPDES program implemented to regulate wastewater discharges to surface waters	1984-City-wide CSO abatement program developed for facility planning 1987-Industrial Pre-treatment Program implemented	1998-Newtown Creek on Section 303(d) listing of impaired water bodies, low DO due to CSOs	2004-Newtown Creek kept on 303(d) list due to low DO from urban runoff and storm sewers in addition to CSOs and included on NYS Water body Inventory / Priority Water body List under 305(b) 2008-Updated Newtown Creek WWTP on line	There are 23 permitted CSO discharges and more than 200 other storm water or industrial discharges to Newtown Creek and its tributaries. Untreated sewage discharges through CSOs. Urban runoff discharges by direct runoff or storm sewers. Upgraded Newtown Creek WWTP in operation. NYCDEP conducting pilot aeration project in English Kills.

Notes:

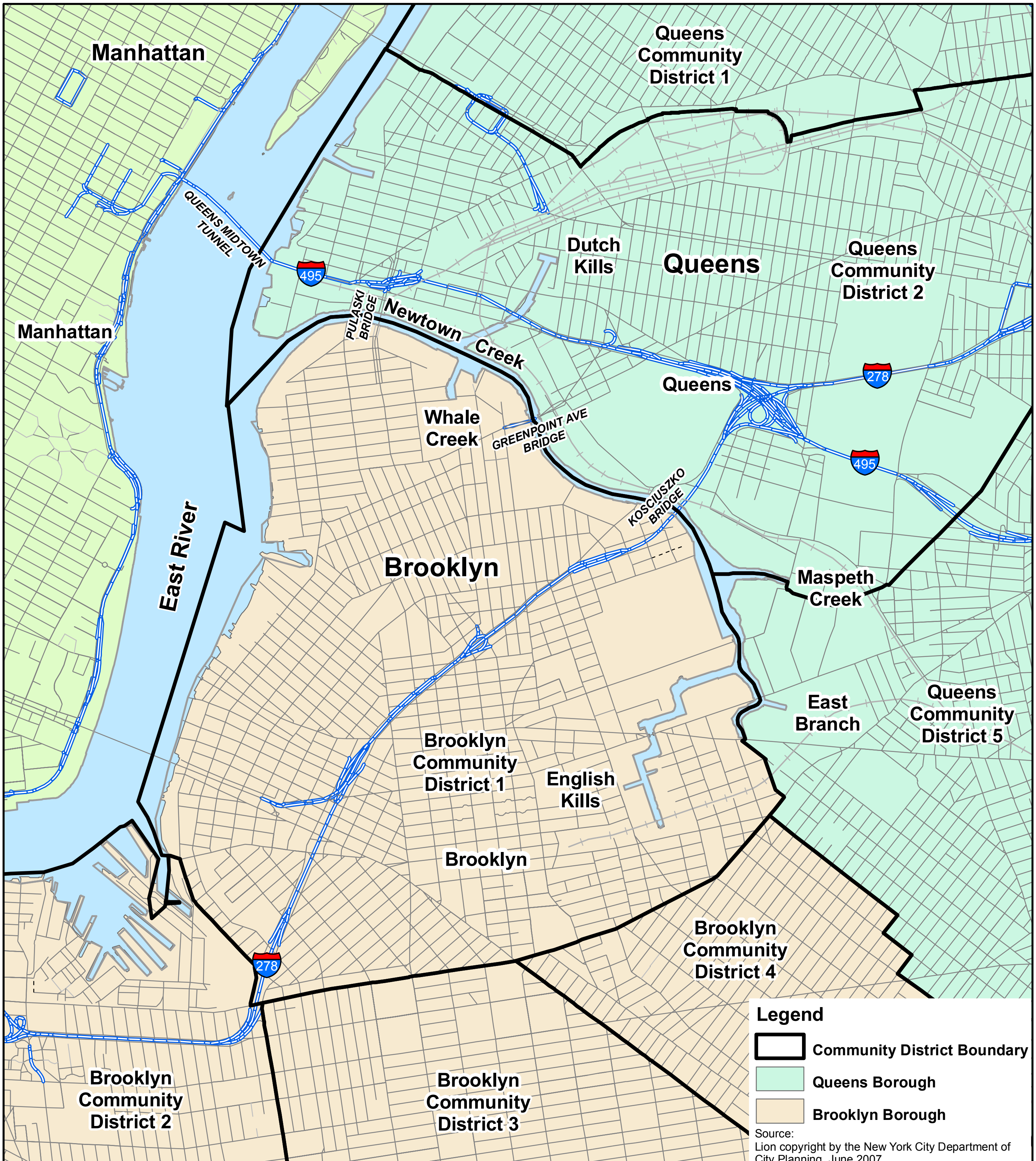
CSO=Combined Sewer Overflow
cy=cubic yards
DO=Dissolved Oxygen
MGP=Manufactured Gas Plant
MLLW=Mean Lower Low Water
NYC=New York City
NYCDEP=New York City Department of Environmental Protection
NYS=New York State
SPDES=State Pollutant Discharge Elimination System
WWTP=Wastewater Treatment Plant

0 7,500 Feet

Source:
ESRI 9.3 I3 Imagery Prime World 2D.

AECOM

Figure 1-1
Aerial Study Area Locus Map
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Map Location

Study Area Location
Remedial Investigation/Feasibility Study Work Plan
Newtown Creek

0 1,500 3,000 6,000 9,000 Feet

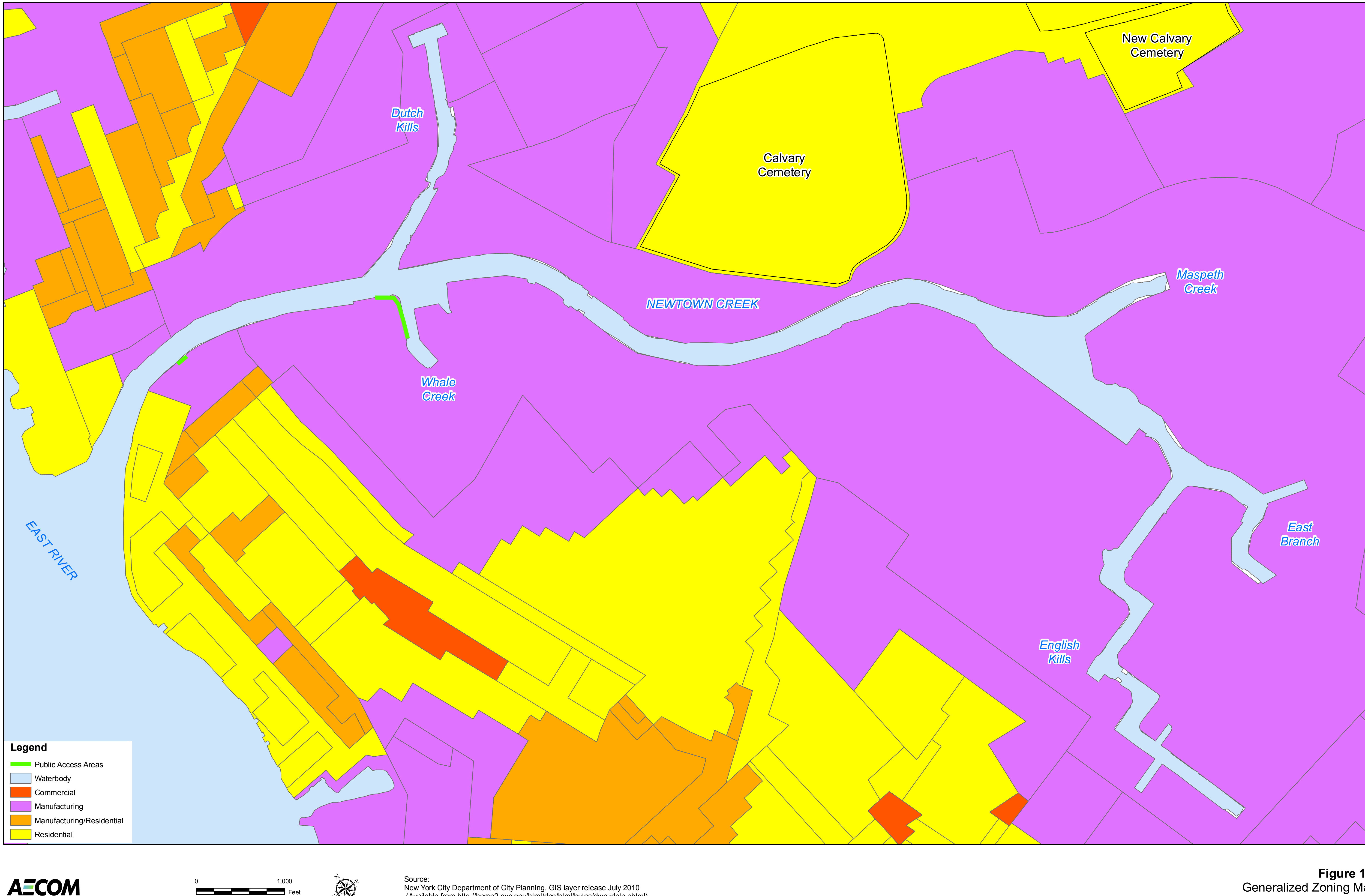
Scale: 1:36,000

AECOM

Figure 1-2

Date: June 2011

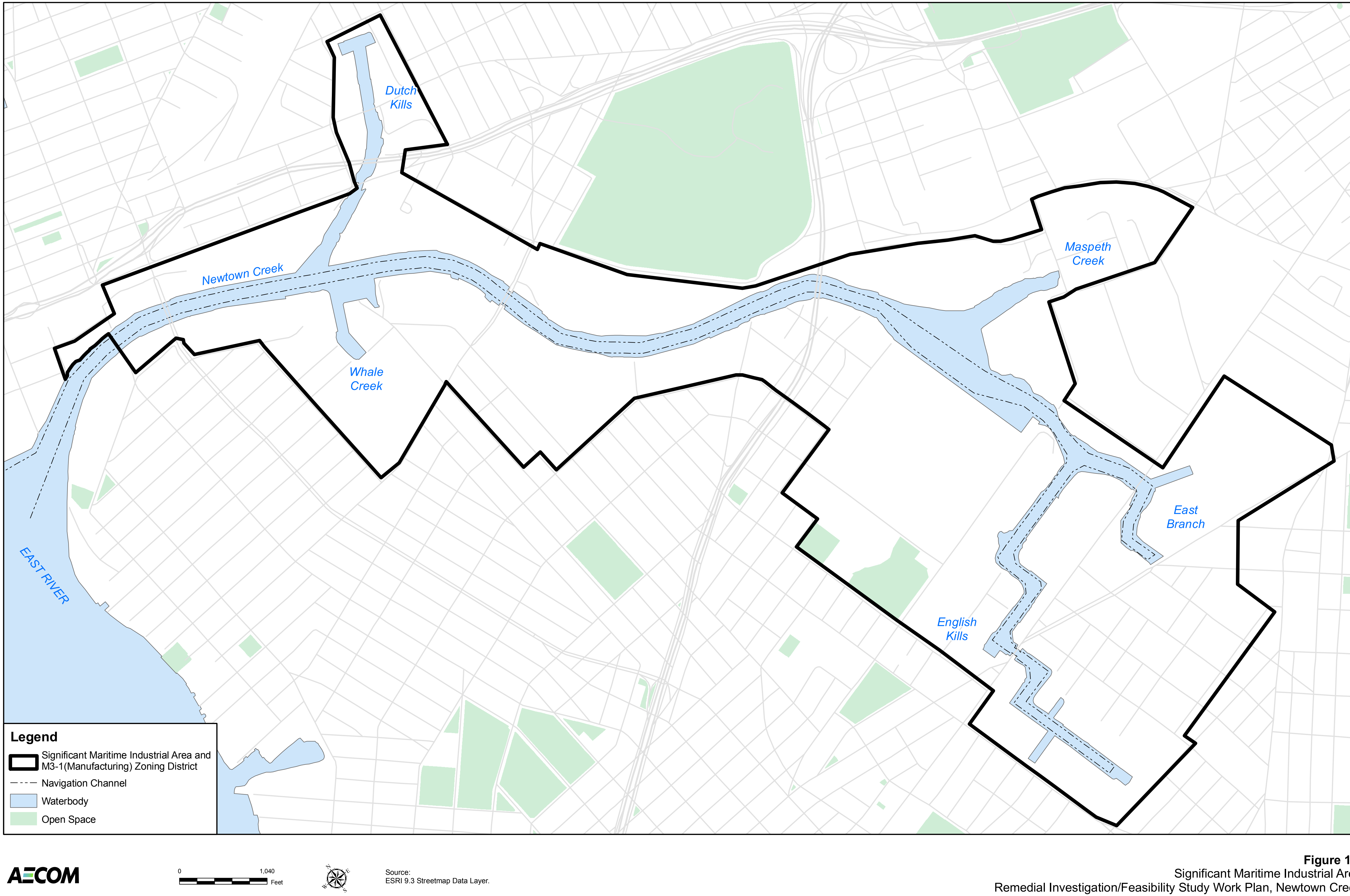
Project #: 60143346.1



AECOM

Source:
New York City Department of City Planning, GIS layer release July 2010
(Available from http://home2.nyc.gov/html/dcp/html/bytes/dwnzdata.shtml).

Figure 1-3
Generalized Zoning Map
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



AECOM

Figure 1-4
Significant Maritime Industrial Area
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

2.0 Study Area Preliminary Conceptual Site Model

This section presents the current understanding of the Study Area, including its physical, ecological, and human elements. The CSM is a representation of the physical, chemical, and biological processes that affect the transport of COPCs from sources to receptors within the system (NYSDEC, 2010). As such, the CSM provides the current understanding of processes affecting the Study Area. The CSM will be updated throughout the RI/FS process as new information becomes available. Updates of the CSM will be subject to USEPA's review and approval, pursuant to the AOC. The CSM will eventually be used as a tool to help select appropriate remedies for the Study Area. Although this section describes the current understanding of the CSM for the Study Area, it also identifies aspects of the CSM which will be further refined by the work proposed in this Work Plan.

A successful CSM describes:

- Sources of potentially significant loadings of COPCs
- Nature and extent of COPCs
- Important fate and transport characteristics
- Potential exposure pathways
- Potentially impacted receptors.

The CSM becomes the framework which supports development of questions that define whether there are unacceptable risks that warrant consideration during the development of the remedial strategy.

As required under *CERCLA*, the RI/FS will consider the highest, best possible and achievable future use of the Study Area. The attainable future use will be influenced by future regulatory and land use decisions by government entities affecting the Study Area. In turn, the long-term constituent mass loading will impact the future water quality and sediment deposition in the Study Area. The CSM will consider a full range of potential future uses of the Study Area and will assist in understanding the mass loading reductions from ongoing sources required to achieve each use scenario. The CSM will also help in assessing the benefits to the Study Area that might be achieved by various remedial strategies under each scenario.

The following discussion describes the current extent of knowledge for the CSM and identifies proposed activities in the RI designed to address gaps in that understanding. Data gaps for the development of the CSM are further discussed in Section 4.

2.1 Physical Characteristics of the Study Area

The following sections describe the current understanding of the physical characteristics of the Study Area. These sections include general descriptive information on the Study Area as well as the geology, hydrogeology, surface water hydrology, and climate in the Study Area.

2.1.1 Physical Description

Newtown Creek and its tributaries comprise an estuarine waterbody characterized by a semi-diurnal tidal cycle with a vertical range of approximately five to seven feet. Newtown Creek forms the border between the Boroughs of Brooklyn and Queens (Community District 1 in Brooklyn and Community Districts 2 and 5 in Queens). Newtown Creek and its five tributaries (Dutch Kills, Whale Creek, Maspeth Creek, East Branch, and English Kills) have an approximate 3.8-mile reach. Newtown Creek is located within the coastal zone as designated by the State of New York.

Newtown Creek and its tributaries are generally oriented in an east to west direction; however, the easternmost section is oriented south to north (Figure 1-2). Surface water flow is generally east to west, however Newtown Creek and its tributaries are tidal and reversal of flow may occur with incoming tides. Eleven bridges span Newtown Creek and its tributaries, the largest being the Brooklyn Queens Expressway (US Interstate 278) and the Long Island Expressway (US Interstate 495). The remaining nine bridges are draw or swing bridges that allow vessel access to the upper reaches of Newtown Creek and its tributaries. The two railroad bridges on Dutch Kills "are currently in a state of disrepair and cannot be opened for navigation" (USCG, 2010). These two railroad bridges prevent water-side access, other than by small boats, to the upper reaches of Dutch Kills.

A substantial portion of the shoreline is contained by bulkheads or protected with riprap. Some vegetation exists along eroded bulkheads, on sediment mounds, and similar locations within the Study Area. The width of Newtown Creek and its tributaries (200 to 300 feet) does not vary greatly. Newtown Creek and its tributaries are a federally designated navigation channel. The authorized project water depths in the majority of the Study Area are at least 20 feet (ft) MLW (mean low water); however, the recent Army Corps of Engineers survey showed that these project depths are not being met (USACE, 2009). Authorized project depths are approximately 9 to 12 feet deeper than predredged conditions, to allow for small ship and barge navigation through most of the navigation channel. The last known dredging of the Study Area was maintenance dredging in East Branch that was performed in 1974.

2.1.2 Geology

The unconsolidated deposits in the Study Area consist of fill (e.g., construction debris and domestic refuse) which overlies Holocene salt-marsh deposits and alluvium (AMEC, 2003). The Holocene deposits are typically underlain by a sequence of Pleistocene-age till and ground moraine (Upper Glacial Aquifer) (Buxton et al., 1981). Based on well and test borings conducted in the Study Area (Buxton and Shernoff, 1999), the Upper Glacial Aquifer overlies the Precambrian-age crystalline bedrock under the Study Area from the mouth of Newtown Creek to just south of Greenpoint Avenue. Bedrock is approximately 30 feet below ground surface near the mouth of Newtown Creek and slopes southeastward to a depth of over 190 feet below ground surface at the southeastern extent of Newtown Creek. In the area east of Greenpoint Avenue through the end of Newtown Creek, the Raritan Clay (mainly deltaic clay and silty clay beds with some interbedded sand) underlies the Upper Glacial Aquifer over the bedrock. A marine clay (Gardiner's Clay) separates the Upper Glacial Aquifer from the Raritan Clay at the southeastern extent of Newtown Creek beginning at the intersection of the East Branch and English Kills.

2.1.3 Hydrogeology

Groundwater flow in the Study Area has changed over time. In 1903, prior to the inception of public water supply pumping in the area, groundwater in the water table aquifer followed its natural flow path and flowed toward and discharged to the nearest surface waterbody, including Newtown Creek and the East River. By the 1930s, public water supply withdrawals reached their peak in Kings County, southwest of Newtown Creek, creating a cone of depression in the water table in Kings County and possibly extending into Queens County to the northeast. At the center of this cone of depression, water levels in the water table aquifer were approximately 45 feet lower than during the pre-pumping period. This cone of depression possibly extended under Newtown Creek and, based on water level mapping in the area, the groundwater was depressed such that groundwater may have flowed from the north under Newtown Creek toward the pumping center. Pumping for the public water supply was discontinued in Kings County in 1947, and groundwater levels recovered from this pumping by 1974 (Cartwright, 2002).

The United States Geological Survey (USGS) developed a groundwater flow model for Kings and Queens Counties in New York (Misut and Monti, 1999). The report on this modeling describes the groundwater baseflow to Newtown Creek as 0.3 cubic feet per second which equates to approximately 135 gallons per minute. The RI/FS will further evaluate groundwater baseflow to the Study Area.

Groundwater is expected to flow from upland areas towards the Study Area; however, groundwater flow is affected by bulkheads, remediation systems, discharge pipes, and tidal influences. The presence of bulkheads in various states of repair has the potential to locally divert shallow groundwater flow. Groundwater remediation systems associated with some upland sites also capture groundwater flow and prevent direct groundwater flow to the Study Area. The presence of numerous discharge pipes has the potential to create preferential flow paths towards the Study Area. Additionally, tidal fluctuations in surface water levels in the Study Area influence the discharge of groundwater to Newtown Creek and its tributaries and result in periods during the day when the surface water elevation may be higher than the adjacent groundwater elevation (up to half of each day during high tides). During periods of the day when the surface water elevation is above the groundwater elevation, a reverse groundwater gradient may occur. With the return of the low tide cycle, the gradient reverses and groundwater discharges to the Study Area.

Several environmental sites located in the area surrounding the Study Area have been investigated and some are undergoing remedial activities under NYSDEC environmental programs. Hydrogeologic information contained in reports on these investigations and remedial activities will be researched in the Historical Data Review and summarized in the Phase 1 RI Interim Data Report and the Data Applicability Report.

2.1.4 Surface Water Hydrology

Surface water circulation in the Study Area reflects the influence of two different mechanisms. Generally, freshwater including stormwater, municipal and industrial outfalls, and groundwater, flows downstream as a surface layer over denser estuarine water (NYCDEP, 2007a). The average estuarine water flow is typically in the opposite direction (upstream) creating an underlying salt water wedge. Changes in tidal elevation and the timing of freshwater inputs control the magnitude of the seaward freshwater flow. The mixing of estuarine and freshwater creates a complex and dynamic geochemical environment affecting the solubility, precipitation, and deposition of specific constituents in sediments.

Aside from tidal cycles, the flows in Newtown Creek and its tributaries are comprised of wastewater discharges from CSOs, wastewater discharges from the surrounding industrialized areas, stormwater runoff from adjacent properties, and groundwater discharges (NYCDEP, 2007a). The CSO and storm sewer outfall point source discharges make up over 90% (annual baseline discharge volume of 2040 million gallons [MG]) of the wet weather flow in Newtown Creek and its tributaries (NYCDEP, 2007a). Base flow in Newtown Creek and its tributaries from groundwater discharge is estimated by the USGS as 0.3 cubic feet per second (Misut and Monti, 1999) or approximately 71 million gallons per year. This groundwater base flow, when compared to other discharges, makes up less than three percent of the total annual freshwater flow in Newtown Creek and its tributaries.

Figure 2-1 shows the 100-year and 500-year floodplain around the Study Area as shown the latest Federal Emergency Management Agency (FEMA) mapping published in 1996. The floodplain represents the area of flooding to be equaled or exceeded every 100 years in the case of the 100-year floodplain and every 500 years in the case of the 500-year floodplain. The 100-year floodplain around the Study Area is at the shoreline in some areas and in other areas extends approximately 1,000 feet from the shoreline. The 500-year floodplain is generally within 2,500 feet of the shoreline.

The drainage area for the Newtown Creek watershed is fully urbanized with no remaining natural marshlands or freshwater streams. The Newtown Creek watershed drains an area of approximately 7,440 acres, of which up to 50% is impervious because of extensive paving, construction, and urban development throughout the Newtown Creek watershed (NYCDEP, 2007a).

Approximately 17% of the Newtown Creek watershed surface area drains directly to the Study Area through storm sewers, highway drains, and other direct discharges while the remaining 83% of the Newtown Creek watershed surface area drains into a sewer system that collects stormwater, sanitary sewage, and industrial discharges (NYCDEP, 2007a). This sewer system is directed to the Newtown Creek and Bowery Bay WWTPs for treatment prior to discharge into the East River. During high flow wet weather conditions, the flow exceeds the capacity of the WWTPs, and untreated wastewater and stormwater discharge directly into the Study Area through a set of CSO outfalls (NYCDEP, 2007a). These flows contain both suspended and dissolved constituents (NYSDEC Urban Stormwater Runoff web site, http://www.dec.ny.gov/chemical/69422.html). The results of NYCDEP modeling of flow in the Study Area indicate that in a typical precipitation year, such overflows occur, on average, approximately 70 times per year with a total annual discharge volume of approximately 1.4 billion gallons (NYCDEP, 2007a) of untreated wastewater. NYC is developing plans to abate certain of the CSO and City-owned stormwater discharges.

The surface water in the Study Area is classified by the NYSDEC as Class SD saline surface water with a protected use of fish survival only, a protected use that is not currently met for basic parameters, e.g., dissolved oxygen (DO) (NYCDEP, 2007a). NYSDEC defines class SD as, "…water that, because of natural or manmade conditions, cannot meet the requirements for primary and secondary contact recreation and fish propagation." As such, the waters in the Study Area are not currently classified as suitable for primary (e.g., swimming) or secondary (e.g., boating or fishing) direct contact recreation.

2.1.5 Climate

The climate in the Study Area is typical of the Mid-Atlantic region of the United States. The average annual temperature in NYC is 55 degrees Fahrenheit (13 degrees Celsius), with average temperatures ranging from 32 degrees Fahrenheit (0 degrees Celsius) to 77 degrees Fahrenheit (25 degrees Celsius). Precipitation is distributed uniformly throughout the year, averaging approximately 47 inches annually with an average of 121 rainy days per year. Thunderstorm activity has been recorded from March through October with the greatest probability of thunderstorms in June through August. Winters are moderate with snowfall averaging approximately 28 inches annually and typically distributed from November through mid-April. Average morning relative humidity varies from 64% to

78% and average evening relative humidity varies from 45% to 59%. Prevailing winds in the Study Area are from the south with an average wind speed in NYC of 10 miles per hour. (http://www.weatherbase.com/weather/)

2.1.6 Shoreline Features

Originally a natural stream with fringe marshes and side channels, during the late 1800s and early 1900s Newtown Creek and its tributaries were channelized and dredged for drainage and navigation purposes that resulted in reworking the banks and channel from a natural drainage condition to one that is largely governed by engineered and institutional controls. These institutional controls include discharge and other permits, zoning restrictions, security, and public health advisories. Most of the current shoreline is characterized by bulkheads with some riprap. Bulkheads are generally wood, steel, cement, or stone and are in various states of repair. Vegetation exists along eroded bulkheads, on sediment mounds, and similar locations within the Study Area.

The majority of the shoreline area is zoned M3-1 for heavy manufacturing and industrial use (Figure 1-3). A small portion, of each of the north and south shorelines near the mouth of Newtown Creek has been rezoned for residential use. Current operations along the Study Area include a cement plant, scrap yard, beverage distributor, construction supply company, recycling plant for used concrete, plumbing fixture show room, dry ice manufacturer, petroleum bulk storage facilities, liquefied natural gas (LNG) storage site, and the Newtown Creek WWTP.

Two access areas have been constructed on the Brooklyn side of Newtown Creek; these are the only official locations along the Study Area where the public can approach and come in contact with Study Area media from the shore. A street-end access area was constructed at the end of Manhattan Avenue, and a shoreline promenade was constructed at Whale Creek as part of the upgrades to the Newtown Creek WWTP. The shoreline promenade at Whale Creek was temporarily closed by NYC. While the promenade along Whale Creek has been reopened by NYC, cautionary signs have been posted to alert promenade users that Newtown Creek is a heavily trafficked maritime area and, further, has been designated by USEPA has a Federal Superfund Site. These two access locations are shown in Figure 1-3.

2.2 Chemical and Physical Conceptual Site Model

Figure 2-2 is a diagram summarizing the physical CSM, which includes the potential significant sources, release mechanisms, transport media, and exposure media in the Study Area.

Potential significant sources that may affect or have historically affected sediment and water quality in the Study Area include a variety of point and nonpoint source discharges or releases. Potential sources of COPCs to the Study Area include a range of current and historical industry-associated and municipal discharges as described below.

- Historical placement of contaminated fill (Walsh and LaFleur, 1995) by both industry and municipalities along the banks of Newtown Creek and its tributaries for disposal or for filling in of former marshy areas.
- Historical placement of dredge material along the banks of Newtown Creek and its tributaries during dredging and channelization activities.
- Historical direct discharges of sanitary sewage from the surrounding areas.
- Historical and ongoing industrial discharges (treated and untreated) from industries along the banks of Newtown Creek and its tributaries and within the Newtown Creek watershed.

- Incidental releases or placement of chemicals (such as industrial raw materials [including petroleum products], industrial wastes, and municipal refuse being shipped from the Study Area for disposal) including the loading and unloading of barges.
- Historical and ongoing releases of storm flows into the Study Area.
- Historical and ongoing releases of combined storm, sanitary, and industrial discharges through the CSO systems to the Study Area.
- Historical and ongoing discharges of groundwater to the Study Area. There is a potential for discharge of constituents to the Study Area associated with the movement of groundwater from surrounding properties through soils and fill material containing COPCs with eventual discharge to the Study Area.
- Historical and ongoing aerial deposition. COPCs may enter the Study Area through direct atmospheric deposition to the water surface or indirectly via deposition to adjacent upland areas and subsequent runoff into the Study Area.
- Releases from navigational shipping and maritime traffic. There is the potential for releases of COPCs from tug boat, barge, and other commercial traffic.
- Reworking (resuspension and deposition) of buried, historical subsurface sediments containing COPCs through propeller wash, tidal scour, or dredging operations.
- Ongoing movement of constituents between sediment, pore water, and surface water via sorption, desorption, diffusion, precipitation, and advection processes.

The following sections summarize the currently available information on areas located within the Newtown Creek watershed that may be sources of chemical stressors[6] to the Study Area and on physical and biological stressors to the Study Area that may impact its ecological and habitat quality, and provide a brief summary of available previously collected analytical data from the Study Area.

2.2.1 Sources of Potential Chemical Stressors

The Study Area and the upland areas which drain to the Study Area have a long history of industrial activity and urbanization. As such there are many potential sources of COPCs and other stressors to the Study Area, both historical and current. This subsection identifies some of the potential upland sources within the Study Area drainage area that may contribute contaminants to the Study Area. These potential sources have been identified based on review of New York State and Federal Geographic Information System (GIS) databases of remediation sites or sites that store chemicals or release chemicals to the environment and other State and Federal sources (e.g., USEPA *Expanded Site Inspection Report* [Weston Solutions, 2009]). This evaluation does not attempt to discern if constituents from these sites have been discharged or migrated to the Study Area, but merely identifies the sites as potential sources. Databases reviewed include:

- NYSDEC remediation sites in NYSDEC Region 2 (as provided by NYSDEC in August 2010).
- Spills and releases in NYSDEC Region 2 (as provided by NYSDEC in August 2010).
- Bulk storage facilities in NYSDEC Region 2 (as provided by NYSDEC in August 2010).

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[6] A “stressor” is defined (USEPA, 1998b) as “any physical, chemical, or biological entity that can induce an adverse response.”

- New York State Pollutant Discharge Elimination System (SPDES) dataset (as provided by NYSDEC in August 2010).
- USEPA *Resource Conservation and Recovery Act* (*RCRA*)/*CERCLA* sites (downloaded from USEPA Geospatial Data Download Service-Envirofacts Database, August 2010).

The area around the Study Area is serviced by two WWTPs: the Newtown Creek WWTP and the Bowery Bay WWTP. The sites identified in this section are sites located within the Newtown Creek drainage area, defined here as the combined service areas of the Bowery Bay and Newtown Creek WWTPs that have the potential to drain to the Study Area through groundwater discharges, direct runoff, or other conveyances. Figure 2-3 shows the Bowery Bay and Newtown Creek WWTPs service areas[7]. The figure depicts the permitted CSOs, storm sewer outfalls, and NYCDEP-identified discharges to the Study Area, along with identifying the areas that drain to the Study Area through CSOs, storm sewer outfalls, or by direct drainage.

To the extent possible with available mapping, the potential sources identified in this section have been associated with either conveyances or direct drainage areas. These contaminated sites include various types of remediation sites identified by the NYSDEC, as well as USEPA *RCRA* and *CERCLA* sites. The identified sites are discussed below by regulatory program and are identified in associated figures and tables. Figure 2-4 shows the locations of upland sites in various regulatory programs including those industrial sites that are described in more detail in Section 2.2.1.4.

2.2.1.1 New York State Contaminated Sites within the Newtown Creek Watershed

The NYSDEC identifies remediation sites within several different regulatory programs including: Brownfield Cleanup Program (BCP), Environmental Restoration Program (ERP), State Superfund Program (SSP), and Voluntary Cleanup Program (VCP). Figure 2-4 includes the locations of New York State remediation sites within the Newtown Creek drainage area. The nature and occurrence of remediation sites within each of the above programs are described below.

Brownfield Cleanup Program

There are four sites located in the drainage areas to the Study Area which have been qualified for the BCP (Appendix B, Table B-1), a program that promotes remediation of closed or abandoned contaminated sites. The BCP sites are located in the western portion of the Newtown Creek drainage area. Three of the sites are in areas of direct drainage and the other site is served by a conveyance to the Study Area.

Environmental Restoration Program

There is one site within the Newtown Creek drainage area that participates in the ERP (Appendix B, Table B-1). The ERP provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and 100 percent of off-site eligible costs for site investigation and remediation activities. The site is known as the Maspeth Project and is located northeast of Newtown Creek. The Maspeth Project is located in an area served by a conveyance to the Study Area.

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[7] The watershed areas depicted on the figures provided in this section are best estimates of the areas.

State Superfund Program

Ten sites within the Newtown Creek drainage area are part of the SSP (Appendix B, Table B-1), an enforcement program which identifies suspected inactive hazardous waste disposal sites and remediates those considered to be significant threats to public health and the environment. The majority of the sites are located in the southeast portion of the Newtown Creek drainage area in close proximity to the Study Area. Four sites are located in the direct drainage area to the Study Area and six sites are served by conveyances to the Study Area.

Voluntary Cleanup Program

There are six sites within the Newtown Creek drainage area that are currently being remediated under the VCP (Appendix B, Table B-1). These sites are dispersed throughout the Newtown Creek watershed with a concentration in the northeastern quarter. Five sites are located in areas served by conveyances to the Study Area and one site is located in the direct drainage area to the Study Area.

2.2.1.2 USEPA RCRA Facilities within the Newtown Creek Watershed

There are 22 facilities within the Newtown Creek watershed that are listed as *RCRA* Large Quantity Generator (LQG) facilities (Appendix B, Table B-2). *RCRA* facilities may include landfills, solid waste and hazardous waste facilities, and facilities with underground storage tanks (USTs) holding chemicals or petroleum products. The facilities are scattered throughout the drainage area (Figure 2-4). One is in an area of other drainage (drainage type not specified in available source documents) and twenty-one are served by conveyances to the Study Area.

2.2.1.3 USEPA CERCLA Sites within the Newtown Creek Watershed

Aside from Newtown Creek itself, there are no *CERCLA* sites (broadly defined to include any area where a hazardous substance release has "come to be located," which have been placed or are proposed for listing on the NPL) known to occur within the Newtown Creek drainage area.

2.2.1.4 Industrial Sites within the Newtown Creek Watershed

This section provides brief summaries of select sites within the Newtown Creek drainage area.[8] These summaries provide an overview of the sites, and do not provide conclusions concerning these sites. A more comprehensive study and mapping of the industrial sites within the Newtown Creek watershed will be conducted during the Historical Data Review (as described in Section 3.2.1).

Phelps Dodge Refining Corporation Laurel Hill Site[8]

The Phelps Dodge Refining Corporation (PDRC) Laurel Hill Site, an area of approximately 37 acres, is located in Maspeth and abuts Newtown and Maspeth Creeks. The Laurel Hill Site was used for chemical production, copper smelting, and copper refinery operations between the 1870s and 1984. Previous and other owners included G.H. Nichols & Company, Nichols Chemical Company, Nichols Copper Company, Allied Chemical Company, and General Chemical Company.

PDRC's parent acquired Nichols Copper Company as of 1930 and renamed it PDRC in 1938.

[8] Each site summary in this section regarding a Respondent's site was prepared by the current individual Respondent and represents the status according to that company.

The Laurel Hill Site currently is undergoing various stages of industrial/commercial redevelopment. PDRC currently retains ownership of approximately 15 acres of the Laurel Hill Site. Other owners include: Sagres LLC, Jump Street, LLC, Spencer Investment Ltd, JSB Equities, New Found LLC, and 56th Road and 43rd Street LLC.

PDRC has entered into four Orders on Consent with NYSDEC and performed extensive investigative and remedial work at the Laurel Hill Site. PDRC completed an initial removal action of approximately 12,000 cubic yards of soil and concrete (excavated and disposed off site) from the southeastern portion of the Laurel Hill Site under NYSDEC's oversight by 1987. From 1999 to 2000, decommissioning and demolition of the Laurel Hill Site structures was undertaken in accordance with a NYSDEC-approved work plan.

In 2000, a RI to define the nature and extent of any contamination resulting from historical activities on the Laurel Hill Site (including soil sampling, soil gas sampling, and groundwater sampling) was completed. A FS, finalized in 2002, explored alternative actions that would minimize or eliminate potential impact on public health and/or the environment posed by the Laurel Hill Site. Based on the results of the RI/FS, NYSDEC selected a remedy, which included physical containment of soils (capping); "hot spot" removal of polychlorinated biphenyls (PCBs) and petroleum-contaminated soil with off-site disposal; groundwater extraction, containment, and treatment; institutional controls; and a long-term cap inspection/maintenance program and groundwater monitoring program. The selected remedy is documented in a 2003 Record of Decision (ROD).

The soil-removal remedial action was completed in 2004. During this period, approximately 21,000 tons of PCBs and petroleum-contaminated soils were excavated and disposed off site. Construction of the groundwater extraction, containment, and treatment system was completed in April 2007. PDRC reports that the operation of the groundwater extraction, containment, and treatment system prevents discharge of contaminated groundwater to Newtown Creek from the Laurel Hill Site and has effectively eliminated the only significant contaminant-migration pathway from the Laurel Hill Site to Newtown and Maspeth Creeks.

As of 2009 approximately 14 of the total 37 acres have been capped with a site-specific cap consisting of asphalt pavement or are covered with new buildings. PDRC continues to work with NYSDEC regarding uplands site capping plans scope and approvals. The New York State Department of Transportation (NYSDOT) Kosciusko Bridge reconstruction project may impact the Laurel Hill uplands site and capping schedule. Based on the current projected schedule, capping should be completed in 2011.

Former Texaco Terminal and the Apollo Street Parcel[8]

The Former Texaco Terminal and the Apollo Street Parcel are located along the southern bank of Newtown Creek between Meeker Avenue and Apollo Street. The combined size of both properties is approximately 14.2 acres with the Former Texaco Terminal accounting for 11.2 acres. From 1934 to 1958, the Paragon Oil Company operated a petroleum marketing terminal that distributed finished products. From 1958 to 1968, Texaco operated a petroleum marketing terminal that distributed finished petroleum products. Terminal operations peaked in the 1960s and included the storage of 6.1 million gallons of finished petroleum products, with over 64% of the tankage used for the storage of No.4 fuel oil, No. 6 fuel oil, and lubricating oils. The remaining tankage was used for the storage and distribution of diesel fuel, kerosene, and leaded gasoline. The facility was sold in 1968 to the current property owner. The Terminal was demolished in 1968 and a liquor distribution warehouse was constructed on the site. The Apollo Street Parcel is located adjacent to the Former Texaco Terminal, and Texaco neither owned nor maintained operations on the property. Historical operations on the Apollo Street Parcel included a former NYC trash incinerator. The property is currently leased as a liquor distribution facility.

In 1991, 23 years after Texaco ceased terminal operations, a petroleum seep appeared along the bulkhead where the former Texaco Terminal had been located. Through 2004 ExxonMobil completed seep mitigation activities on the former Texaco property. Texaco entered into a Consent Order with the NYSDEC in 2005 that was amended in 2009, to include the adjacent Apollo Street Parcel. In June 2005, Texaco began a detailed phased approach to delineating the extent and determining the source of the subsurface petroleum on the former terminal property and the adjacent Apollo Street Parcel. In 2005, light non-aqueous phase liquid (LNAPL) was seeping into Newtown Creek along 427 feet of bulkheaded shoreline. Remedial action activities have focused on containing and collecting both LNAPL and groundwater in the seep area. These activities have included the installation of a 360-foot grout wall along the former terminal property to contain LNAPL, sealing seams in the steel bulkhead fronting the former terminal property, resurfacing the bulkhead on the Apollo Street Parcel, and installing an impermeable barrier along a 67-foot section of the bulkhead.

Interim land-side recovery of LNAPL began in 2005 as site characterization and remediation system design activities were completed. In September 2007 a full scale total fluids recovery system began operation immediately land-side of the seep. Through June 2010 a total of 41,322 gallons of LNAPL have been recovered from the 13 recovery wells and the LNAPL seep has been effectively mitigated along 100% of the initial 427 seepage front. Texaco reports that the system continues to operate and maintains an effective hydraulic control.

BP Terminal Property[8]

In 1968, Amoco Oil Company (currently BP) purchased a ten-acre parcel of property from Mobil Oil Company. The parcel, located at 125 Apollo Street, was a portion of a much larger property that had been used for petroleum refining operations, dating back to the mid-1800s, known as the former Standard Oil Company of New York (SOCONY) (later Mobil Oil Corporation) Brooklyn Refinery site. All above ground structures related to the refinery operations had been removed prior to the purchase by Amoco Oil Company. After purchasing the parcel, Amoco constructed a new bulk fuel storage terminal, which began operation in 1970 and continues in operation today. Products are transported to the site via barge and pipeline, stored in a number of above ground storage tanks (ASTs), and transported off-site via truck and barge. The storage capacity of the terminal is 5,902,512 gallons. The terminal has been used to store diesel fuel, No. 2 fuel oil, kerosene, gasoline, and ethanol.

Following the 1978 US Coast Guard (USCG) observation of an oil sheen on Newtown Creek from a property abutting Newtown Creek at the end of Meeker Avenue, BP, the USCG and NYSDEC, among others, established the Meeker Avenue Task Force to work on a collaborative basis to address the seep along Meeker Avenue. Working under the direction of NYSDEC, BP also initiated petroleum product recovery on the BP Terminal Property as early as 1980. To enhance product recovery, BP has installed additional recovery wells and expanded its recovery system several times.

BP's efforts to maximize free phase petroleum recovery continue today and are currently governed by a comprehensive Consent Order entered into by NYSDEC and BP in 2006. That Order acknowledges that the volume of petroleum product under the BP Terminal Property due to historical refinery operations has resulted in impacts to the soil and groundwater beneath the BP Terminal Property. Remedial operations have removed more than 50 million gallons of groundwater and more than 3.4 million gallons of free phase petroleum product from beneath the BP Terminal Property. Since natural lithologic boundaries and the bulkhead construction limit the potential for a groundwater pathway between the BP Terminal Property and Newtown Creek, there have not been any historical or current seeps into Newtown Creek identified from the BP Terminal Property.

Greenpoint Energy Center (National Grid)[8]

The Greenpoint Energy Center consists of approximately 119 acres on the west bank of Newtown Creek. The southern boundary of the site lies approximately 500 feet north of English Kills. Roughly one sixth of the site was created from the fill dredged from the removal of Mussel Island and the realignment of Newtown Creek in the mid 1920s. Byproduct coking operation began on this site in 1928. The Greenpoint manufactured gas plant (MGP) produced manufactured gas, and functioned as an MGP and byproduct coking operation until 1952. The facility included a water gas plant, coke ovens, an ammonia plant, and a byproducts plant. Up until the mid 1980s, Greenpoint produced substitute natural gas as well. The coking operations have been decommissioned. Greenpoint currently is an operations center for National Grid (formerly Brooklyn Union Gas) and operations include a liquefied natural gas facility, a service center, and a distribution warehouse facility.

Based on a USEPA Preliminary Assessment (PA) for the site in 1986, USEPA concluded that no further remedial action was planned (NFRAP) and archived the site. Since that time, the site has had activities under two New York State orders. The first order was a VCP for the remediation of four non-contiguous parcels related to the upgrading of LNG operations within the Greenpoint Energy Center in Brooklyn, NY which resulted in an Interim Remedial Measure (IRM) for the northeast corner of the site. The second is an Order on Consent and Administrative Settlement, as modified on May 22, 2008, under which current site activities are being performed. At this time, a predesign investigation for restoration of the current degraded bulkhead with a modern integrated bulkhead barrier system is underway.

An investigation performed on the northeast corner of the site as part of the upgrade of the LNG liquefaction/vaporization facility found hardened weathered tar. Implementation of IRM activities commenced in April 2005 and concluded with restoration activities in June 2005. The completed IRM work effort included removal of approximately 7,000 cubic yards of impacted soils that were classified as non-hazardous waste and removal of approximately 400 tons of debris.

Equity Works Site[8]

The Equity Works Site, formerly owned by National Grid, is comprised of three parcels of land owned by third parties, totaling approximately two acres, and is located between 222 and 254 Maspeth Avenue. It is not contiguous to Newtown Creek, with its borders approximately 500 yards to the south and west of the English Kills. The Equity Works MGP began operations in the early 1900s with gas generation, gas storage and purifier house processes in place. Support facilities included coal storage/delivery facilities and miscellaneous tar and oil storage capacity, including tar separators, drip tanks, and gas oil tanks. The plant was developed to its maximum extent around 1921. By 1932 the relief holder was partially decommissioned and by 1933 gas manufacturing equipment had been removed. Brooklyn Union Gas owned the property until approximately 1951 and has had no interest in the property since. Subsequently, the Equity Works Site was used for storage for the period between 1965 and 1981, and appears to have been vacant during the period between 1986 and 1988. Portions of the site have been used as a solid waste transfer facility from 1990 to the present under the ownership of various parties. Two of the parcels are currently used by their owner as a transfer facility and for vehicle maintenance, with the third parcel vacant. Following a PA in 1986, USEPA concluded that no further remedial action was planned at that time, pursuant to *CERCLA* and archived the site within USEPA's *CERCLA* Program. The Equity Works site was included in a May 22, 2008 Order on Consent between National Grid and NYSDEC to investigate and remediate hazardous substances believed to exist at the Equity Works Site. The Order requires a RI/FS of the site; National Grid has recently completed the field work associated with the RI.

Greenpoint Facility (ExxonMobil)[8]

Petroleum refining operations in the northeast section of Greenpoint, between North Henry Street, Norman Avenue and Newtown Creek, began in approximately 1866. By 1870, over 50 refineries were located along the banks of Newtown Creek. In 1892, the Standard Oil Trust purchased many of the refineries along Newtown Creek. In 1911, the Standard Oil Trust was dissolved, resulting in the spin-off of 34 companies, including SOCONY, which later became Mobil Corporation. Refinery operations at Mobil's Brooklyn refinery ended in 1966, and the refinery was demolished. Significant portions of the former refinery property were sold to various companies for continued industrial use, including a large parcel sold to the American Oil Company (Amoco, currently BP). Mobil used the property it retained as a petroleum bulk fuel storage and distribution terminal until 1993. ExxonMobil was formed with the merger of Exxon Corporation and Mobil Corporation in 1999.

ExxonMobil has been actively engaged in remediation activities in Greenpoint on a continuous basis since 1979. These activities were initiated voluntarily by ExxonMobil immediately after the discovery by the USCG that oil was seeping into Newtown Creek from the bulkhead located at the northern terminus of Meeker Avenue. ExxonMobil and other oil companies identified as potentially responsible parties assisted the USCG with its investigation efforts. At that time ExxonMobil began product recovery operations on its own property and participated in the Meeker Avenue Task Force recovery operations at the foot of Meeker Avenue. Based upon the results of the investigation completed by the USCG in 1979, the free product plume volume was estimated at 17 million gallons. ExxonMobil has recovered in excess of 10 million gallons of product, with majority of product recovery from systems installed and operated by ExxonMobil. The hydraulic control provided by ExxonMobil's systems is also having the beneficial effect of addressing multiple other sources of off-site contamination that are not attributable to ExxonMobil but are present due to the long industrial history of the area. As a result of these hydraulic control measures implemented by ExxonMobil, ExxonMobil reports that there is now no seepage through any of the ExxonMobil controlled bulkheads in the Greenpoint Area. Based upon the prior investigations and ongoing monitoring, NYSDOH has concluded that there is no evidence of petroleum vapor intrusion from the plume into homes in the Greenpoint area. ExxonMobil continues to monitor soil vapor conditions throughout the area on a regular basis in accordance with a monitoring plan approved by NYSDEC. ExxonMobil has also implemented, with NYSDEC approval, a soil vapor mitigation system as a proactive preventative measure in a portion of the commercial-industrial area of Greenpoint.

ExxonMobil has reached an agreement with the State of New York regarding the remediation of contamination associated with its historical operations in Greenpoint. The Consent Decree provides for ExxonMobil not only to continue its current efforts to remediate and reduce the size of an underground petroleum plume, but also establishes a comprehensive framework for remediation and containment of soil, groundwater and vapor.

Former Pratt Oil Works[8]

The Former Pratt Oil Works (FPOW) encompassed approximately 18.5 acres located south of Review Avenue adjacent to the north shore of Newtown Creek in Long Island City. FPOW was determined to have been owned by a predecessor of ExxonMobil between 1892 and 1949. The FPOW operated primarily as a paraffin wax refinery. The development of the property that became FPOW appears to have commenced in the early 1850s as the North American Kerosene Gas Lamp Company. The Asphalt Mining and Kerosene Gas Company set up a factory along Newtown Creek, Long Island City in 1854. The company later changed names to North American Kerosene and Lighting Company. In or about July 1876, Charles Pratt & Company acquired the property under the name of the Pratt Long Island Refinery (Pratt Oil Works). Historical information indicates that a Queens County Oil Works was present at the property before an acquisition by Charles Pratt. SOCONY acquired the FPOW refinery in approximately 1892. SOCONY operations may have included the manufacturing of wax, lubricating oils, and burning oils; grease compounding; and a cooperage facility. SOCONY ceased operations in 1949. By 1954 much of the FPOW was razed, with the exception of four buildings and a smoke stack, and subsequently was divided and redeveloped.

The property has since been subdivided into 16 lots of Block 312. The parcels that constitute the FPOW have changed ownership over the years. Following FPOW operations the property was redeveloped for industrial activities including but not limited to petroleum, chemical, gravel, manufacturing, and warehousing/storage operations. The FPOW is located in a designated Industrial Business Zone and current uses include municipal waste transfer, warehousing, vehicle storage, restaurant oil and grease recovery and recycling, valve manufacturing and design, stocking of residential and commercial building supplies for distribution, commercial refrigeration supply distribution, cleaning and maintenance products manufacturing, retail lumber and building supply distribution, manufacturing of furniture pads and moving equipment, and wholesale beverage distribution.

ExxonMobil agreed to perform a site characterization even though there were several decades of industrial operations including petroleum-related operations before and after ExxonMobil owned the property. IRM feasibility testing was proposed to NYSDEC in 2009; the findings and results of LNAPL recovery feasibility study events conducted in 2009 were summarized for NYSDEC in a 2009 report.

BCF Oil

The nearly 2-acre BCF Oil Site is a former petroleum distribution and waste oil recycling facility located on the northern bank of English Kills. According to Weston Solutions (2009), the BCF Oil Site was used for petroleum distribution until 1980 and for waste oil recycling from 1980 until 1994. Oil products containing halogenated solvents and PCBs in 19 of 21 on-site storage tanks and associated piping were identified in 1994 (Weston Solutions, 2009). Site investigations completed between 1992 and 1998 confirmed the presence of site-related contaminants in soils and groundwater. Beginning in May 2000, USEPA conducted an emergency response action at the BCF Oil Site to address concerns about possible leakage from abandoned USTs, ASTs, and drums. The emergency response action removed more than 800,000 gallons of contaminated oil and 65,000 pounds of scrap metal from the BCF Oil Site. PCBs and metals were detected in a seep sediment sample collected at the edge of English Kills. It has been suggested that sampling results indicated that other sources might be contributing to the PCB contamination in the sediments. NYSDEC prepared the RI/FS work plan for the site and continues to obtain the data necessary to design an efficient and cost-effective remedial strategy. The BCF Oil Site is currently being redeveloped as an automobile impound lot.

Quanta Resources

The Quanta Resources property located on Review Avenue in Long Island City, Queens has been used for a variety of industrial purposes since the late 19th century. The earliest recorded use of the property was by American Agricultural Chemical Company. The property was transferred to Triplex Oil in 1931, which used the property for refining used crankcase oil until 1971. The facility was operated by several different owners between 1972 and 1980. Quanta Resources acquired the Review Avenue property in 1980, used the facility to refine used crankcase oil and other liquids, and filed for bankruptcy in October 1981. In 1982, NYCDEP completed an emergency removal action to address the immediate risks posed at the Quanta Resources site (i.e., various waste materials left behind in tanks and other structures). More than 500,000 gallons of liquids and approximately 900 cubic yards of soil were removed from the site. The removed materials contained PCBs, chlorinated solvents, heavy metals, and cyanide (Weston Solutions, 2009). During NYSDEC's Phase 2 investigation, a seven-foot layer of oil lying above the groundwater table was discovered. A Consent Order was signed with numerous potentially responsible parties (PRPs) in May 2002 for the undertaking of investigation and remediation activities. The RI/FS was completed and confirmed soil and groundwater contamination. The site was accepted into the VCP, and the ROD was signed February 2007 requiring a remedy which includes a LNAPL recovery system (NYSDEC, 2009).

Empire Transit Mix, Inc

Empire Transit Mix, Inc, established in 1994, is a concrete manufacturer located at 430 Maspeth Avenue, Brooklyn, New York. In 2005, the company admitted to illegally discharging concrete slurry into Newtown Creek, pleading guilty in Federal court to violating the *Rivers and Harbors Act* and agreed to pay a $300,000 fine. Numerous discharges were observed over the course of USEPA's investigation. Sampling revealed that the discharge had an extremely high pH of 12 SU (standard units).

NYCON Supply Corporation

NYCON Supply Corporation (NYCON) is a concrete manufacturer located in Long Island City, Queens, New York. In September 2008, Riverkeeper filed a Notice of Intent to Sue NYCON. Riverkeeper alleged that NYCON had been illegally discharging concrete waste without a permit into a tributary of Newtown Creek, in violation of both the *Clean Water Act* and *RCRA*. On October 31, 2008, NYSDEC filed a legal complaint against NYCON, alleging the concrete manufacturer illegally dumped concrete waste into the Dutch Kills tributary of Newtown Creek on multiple occasions.

Former WLK Corporation Site

The Former WLK Corporation site is located near the intersection of Grand Avenue and 57th Street in Queens County and is approximately two acres in size. The northern portion of the site has historically been used by a radiator distribution facility, a steel pipe distributor, a corrugated box company, a beer distributing company, and, more recently, a recycling facility. The southern portion of the site is currently occupied by offices and has been used for several businesses. A lubricating oils company occupied this portion of the site into the 1970s. Other occupants over the years included an oil company sales office, a milk products company, and an engineering firm. The site is currently used as a lumber yard with some offices. Previous investigations in the area, by a third party, revealed high concentrations of chlorinated solvents (specifically trichloroethene [TCE]; 1,1,1-trichloroethane [1,1,1-TCA]; and 1,2-dichloroethene [1,2-DCE]) in the groundwater at the northwestern portion of the site. The groundwater contamination detected at the site indicates a source area around the loading dock located at the northern end of the main building and/or an alley (former railroad spur) between the western property fence line and the building. A site characterization was completed and it was determined that the need exists for a full remedial investigation (NYSDEC, 2009).

Former Morgan Oil Terminal

The former Morgan Oil Terminal (Morgan Oil), located at 200 Morgan Avenue in Brooklyn, New York, is bordered to the north and east by English Kills. According to a 2004 remediation system evaluation (USEPA, 2004a), this abandoned site included a two-story terminal operations building and maintenance building, seven bulk fuel oil storage tanks, and several underground storage tanks, including tanks that contained chlorinated solvents. Contamination (oil seeping into English Kills) near the site was first identified by the Coast Guard in 1992. An RI followed in 1992 and 1993, and NYSDEC issued a Consent Order in 1994 to the Morgan Oil Respondents (Morgan Oil Terminals Corp.; Citifuel Corp.; Premium Pipeline Inc.; Samuel Festinger; Henry Foster and Alexander Weisz). The area has been impacted by diesel fuel, No. 6 fuel oil, and dissolved hydrocarbons. The tanks were cleaned in 1994 and a remediation system was installed in 1995. The remediation includes withdrawing fluids from monitoring wells (which are used as monitoring wells and extraction wells), treatment, and then discharge to a sewer. A USEPA 2004 remediation system evaluation recommended that: analysis of chlorinated solvents and PAHs be added to the groundwater monitoring program; structures, including the storage tanks and loading docks, be removed; a discharge permit for the remediation system be located or obtained; and sampling of effluent be conducted. (USEPA, 2004a)

2.2.1.5 Industrial Discharges, CSO/Storm Sewer Outfall Discharges, and Other Indirect Discharges

In addition to contaminated sites as potential sources to the Study Area, there are a number of permitted discharges in the Newtown Creek drainage area. These permitted discharges include SPDES-permitted industrial facilities (which may have multiple discharges), non-industrial SPDES-permitted CSO/storm sewer outfall discharges, and other indirect discharges (NYCDEP, 2007a). Where these sites are identified in the New York State GIS databases, they are summarized below and their locations are identified in associated figures and tables. There may be other unpermitted discharges occurring in the Newtown Creek drainage area. A more comprehensive study and mapping of the discharges to Newtown Creek and its tributaries will be conducted during the Historical Data Review (as described in Section 3.2.1).

SPDES Industrial Discharges

Eleven facilities located within the vicinity of the Newtown Creek drainage area are covered under the SPDES Program (Appendix B, Table B-3) (Figure 2-5). The SPDES Program in NYSDEC's Division of Water regulates municipal, industrial, private, commercial, and institutional wastewater treatment facilities that discharge to the groundwaters and surface waters of the State. It should be noted that these facilities have been mapped based on their physical location within the Newtown Creek drainage area. Actual discharges may be to one or more waterbodies in proximity to the facility including but not limited to the East River, Newtown Creek, or tributaries of Newtown Creek.

The facilities identified are located in drainage areas with discharges to the Study Area including one located in the direct drainage area to the Study Area and ten served by conveyances to the Study Area.

CSO/Storm Sewer Outfall Discharges[9]

NYC is served primarily by a combined sewer system, totaling 4,800 miles of sewers within the five boroughs. The system's outfalls that receive combined storm and sanitary flow during wet weather are covered by SPDES permits issued by New York State pursuant to the *Clean Water Act* that authorize NYC to discharge through the CSOs during wet weather to the receiving waters of the New York Harbor complex. Twenty-three of these permitted outfalls are located within the Study Area (Figure 2-3). In addition, other areas within the Newtown Creek drainage area are served by separate

[9] This summary was prepared by NYC and represents the status according to NYC.

sewer systems. Storm sewer outfalls in these areas discharge stormwater to the Study Area during wet weather.

The combined sewer system was constructed in the 19th century, first through constructing sewer pipes that directed sanitary discharges and stormwater out of streets and neighborhoods, and later through constructing WWTPs to treat combined sanitary and storm sewer flow. Since January 1987, NYC has administered an Industrial Pre-treatment Program in accordance with the federal *Clean Water Act* that regulates industrial discharges into NYC's sewers. CSO discharges occur when wet weather flow combined with sanitary flow exceeds the capacity of the receiving WWTP and a bypass of the treatment system before reaching the WWTP is necessary to prevent sewer system backups and inundation of the WWTP.

Subject to an NYSDEC order, NYCDEP is in the midst of a CSO Reduction Program, which includes building retention tanks and increasing the capacity and improving the operation of treatment plants and sewer systems during wet weather. In addition, the NYC Green Infrastructure Plan, released by NYCDEP in September 2010, aims to reduce CSO discharges through a combination of methods, including the use of roof top detention and on-site detention, bending weirs, public plantings, and more porous surfaces for sidewalks and parking lots, among other measures. CSOs are nonetheless an ongoing, permitted source of discharges to the Study Area.

<u>Other Discharges</u>

In addition to the SPDES-permitted discharges discussed above, there are numerous Significant Industrial Users (SIUs) which discharge industrial wastewater to the Newtown Creek or Bowery Bay WWTPs. Within combined sewer service areas, contaminants from such SIUs could be discharged to the Study Area via CSOs. Mapping information illustrating the location of such discharges has not yet been obtained. The NYCDEP has had an industrial pretreatment program (IPP) in effect since the late 1980s. As such, NYCDEP regulates such discharges to their wastewater conveyance and treatment systems.

NYCDEP reports significant non-compliance for SIUs on an annual basis. Information on these SIUs is available from the NYCDEP website (http://www.nyc.gov/html/dep/html/wastewater/snclist.shtml) for the most recent year. Preliminary review of this website reveals that the following SIUs within the Newtown Creek drainage area are on the significant non-compliance list for 2007-08 and/or 2008-09:

- ALSCO Jewelry of New York, Inc, Queens (2007-08 and 2008-09)
- Apexx Omni-Graphics, Inc, Queens (2008-09)
- Architectural Coatings, Inc, Brooklyn (2008-09)
- N.S. Friedman Designs, Inc, Queens (2007-08).

There are other SIU sites located within the Bowery or Newtown Creek service areas that have been reported as non-compliant. Current and historical records for SIUs have not yet been obtained. Review of SIU sites will be conducted as part of the Historical Data Review.

2.2.1.6 Groundwater Discharges

Potential historical and ongoing discharges of COPCs to the Study Area may occur with the movement of groundwater through the upland saturated zone containing COPCs. The potential for groundwater containing COPCs to discharge to Newtown Creek and its tributaries is mitigated in portions of the Study Area and may be mitigated in other portions of the Study Area where remedial activities have been completed or are currently ongoing.

The daily tidal fluctuations of Newtown Creek influence the discharge of groundwater to Newtown Creek and its tributaries. During high tide cycles (twice daily) the surface water elevation of Newtown Creek and its tributaries may be higher than the groundwater elevation immediately inland of the bulkheads. During periods of the day when the surface water elevation is above the groundwater elevation, a reverse hydraulic gradient may occur. With the return of the low tide cycle, the gradient reverses and groundwater discharges to the Study Area. There are also portions of the Study Area where groundwater withdrawals from existing environmental remediation systems create zones that reverse the hydraulic gradient away from the Study Area and prevent direct groundwater discharge to the Study Area. These natural and induced hydraulic conditions will be considered during the evaluation of potential significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area.

Discharge of wastewater to groundwater is regulated under the SPDES permit program. As such, any permitted groundwater discharges are addressed in Section 2.2.1.5 above. It is possible that other groundwater discharges may have occurred elsewhere in the Newtown Creek watershed, and such discharges would likely be captured under the New York State contaminated sites (Section 2.2.1.1) or under the discussion of spills and releases (Section 2.2.1.8).

2.2.1.7 Urban Sources

The presence of metals, dioxins, PCBs, polycyclic aromatic hydrocarbons (PAHs), and other petroleum hydrocarbons in urban runoff is well documented (Athayede et al., 1983; Serdar, 1993; Polta, 2001; Polta et al., 2006; Schueler and Yousef, 1994; Munoz et al., 2006; Valle et al., 2007; Boehme et al., 2003; de Cerreno et al., 2002; Panero et al., 2005; and Munoz et al., 2008). Sources of hydrocarbons and metals in urban runoff include vehicle exhaust, brake and tire wear, pavement wear, fuel and engine oil leaks or spills, and corrosion. Schueler and Yousef (1994) documented concentrations of hydrocarbons and metals in stormwater sediments at concentrations well above aquatic life criteria. Given the highly urbanized nature of the Newtown Creek watershed, urban runoff from streets and other impervious surfaces represents a likely source of contaminants to the Study Area (Athayede et al., 1983; Serdar, 1993; Polta, 2001; Polta et al., 2006; Schueler and Yousef, 1994; Munoz et al., 2006; Valle et al., 2007; Boehme et al., 2003; de Cerreno et al., 2002; Panero et al., 2005; and Munoz et al., 2008).

2.2.1.8 Spills and Releases

There are 1,491 sites with reported spills and releases located in the Newtown Creek watershed, 93 of which remained open cases as of July 2010 (Appendix B, Table B-4) (Figure 2-6). These spill locations are found throughout the Newtown Creek watershed with an apparent concentration in the western portion. Of the total number of sites, 1,374 are served by conveyances to the Study Area, 84 are located in the direct drainage area to the Study Area, and 17 are classified as other (drainage type not specified in available source documents).

2.2.1.9 Other Sites Not Currently Under Enforcement Actions

In addition to contaminated sites and permitted discharges, there are a number of other facilities that were identified in the Newtown Creek drainage area. Where information is available on these facilities, it is presented below. Additional information will be collected during the Historical Data Review and presented in the Phase 1 RI Interim Data Report (Section 3.2.1) and in the Data Applicability Report (Section 3.2.1).

Bulk Storage Facilities

There are 1,180 facilities within the Newtown Creek drainage area which are identified by NYSDEC as bulk storage facilities (Appendix B, Table B-5) (Figure 2-7). Such facilities may include petroleum storage tanks regulated under *Environmental Conservation Law* (*ECL*) Article 17, Title 10; major oil storage facilities regulated under *Oil Spill Prevention, Control and Compensation Act* (Article 12 of *Navigation Law*); or facilities with chemical storage tanks regulated under *ECL* Article 37. These facilities are scattered throughout the Newtown Creek drainage area with a concentration of facilities found in the western half of the Newtown Creek drainage area.

Fifteen major oil storage facilities (MOSFs) are located in the Newtown Creek drainage area. Three are located in areas that drain directly to the Study Area, and twelve are served by conveyances to the Study Area. Thirty-five facilities with chemical bulk storage (CBS) are identified in the Newtown Creek drainage area. Twenty-eight are served by conveyances to the Study Area, five are in the direct drainage area to the Study Area, and two in areas classified as other (drainage type not specified in available source documents). The remaining sites are petroleum bulk storage (PBS) facilities. Of these, 1,039 are served by conveyances to the Study Area, 74 are located in the direct drainage area to the Study Area, 16 are classified as other (drainage type not specified in available source documents), and 1 facility did not have drainage information.

Toxic Release Inventory Reporting Facilities

There are 42 facilities within the Newtown Creek drainage area which are identified in the Toxic Release Inventory (TRI) Reporting Database (Appendix B, Table B-6) (Figure 2-8). The primary purpose of TRI reporting is to inform communities and citizens of chemical hazards in their areas, as required by the *Emergency Planning and Community Right-To-Know Act* (*EPCRA*). Sections 311 and 312 of *EPCRA* require businesses to report the locations and quantities of chemicals stored on site to State and local governments in order to help communities prepare to respond to chemical spills and similar emergencies. TRI facilities are found throughout the Newtown Creek drainage area with the majority located in close proximity to the Study Area. Of these, 38 are served by conveyances to the Study Area and 4 are located within the direct drainage area of the Study Area.

Air Facility System Major Dischargers of Air Pollutants

There are fourteen facilities within the Newtown Creek drainage area which are identified as Air Facility System (AFS) Major Dischargers (Appendix B, Table B-7). The AFS contains compliance and enforcement data and permit data for stationary sources of air pollution regulated by USEPA, State, and local air pollution agencies. The environmental regulatory community uses this information to track the compliance status of point sources with various programs regulated under the *Clean Air Act*. The identified facilities are scattered throughout the Newtown Creek drainage area. Of these, eleven are served by conveyances to the Study Area and the remaining three are located within the direct drainage area of the Study Area.

Other Facilities

Other industrial and/or commercial facilities, which are not currently under enforcement actions, and which have not otherwise been identified under the categories above may be operating within the Newtown Creek drainage area, and represent potential sources of contaminants to the Study Area. As new data become available, additional sites/facilities or site/facility types may be identified.

2.2.1.10 Other Chemical Stressors

There are other potential sources of chemical stressors to the Study Area including nutrients and chemicals mobilized by disturbance of sediments within the Study Area. Elevated nutrient levels (primarily nitrogen and phosphorus) may be present in discharges to the Study Area. Chemicals present in sediments may be mobilized if sediments are disturbed by activities within the Study Area, e.g., prop wash from marine traffic and the operation of the NYCDEP aerators in English Kills, or natural scouring during periods of high surface water flow following precipitation events.

2.2.2 Sources of Potential Physical and Related Stressors

In a complex, altered environment like the Study Area adverse responses to ecological receptors can be caused by a combination of stressors. In addition to potential chemical stressors to the Study Area, there are physical and biological stressors to consider when evaluating current and future ecological conditions. The following sections present initial considerations related to physical stressors that influence the ecosystem. While the *CERCLA* RI focuses on chemical stressors, a thorough understanding of non-chemical stressors, such as are discussed below, is necessary when characterizing risk and sources of risk in the Study Area.

2.2.2.1 Habitat Alteration and Loss

There are a number of physical stressors in and around the Study Area that influence which organisms and ecological communities can colonize and persist. These include channelization of Newtown Creek and its tributaries, periodic dredging, bulkheading and filling in of shoreline areas, construction and the presence of industry along Newtown Creek and its tributaries, and siltation/sedimentation. Given the overall urban development, the designation of the Study Area and the majority of the surrounding area as a SMIA and its ongoing use as a navigable waterway, these physical stressors affecting potential ecological habitat will be present for the foreseeable future. Wetlands, salt marshes, intertidal mudflats, and other features associated with pre-development conditions are of limited extent, and the condition bottom sediments (silty and that may be flocculent) further restricts the potential biota that can inhabit the area.

2.2.2.2 Nutrients

Elevated nutrient levels (primarily nitrogen and phosphorus) influence the structure of the biological community as a result of the process of eutrophication. Elevated levels of nutrients that may be present in discharges shift the algae population towards less desirable nuisance algae. Eutrophication reduces subaquatic macrophytes growth, reduces habitat for fish and zooplankton, and may further lead to low DO and consequent fish kills. Physical stressors, nutrients, and their impacts are best addressed within the context of this section.

2.2.2.3 Oxygen Depletion

The SD classification for the Study Area indicates that a DO concentration of at least 3.0 milligrams per liter (mg/L) is the concentration necessary to ensure fish survival. Study Area water quality does not meet this criterion year round. The DO levels in the bottom waters, especially at the heads of the Newtown Creek tributaries often reach anoxic levels (<1 mg/L) (NYCDEP, 2007a) from elevated biochemical oxygen demand, elevated oxygen demand from algae characteristic of eutrophic waters, and limited water column mixing. Sediment oxygen demand is also likely high from decomposing organic matter and contributions from settleable solids, resulting in anoxic and reducing sediments. The DO conditions in the main branch of Newtown Creek improve toward the mouth of Newtown Creek. DO is especially low when water temperatures are higher and for two to three days following wet weather discharge events. The 2007 *City-Wide Long Term CSO Control Planning Project, Newtown Creek* report stated that based on all available data for Newtown Creek and its tributaries, more than 35 percent of all DO samples for the entire waterbody are below 1.0 mg/L (NYCDEP, 2007a) and, as such, DO levels are important to consider within the context of physical and related stressors.

2.2.2.4 Salinity

Salinity in the Study Area will vary based on the wet weather flow, the tidal regime, and the distance from the mouth of Newtown Creek. The NYCDEP *City-Wide Long-Term CSO Planning, Receiving Water Quality Modeling Report, Volume 11* showed that salinity at the surface was lower during wet weather events. The study found that the salinity difference between surface and bottom is greater towards the head of English Kills where measured salinity can be lower than 15 parts per thousand (ppth) (NYCDEP, 2007c). Salinity variation and gradients are important factors in shaping the potential biological community.

2.2.3 Potential Biological Stressors

Biological stressors affecting ecological receptors in the context of the Study Area, e.g., bacteria or pathogens associated with discharges (NYCDEP, 2007a), may adversely affect the structure and abundance of the biota in the Study Area. Invasive species displacing or destroying native biota are another potential biological stressor. Discharges to the Study Area may contain various types of bacteria and pathogens that are potentially harmful to aquatic organisms. Bacteria and pathogens can also indirectly affect the health of aquatic organisms by causing changes in the ecosystem (i.e., nutrient cycling, oxygen consumption).

2.2.4 Nature and Extent of Constituents of Potential Concern

The Newtown Creek system is complex, with many sources, historical and ongoing, contributing to chemical loading in both the sediments and water column. There have been several studies conducted to date that provide a partial understanding of the impacts to sediments, the effects of various land-side activities adjacent to the Study Area, and the contribution of the various sewers and industrial discharges to the Study Area.

The following general statements may be made about the current knowledge of the nature and extent of COPCs in the Study Area. These statements are followed by brief summaries of three studies conducted of the Study Area (Laurel Hill Site Operable Unit 6 RI [referred to in this Work Plan as the OU6 RI], USEPA Expanded Site Inspection [ESI], and NYCDEP sampling prior to maintenance dredging at the mouth of Newtown Creek and in Whale Creek). Data from these studies have been considered in the preparation of this Work Plan (some of which are discussed in Section 2.2.4.1 below) and will be considered or presented in more detail in the RI Report, as appropriate.

- Two rounds of surface water samples were collected in 2004 during the OU6 RI. Nearly all of the constituents analyzed were either undetected or detected at maximum concentrations that were below New York State chronic water quality criteria (Anchor, 2007a; NYSDEC, 1998). Select pesticides and a single volatile organic compound (tetrachloroethene) were detected in the water column at concentrations exceeding water quality criteria (Anchor, 2007a).
- The results of surface water sampling between 1984 and 2003 were discussed in the NYCDEP draft *City-Wide Long Term CSO Control Planning Project, Newtown Creek* report, submitted to

NYSDEC in June 2007. This report states that DO, total and fecal coliform, and floatables are issues in surface water. These constituents and the floatables are of greater issue at the headwaters of Newtown Creek and its tributaries where loading to surface water occurs (NYCDEP, 2007a).

- In 1993, sediment samples were collected proximal to outfall locations that received drainage from historical upland operational areas at the Laurel Hill Facility. These sediment samples contained concentrations of organic compounds (primarily PAHs) and metals at levels above NYSDEC sediment screening criteria (NYCDEP, 2007a).
- In 1990 and 2000, NYCDEP and NYSDEC collected sediment samples from locations throughout Newtown Creek and the East River. A wide range of metals, including arsenic, cadmium, chromium, copper, and mercury, were detected in surface sediment samples throughout this region at concentrations that exceed NOAA effects range screening levels for potential benthic toxicity (NYCDEP, 2007a).
- Sediment sampling conducted in 2004 and 2005 for the OU6 RI included analysis for metals, PAHs, PCBs, semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), pesticides, dioxins and furans, and volatile organic compounds (VOCs). These analyses showed the presence of a wide range of metals, hydrocarbons (including PAHs), PCBs, pesticides, plasticizers (e.g., phthalates), and other chemicals (Anchor, 2007a).
- Sediment sampling conducted in 2009 by the USEPA for Hazard Ranking System (HRS) scoring included analysis for metals, PCBs, SVOCs, and VOCs. USEPA compared these data to sediment samples collected from the Atlantic Basin, which the USEPA considered a background location for their study. Their analyses showed that select metals, PCBs, SVOCs, and VOCs were detected above the background concentrations selected by USEPA (Weston Solutions, 2009).
- NYCDEP conducted sediment and surface water sampling in 2009 of areas where they are proposing to conduct maintenance dredging at the mouth of Newtown Creek and at Whale Creek. Samples were analyzed for VOCs, SVOCs, metals, pesticides, herbicides, PCBs, and dioxins/furans. Select sediment samples were also analyzed using TCLP (Toxicity Characteristic Leaching Procedure). These analyses showed the presence of metals, PAHs, PCBs, dioxins, pesticides, and VOCs (NYCDEP, 2009).

2.2.4.1 Previous Study Area Investigations

There have been several previous environmental investigations of the Study Area and the surrounding uplands. These investigations have been conducted by several parties, including the Respondents, NYSDEC, and USEPA. Recent work investigating surface water and sediment has included OU6 RI work performed by the PDRC in an upper portion of Newtown Creek, site-specific work conducted by other Respondents, work performed by NYCDEP in the upper portion of Newtown Creek and its tributaries and sampling of the sediments at the mouth of Newtown Creek and in Whale Creek in preparation for the NYCDEP proposed maintenance dredging, and work performed by USEPA in the main portion of Newtown Creek, but not of the headwaters of the tributaries. The work performed by PDRC is summarized in a Draft OU6 RI report (Anchor, 2007a). The NYCDEP investigation work is summarized in the draft report *City-Wide Long Term CSO Control Planning Project, Newtown Creek*, submitted to NYSDEC in June 2007 (NYCDEP, 2007a). The USEPA work is summarized in an ESI report (Weston Solutions, 2009). The results of these three studies are summarized below.

Summary of Laurel Hill OU6 Data

The OU6 RI was conducted in four phases from 2004 to 2005. The investigation included 72 surface sediment, 48 sediment core, 72 pore water (up to 4 seasonal rounds at select locations), and 7 surface water (during 2 rounds) sample locations. Surface sediment samples were analyzed for target analyte list (TAL) total metals, TAL pore water metals, acid volatile sulfide (AVS) and simultaneously extracted metals (SEM), total organic carbon (TOC), ammonia, sulfide, grain size, and total solids. At the sediment core locations, the surface samples were also analyzed for target compound list (TCL) VOCs, TCL SVOCs, and TCL pesticides/PCBs. Select samples were also analyzed for dioxins. Sediment core samples were analyzed for TAL total metals, total solids, TOC, ammonia, sulfide, and grain size. Select samples were analyzed for dioxins and radioisotopes. Surface water samples were analyzed for TCL VOCs, SVOCs, and pesticides/PCBs, TAL total and dissolved metals, major and minor cations and anions, and conventional parameters including total suspended solids (TSS), salinity, conductivity, dissolved organic carbon (DOC), pH, temperature, and DO. Pore water samples were analyzed for TAL metals.

The OU6 RI findings, in part, included the following:

- A wide range of metals, hydrocarbons (including PAHs), PCBs, pesticides, plasticizers (e.g., phthalates), and other constituents were frequently detected in surface sediments collected from OU6.
- Nearly all of the constituents analyzed in the surface water samples were either undetected, or were detected at maximum concentrations that were below water quality criteria. Pesticides (aldrin, dieldrin, 4,4′-DDD, 4,4′-DDT, heptachlor, and heptachlor epoxide) and tetrachloroethene were the only constituents that exceeded water quality criteria.

Vertical profiles of metals in sediments that had the highest overall frequency of pore water quality exceedances of NYSDEC marine chronic water quality criteria (e.g., arsenic, mercury, and nickel) “indicate nearly uniform concentration with depth and, in most profiles, a reduction in concentrations near the surface” (copper concentration profiles are more variable with depth and between cores) (Anchor, 2007a).

Summary of USEPA Expanded Site Inspection Report for Newtown Creek

The USEPA conducted an ESI of Newtown Creek in 2009 (Weston Solutions, 2009) as part of the HRS scoring process for consideration for placement of Newtown Creek on the NPL. This information was summarized in the *Expanded Site Inspection Report, Newtown Creek, Brooklyn/Queens, New York, CERCLIS ID No. NYN000206282* (Weston Solutions, 2009). Between February and April 2009, samples from 74 surface (0-2 feet) and 63 subsurface (2-6 feet) sediment locations were collected from the Study Area and 6 surface and 6 subsurface sediment locations were sampled at the USEPA-selected background location within the nearby Atlantic Basin. The investigation focused primarily on the Study Area and not the full length of the tributaries (the headwaters of Dutch Kills, Whale Creek, Maspeth Creek, East Branch, and English Kills were not sampled). The Atlantic Basin and Study Area samples were analyzed for TAL metals, TCL VOCs, SVOCs, PCBs, dioxins/furans, TOC, and grain-size distribution.

Based on the results of the ESI, USEPA concluded that metals, VOCs, SVOCs including PAHs, and PCBs are present in the Study Area sediments at concentrations above the concentrations of constituents in samples that USEPA collected in the Atlantic Basin. The data showed that constituents with concentrations above the concentrations in the Atlantic Basin samples were not confined to any particular area, but were present throughout the Study Area, from the navigable portion of English Kills to the mouth of Newtown Creek. Additionally, the ESI concluded that the variety and distribution of the detected constituents suggested a variety of sources.

Summary of NYCDEP Dredging Presampling Data

In March and April 2009, NYCDEP conducted sediment and surface water sampling in preparation for maintenance dredging at the mouth of Newtown Creek and at Whale Creek to allow access for sludge barges (NYCDEP, 2009). During this sampling program, samples were taken in Newtown Creek at four locations in the proposed dredge material (upper segments) and future exposed sediments (lower segments) and in Whale Creek at three locations in the proposed dredge material and at four locations in the future exposed sediments. All sediment samples were analyzed for physical parameters (e.g., TOC, percent moisture, and grain size), VOCs, SVOCs, metals, pesticides, herbicides, PCBs, dioxins/furans, and conductivity. Proposed dredge area samples were also analyzed using TCLP. Two elutriate samples were analyzed for VOCs, SVOCs, metals, pesticides, herbicides, PCBs, and dioxins/furans (one location). Surface water samples were taken at two locations and analyzed for TSS, salinity, VOCs, SVOCs, metals, pesticides, herbicides, PCBs, dioxins/furans, and conductivity.

Sediment results were compared to NYSDEC Technical & Operational Guidance Series (TOGS)[10] screening levels. The majority of samples had exceedances of metals, PAHs, PCBs, and dioxins. Some samples had exceedances of select pesticides and VOCs. The single sample analyzed for PCB congeners exceeded the screening levels. Surface water and elutriate results were compared to applicable TOGS screening levels. The majority of samples had exceedances of PCBs and some samples had exceedances of total cyanide and dioxin screening levels.

2.2.5 Fate and Transport Characteristics

Understanding movement of constituents within the Study Area system will require an investigation of several mechanisms for the transport of dissolved phase and suspended phase constituents. The present understanding of these mechanisms will guide the related RI tasks.

2.2.5.1 Sediment Transport

Movement of sediment in the Study Area is likely to be controlled in large part by the physical shape of Newtown Creek and its tributaries, water depths, hydrodynamic conditions within the Study Area, sediment properties, and the location of significant ongoing sources of solids loadings into the system. In general, particulate or sediment-associated constituents from upstream (and downstream) areas would be expected to accumulate in depositional areas.

During high-flow (e.g., wet-weather) events, new sediments enter the system through point source discharges (NYCDEP, 2007a) and nonpoint source discharges (e.g., seeps and overland flow). In addition, sediments may be resuspended and deposited within the system due to bed scour processes. These resuspended sediments may accumulate in other depositional areas.

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[10] The TOGS are "jointly produced by the NYSDEC Division of Water and NYSDEC Division of Fish/Wildlife and Marine Resources (hereafter referred to as "Divisions"). The Divisions pursued the development of this [Technical and Operational Guidance Series] TOGS in order to provide staff with guidance on the statutory and regulatory requirements for dredging activities and to promote uniformity in the certification and/or permitting of dredging projects throughout the state… While this TOGS contains numerical assessment criteria, it is not law or regulation." (NYSDEC - TOGS 5.1.9)

Sediment transport within the Study Area may also act to redistribute constituents within the system. There is the potential for buried historical constituents to be exposed to potential receptors by erosion of overlying sediment, as well as the potential for new sediment entering the system through sewer outfalls to cover historical or recently deposited sediments.

Anthropogenic disturbances (e.g., propeller wash or dredging) and transport of sediments within Newtown Creek and its tributaries may also contribute to the redistribution of sediments within the Study Area. These may be more significant in areas of higher marine traffic (e.g., near wharfs). Maintenance dredging activities in the main channel of Newtown Creek and its tributaries occurred routinely during the past but not during the past 35 years. The NYCDEP is currently proposing maintenance dredging of the navigational channel near the mouth of Newtown Creek and within Whale Creek.

2.2.5.2 Surface Water Transport

Almost all of the flow of water into the Study Area results from combined sewer overflows and industrial wastewater discharges. According to Weston Solutions (2009), there are currently 23 CSOs and more than 200 identified stormwater and industrial discharges to Newtown Creek and its tributaries. Nonpoint sources (such as groundwater, overland flows, and seeps) also contribute flow to the Study Area. The surface water of the Study Area may receive COPCs from the discharges and nonpoint sources and redistribute them in the Study Area. Constituents may be transported in surface water as suspended particulates and dissolved constituents. Constituents in surface water may originate from sewer discharges, groundwater discharge into the Study Area, suspension or diffusion from impacted sediments already in the Study Area, and deposition from the air. Suspended particulates are likely to settle out in depositional areas of the Study Area. Dissolved constituents generally remain in the water column until chemical or biological processes cause precipitation or adsorption. Volatilization may transfer constituents to overlying air and photolysis may transform some constituents in the upper portion of the water column.

2.2.5.3 Tidal Transport

Constituents and suspended sediments may be introduced into the Study Area by tidal fluxes and estuarine flow patterns.

2.2.5.4 Atmospheric Deposition and Volatilization

Fine particulate matter or precipitation containing COPCs (e.g., organic constituents [PCBs, PAHs, dioxins/furans, and organochlorine pesticides], trace metals, mercury, and organic and elemental carbon) may be deposited directly into the Study Area or onto the surrounding Newtown Creek drainage area and carried to the Study Area in stormwater runoff. Some volatile constituents, if present in the water column, could volatilize into the atmosphere above the Study Area. The potential for volatilization from surface water to occur is dependent on the air and water temperatures and wind speed. However, according to the USEPA *ESI* (Weston Solutions, 2009), "a release of hazardous substances to air is not observed or suspected."

2.3 Ecological and Human Health Conceptual Site Models

The direct exposure media for the physical CSM include surface water and sediments within the Study Area. Biota, air and groundwater in contact with the Study Area may be indirect exposure media. From these media, ecological and human receptors are potentially exposed to COPCs and other stressors. These exposure pathways are represented in the current CSM as refined by the preliminary ecological risk and human health risk exposures pathway diagrams presented in Figures 2-9 and Figure 2-10 and are more fully developed in the following sections.

2.3.1 Ecological Conceptual Site Model

The following section briefly summarizes the current understanding of the ecological habitat and features of the Study Area. This understanding of the preliminary ecological exposure pathways (Figure 2-9) guides the ecologically-oriented tasks.

2.3.1.1 Habitat Features

The area immediately surrounding the Study Area is urbanized and industrialized, including extensively modified shoreline and nearshore areas. Bulkheads and riprap revetments armor almost all of the shoreline. Some vegetated areas are present along eroded bulkheads and on sediment mounds, and localized areas of intertidal mudflats are present with and without vegetation. Some of these areas may include marsh vegetation. In addition, NYSDEC has mapped an area of high marsh within the main stem of Newtown Creek. Dredging has occurred throughout the Study Area, altering the natural bathymetry. As a result of the extensive urban and industrial development, the natural habitat for fish and wildlife is limited and this development has promoted species that can successfully adapt to highly urbanized environments. In addition, anthropogenic sources of surface water input (i.e., discharges from runoff and municipal and industrial/stormwater outfalls) are the primary sources of inflow of freshwater to the Study Area, as no natural streams exist or have existed in the area for well over a century (USGS, 1999; NYCDEP, 2007a). The structural habitat for fish and wildlife species is severely limited.

The Study Area is tidally influenced. Subtidal zones consist of modified bottoms that are primarily unconsolidated silty clay material. No naturally consolidated or rocky material is expected; however, some occasional constructed material (e.g., concrete riprap) may be present. Observations of Newtown Creek and its tributaries indicate that below the shoreline revetments, localized areas of intertidal zonation exist, which include sediment mounds, mudflats and shoreline exposed during typical tides (vertical range from five to seven feet). Exposed areas generally appear to be silty clay. Riparian areas, adjacent to the Study Area, are few and, when present, are dominated by armored concrete or riprap but include areas of terrestrial and marsh vegetation found in eroded bulkheads, sediment mounds, and similar locations.

Wetland areas may be present on flats or reforming in decaying bulkheads or shorelines. NYSDEC classifies the entire bank of the Study Area as a tidal wetland.

The Phase 1 RI Field Program habitat and shoreline surveys will identify, determine approximate size, and characterize habitat features, including mudflats and potential wetlands areas along the shoreline. If wetlands are present, a wetland delineation, using Federal (USACE and/or United States Fish and Wildlife Service [USFWS]) wetland definitions, will be conducted as part of the BERA.

2.3.1.2 Exposure Pathways

For a risk to be said to exist from a source there must be a receptor affected by the source, a complete and significant pathway to the receptor and a route of uptake by the receptor, and the stressor associated with the source must have adverse effects at the levels present (USEPA, 1998b). This section summarizes the current understanding of the potential exposure routes and pathways from affected media to ecological receptors in the Study Area.

The preliminary ecological exposure pathway diagram (Figure 2-9) identifies an early understanding of sources, release mechanisms, exposure media routes, and potential ecological receptors. This figure will be continually refined based on data obtained during the ongoing RI/FS process.

A critical aspect in the development of the CSM for the Study Area is an understanding of the source and interplay of stressors affecting fish and wildlife resources. In particular, poor habitat quality, seasonally anoxic or low DO conditions, presence of chemical stressors in sediment and water, and other factors may all contribute to ecological risk. Physical and related stressors were introduced in Section 2.2.2, and biological stressors in Section 2.2.3. While the ERA has its primary focus on the chemical stressors, a qualitative and/or quantitative evaluation of the effects and constraints imposed by these biological, physical, and related factors is needed to define appropriate measurement endpoints and to characterize risk and uncertainties associated with chemical stressors.

A preliminary working model of the ecological conditions in the Study Area includes two primary exposure media associated with identified sources in the Study Area and two indirect exposure media:

1. Surface water
2. Sediment and associated interstitial pore water
3. Biota (vegetation and prey animals) affected by uptake of contaminants from primary exposure media, with resultant biological transfer to higher trophic levels
4. Groundwater

Note that exposure to sediment and water column-associated COPCs will be constrained by which organisms are able to subsist in the Study Area under current and predicted future conditions influenced by the physical and associated stressors discussed above. The BERA Problem Formulation will address this issue more fully, although these factors will not limit the assessment endpoints to be considered under reasonable future scenarios.

Surface Water

Aquatic organisms are exposed to surface water via ingestion and direct contact. This also includes sediment dwelling organisms such as clams, which use siphons to ingest surface water even when buried in sediment. Therefore, water quality-related issues and contaminants are important in the understanding of ecological exposure pathways, and must be well understood before conclusions about other pathways can be drawn.

Aquatic organisms are affected by surface water as a result of complete immersion in the medium, and COPCs dissolved in surface water or present in suspended particulates may be absorbed by organisms by multiple physiological pathways. In general, exposure is considered holistically for aquatic organisms. For semi-aquatic organisms, exposure to COPCs in surface water is considered due to ingestion, directly or incidentally. Dermal contact is also a relevant exposure route, but is generally of less importance relative to ingestion.

Water quality monitoring, data analyses, and mathematical modeling of Newtown Creek and its tributaries performed by NYCDEP since 1980 have documented anoxic conditions and other water/sediment quality impairments resulting from ongoing loadings to Newtown Creek and its tributaries. NYCDEP and NYSDEC analyses, corroborated by information collected during the OU6 RI, show that Newtown Creek and its tributaries do not consistently meet the Class SD fish survival standard for DO (never-less-than 3 mg/L). Anoxic conditions (i.e., DO less than 1 mg/L), where fish survival is not supported, regularly occur in the bottom waters of the Study Area. Based on this information, Newtown Creek was included on the 2006 *Clean Water Act* Section 305(b) list, with identified use impairment to aquatic life (precluded), recreation (impaired), and aesthetics (stressed due to floatables). Newtown Creek was also included on the 2006 New York State total maximum daily load (TMDL) priority list under *Clean Water Act* Section 303(d), with identified impairment to fish propagation due to low DO levels that are attributable to ongoing loadings to Newtown Creek and its tributaries. Current NYCDEP CSO control plans propose reductions in CSO flows and aeration of certain areas of English Kills and Newtown Creek to increase DO levels, although it appears unlikely fully attaining conditions will be achieved throughout the entire Study Area under reasonably anticipated future scenarios.

Water quality impairments related to DO and other non-chemical stressors are important to consider when evaluating ecological risk under future conditions, and will be discussed in the BERA Problem Formulation and also addressed in the BERA.

Based on NYCDEP's present CSO control plans, aeration of certain areas of English Kills and Newtown Creek is currently being implemented in a phased program to increase DO levels in these areas of the Study Area (NYCDEP, 2007a). A plan and schedule for construction of all recommended aeration and CSO control facilities will be finalized by 2016. There is no current schedule for completion of this work. Moreover, even if all of the currently planned facilities are constructed, roughly 40% of the current CSO flow and associated loadings will still discharge into Newtown Creek and its tributaries, and there is no current plan to control any of the ongoing stormwater inputs (NYCDEP, 2007a). Continued chemical discharges and impacted ecological conditions associated with urban loadings are expected into the foreseeable future, and will be a consideration in the selection of appropriate exposure pathways and receptors.

<u>Sediment</u>

Aquatic organisms may be exposed to sediment-associated COPCs through ingestion and direct contact. Some organisms contact sediment only incidentally, while others dwell in the sediment and, in some cases, sediment is the food source. Yet other organisms may live epibenthically on the sediment or within the sediment in tubes or shells with limited contact with the sediment as they feed by filtering water via siphons.

The degree of exposure to COPCs in sediment is also affected by the general ecological constraints, due to degraded water quality, indicated in the previous section. Exposure to sediment is further affected by sediment issues including the following.

- The potential for sediment at some locations of the Study Area to be acting as a sink for COPCs that continue to enter the Study Area from ongoing discharges from the urban environment.
- The physical stress caused by reducing conditions (high oxygen demand), fine grained silts with little structure for biota, and possibly smothering by ongoing deposition of suspended solids. Smothering may be significant for organisms dependent on siphoning or filtering surface water overlying the bottom sediment, as filtering organs can become injured or clogged (Wood and Armitage, 1997).
- Limitation of exposure to the biologically active zone (BAZ) of the sediment. The depth of the BAZ is dependent on local conditions, but is typically considered to be about 10 cm in quiescent waters, but may be less in highly reducing environments, or more in marine habitats with ample circulation and water exchange. The BAZ in tidal areas of the New York and New Jersey Harbor has been shown to typically occur within the top 0.5 feet (approximately 15 cm). In view of the indicated reducing conditions and abundance of fine-grained sediments, it is very possible that the BAZ may be less than 10 cm, but the BAZ appropriate for the Study Area will need to be established when developing ERA measurement endpoints. For the purpose of the RI, the more conservative 0 to 0.5-foot interval (0 to 15 cm) will be sampled.

- Exposure in the BAZ may be to interstitial pore water, sediment particulates, or a combination thereof. The bioavailability of contaminants present in sediment will be a key consideration to understanding the mechanism of exposure (USEPA, 2005a).
- Interstitial pore water conditions in the hyporheic zone may be affected by groundwater entering Newtown Creek and its tributaries. The extent and location of such inflow, if any, is not currently known, and therefore the extent or even existence of biological exposure to sediment pore water directly affected by groundwater remains unclear. This issue will be evaluated further in the BERA Problem Formulation.
- Ecological exposure is relevant primarily for surface sediment (i.e., the BAZ and the easily available sediment below the BAZ where sediment transport or internal sediment processes may result in exposure). The "deep," older sediment may not be ecologically relevant unless large scale surface sediment removal or scouring and subsequent redeposition were to occur or if dredging exposes the deeper sediment. However, migration of contaminants from deep to shallow sediment is a potentially complete indirect transport pathway to sediment biota.
- Whether sediment mounds represent a significant in-stream source of sediment oxygen demand and act as sources of sediments containing COPCs to other areas of the Study Area as fine-grained sediment particles are eroded from the mounds during high flow conditions and are transported downstream.

Biological Transfer

Biological transfer via the food web to ecological receptors in higher trophic levels, often resulting in bioaccumulation and biomagnification, is a complete pathway. The ERA process will consider, via appropriate testing and food web models, the extent of exposure in higher trophic levels to contaminants originating in Study Area sources.

Groundwater

Groundwater may represent a potential exposure pathway to ecological receptors. Interstitial pore water conditions in the hyporheic zone may be affected by groundwater entering the Study Area. As described above, the extent and location of such inflow, if any, is not currently known, and therefore the extent or even existence of biological exposure to sediment pore water directly affected by groundwater remains unclear. This issue will be evaluated further in the BERA Problem Formulation.

2.3.1.3 Current and Future Conditions

The diversity and abundance of the ecological community that is currently present in the Study Area is constrained by the chemical, biological, physical, and other stressors already present. The stress from frequent low oxygen conditions results in the inability of many organisms to persist in the waterway; therefore, the ecological community is expected to be degraded and dominated by tolerant species, independent of possible toxic effects from sediment or from water influx. Exposure to potential chemical stressors in sediment under these circumstances is a secondary issue, because anoxic sediment conditions result in a habitat hostile to colonization by most organisms and little exposure to chemical stressors is likely to occur. However, aquatic organisms present in the Study Area are exposed to chemical stressors under the current conditions.

Sensitive species may be unable to colonize the Study Area unless constraints are removed. Currently, as noted, Newtown Creek and its tributaries do not meet the minimum oxygen criteria for the applicable lowest class of New York waterbodies, Class SD (NYCDEP, 2007a). Meeting and surpassing the Class SD criteria will be necessary before the habitat becomes amenable to colonization by species and communities associated with a “healthy” ecosystem. Therefore, the distinction between current conditions and a potential future condition is an important consideration for the ERA, and will be a key component of ongoing discussions with stakeholders during the ERA process.

The Phase 1 RI investigations include biological evaluations (e.g., benthic macroinvertebrate surveys and fish identification surveys) to further define the current ecological condition in the Study Area. These investigations have been designed without limiting assumptions on potential future use of the Study Area.

Potential future conditions will be considered in the risk assessment. These conditions affect the selection and evaluation of receptors, and are critical in formulating appropriate assessment endpoints. The draft *City-Wide Long Term CSO Control Planning Project, Newtown Creek* report (NYCDEP, 2007a) has evaluated different scenarios to improve conditions in the Study Area. Based on review of these scenarios, future conditions may include the following.

- A “restricted” future condition where improvements or reductions of the loadings improve conditions to meet currently mandated Class SD criteria, i.e., allowing fish survival but not necessarily allowing a resident, reproductive population.
- A more complete reduction in permitted loadings, allowing water quality to improve to conditions surpassing currently required Class SD criteria to Class I criteria (i.e., the classification for other New York Harbor waters). In this scenario, water quality is sufficient to allow a resident fish population and associated biota (in addition to allowing secondary recreation) and the biological community, while still restricted by the poor physical habitat of the Study Area.

Exposure to chemical stressors is the primary focus of the ERA, and assessment endpoints are defined on the basis of evaluation of chemical COPCs. However, the impact of physical and related stressors on uncertainties associated with exposure assumptions will be considered in the BERA Problem Formulation and in the refinement of appropriate assessment and measurement endpoints for the ERA.

2.3.1.4 Complete and Incomplete Exposure Pathways

While many exposure pathways may exist in an ecosystem, not all are necessarily complete or significant enough to warrant detailed analysis. Figure 2-9 shows preliminary determinations for each of the identified pathways and receptors relevant for the Study Area. These preliminary determinations, which will be updated in the BERA Problem Formulation, will affect the form of the risk questions, assessment endpoints, and measurement endpoints to be evaluated in the ERA. The types of pathways are listed below.

- Complete pathways that are likely to be of significance such that quantitative assessment procedures will need to be developed for the ERA.
- Complete pathways where the endpoint may lack applicable quantitative methods for assessment. These pathways are expected to be evaluated in part on a qualitative basis based on a weight-of-evidence approach incorporating literature data, Study Area observations, and other non-numeric criteria.
- Potentially complete pathways, but due to minimal exposure, or minimal presence of the receptor, where the exposure, if any, is expected to be acceptable in the context of the overall ERA. These endpoints will be considered on a qualitative, narrative basis.

- Incomplete pathways due to biological, habitat, or physical constraints.
- Some receptors are essential components as a resource base for higher trophic level endpoints. These receptors will be included in the modeling necessary to estimate exposure via the food web, but may not be evaluated as assessment endpoints in their own right. To evaluate the contribution of these receptors to food web transfer, the approach yielding least uncertainty is based on measured tissue concentrations. If collection of tissue data are not practical or feasible, modeled uptakes using standard bioaccumulation and bioconcentration factors between media and the various trophic groups may be used to estimate tissue concentrations and other parameters necessary to the food web model. The BERA Problem Formulation will determine the best approach to be implemented for an accurate food web model.

2.3.1.5 Ecological Receptors

Any ecological receptor in and around the Study Area may be assumed to be adapted to a highly urban and industrialized waterway. Based on the conditions associated with the current designation of Newtown Creek and its tributaries as Class SD, it is expected that the population size and diversity of species will be lower than in NYC waters as a whole, which are classified as Class I in the urban core areas. Although each species has unique habitat requirements and behavior, several species are often similar in their use of resources and potential exposure to constituents.

The following key receptor classes have been identified as preliminary assessment endpoints[11] based on the currently available information for the Study Area. The exposure pathway diagram in Figure 2-9 presents these endpoints. The assessment endpoints will be refined during the BERA Problem Formulation following collection of data from the Phase 1 RI Field Program habitat assessment.

<u>Endpoint 1: Aquatic Plants</u>

Emergent vegetation was observed in limited areas within the tidal margins of the Study Area during the OU6 RI. In addition, a phytoplankton community is expected to be present. Diatoms have been reported to represent the dominant class of phytoplankton, followed by dinoflagellates and green algae (NYCDEP, 2007a). Phytoplankton community structure is highly sensitive to physical conditions (tidal influence, salinity) as well as to nutrient loading and oxygenation. Phytoplankton blooms can often cause noxious conditions. Phytoplankton is also a major component of the base of the food chain, and its abundance and structure is of ecological concern.

<u>Endpoint 2: Zooplankton</u>

The type and structure of the zooplankton community present in the Study Area have not been previously studied. As in the case of phytoplankton, the community structure is highly sensitive to physical, chemical, and biological conditions. Zooplankton is a major source of food for fish communities; its abundance and structure is of ecological concern.

<u>Endpoints 3 and 4: Invertebrates (benthic community and crabs/filter feeders)</u>

The benthic macroinvertebrate community present in the Study Area has been described as a pollution tolerant community dominated by Tubificid worms (NYCDEP, 2007a). The benthic

[11] "Assessment endpoint" is an explicit expression of the environmental value to be protected, and is a key part of the ecological risk assessment process.

conditions in the Study Area are expected to be low in oxygen and also dominated by unconsolidated silts. Physical disturbance, sediment smothering, flocculent surface sediment, and low or no oxygen content due to elevated oxygen demand are likely to severely limit the benthic community that can persist in the Study Area (Rankin et al., 1999; NYCDEP 2007a).

Benthic invertebrate community structure, and toxicity and bioaccumulation evaluations based on benthic invertebrates are common endpoints in ERAs. An understanding of the actual benthic community, as well as the potential community that could be present given the overall physical constraints is essential to defining appropriate endpoints for the ERA.

Epibenthic macrofauna (e.g., blue crab) are opportunistic predators and grazers, and may be expected in portions of the Study Area (primarily segments near the mouth of Newtown Creek) where physical conditions are less stressful. Crabs, which have been observed in the Study Area, are directly exposed to dissolved constituents as they ventilate surface water over gills and as they ingest benthic invertebrates, zooplankton, benthic and epiphytic microflora (both algae and bacteria), detritus, and scavenged tissue (e.g., dead fish). Other epibenthic invertebrates observed in the Study Area include filter feeding barnacles growing on manmade structures near the water surface. Benthic infauna and many epibenthic invertebrates are closely associated with sediment. The degree of exposure to sediment-associated COPCs varies depending on feeding strategies. Some species, such as blue crabs are exposed to sediment via direct contact and ingestion, while others such as barnacles have minimal sediment contact and are primarily affected by COPCs in the surface water. Burrowing organisms have varying degrees of exposure to interstitial pore water, to surface water via siphoning, and to direct contact with sediment.

Endpoints 5 and 6: Fish (benthic and open water)

There have been a limited number of studies on the fish populations present in the Study Area (NYCDEP, 2007a). Fish populations are likely to be primarily limited by unfavorable surface water conditions (e.g., low DO) (USEPA, 2000a; USEPA, 2007; NYCDEP, 2007a). Based on potential exposure pathways, fish are divided into two primary receptor groups as described below.

- Benthic fish – This group includes fish that have foraging and feeding behaviors that result in close association with sediments. They can include detritivores, omnivores, and carnivores. These fish can be potentially exposed through ingestion of sediment, ventilation of surface water, and ingestion of biota.
- Open water ("pelagic") fish – This group includes fish that primarily forage and feed in the water column and do not have a close association with sediment. This group includes carnivorous and planktivorous fish, commonly includes species such as the perch, and may be subject to fishing. Exposure routes for this group include ventilation of surface water and ingestion of biota.

The distribution, abundance, and temporal distribution of fish in the Study Area have not been extensively investigated. Documented oxygen depletion in large portions of the Study Area would be expected to limit fish species and population sizes (USEPA, 2000a; USEPA, 2007; NYCDEP, 2007a). The low oxygen content is an important factor in the State designation of this waterway as a Class SD waterbody, which is meant to be protective of survival but not reproduction of fish (*Title 5 New York Codes, Rules and Regulations* (*NYCRR*) *Part 701*). An important consideration in this respect is that many fish are opportunistic and will take advantage of times of tolerable conditions to forage in the Study Area, and leave the area at other times. Therefore, in addition to benthic and open water fish, it is necessary to distinguish resident (and reproductive) populations, if any, and intermittent or sporadic visitors.

Migratory species of fish such as American eel and Salmonids are not expected to be relevant under current or future conditions in the Study Area, as no suitable upstream destinations exist.

Endpoint 7: Semi-aquatic Birds and Mammals

Semi-aquatic birds and mammals are defined as those aquatic-dependent animals that derive their food primarily from the Study Area media (distinguishing them from riparian birds and mammals which are animals that inhabit the areas ecologically influenced by, but do not necessarily use, the Study Area media as a resource). Birds are likely to be the principal aquatic-dependent wildlife species that occur in and around the Study Area, although some mammals such as muskrats may use the area. Members of various avian feeding guilds may, at one time or another, also be present in the Study Area.

- Piscivores (fish-eating species), such as kingfishers and cormorants, would primarily be exposed to Study Area-related constituents through ingestion of fish and incidental ingestion of sediment and water. These may be wide-ranging birds, and may feed, roost, and reproduce in widely scattered locations around New York Harbor, and have only limited exposure in the Study Area itself.
- Benthivores (birds that feed primarily by probing sediments for benthic invertebrates, such as shorebirds and egrets) may be exposed to Study Area-related constituents through ingestion of benthic invertebrates, sediment, and water. The presence of such birds is highly dependent on the abundance of suitable shallows, mudflats, or beaches.
- Omnivores include plants and animals (to varying degrees) in their diet and could be exposed to Study Area-related constituents through ingestion of aquatic plants and benthic invertebrates, and through incidental ingestion of sediment and water. Common urban ducks such as mallards belong to this category. Although resources for these birds are limited, some presence of highly urban adapted birds of this group, such as mallards, is likely.
- Herbivorous birds feed only on plant matter and could be exposed to constituents in the Study Area through ingestion of aquatic plants as well as incidental ingestion of sediment and water during feeding. Several common urban duck and geese species are strictly herbivorous. The apparent absence of stands of floating emergent or submerged macrophytes suggests this group of birds has limited exposure.

Endpoint 8: Riparian Birds and Mammals

Riparian birds and mammals are animals that inhabit the areas ecologically influenced by, but do not necessarily use, the Study Area media as a resource. The riparian zone is the distinct ecosystem associated with vegetation zones developing in the shore zone of waterbodies. Due to the industrialized and developed nature of the upland and riparian areas surrounding the Study Area, habitat needed to support terrestrial mammals is extremely limited. Ecological habitat of any sort appears limited to empty lots and maintained lawns at businesses and perhaps the Calvary Cemetery. Due to the presence of bulkheads and riprapped steep banks, very limited areas of easy access along banks are present. Riparian mammals or birds are not expected to represent a significant receptor population in the area, and exposure by significant populations to Study Area media is limited. This endpoint is not shown on Figure 2-9 and will not be evaluated in the ERA.

Insectivorous birds (e.g., swallows) that feed on emergent insects are riparian receptors which do have a potentially complete pathway to Study Area media, as emergent insects from the Study Area may biotransfer COPCs. This endpoint will be considered in the ERA and is shown on Figure 2-9.

2.3.1.6 Rare, Threatened, and Endangered Species

Per USEPA (1997) *Ecological Risk Assessment Guidance for Superfund* and NYSDEC (1994) guidance for conducting a Fish and Wildlife Resources Impact Analysis (FWRIA), threatened and endangered species are receptors that require special consideration in ecological risk evaluations. Due to limited population sizes, populations of these species may be more vulnerable than other species to the presence of stressors. Threatened or endangered species need to be considered very carefully when designing and conducting a remedial action but are not an assessment endpoint in their own right.

The *United States Endangered Species Act* (*ESA*) of 1973 provides Federal authority to list species as threatened or endangered. The State of New York has also enacted endangered species legislation. Few, if any, of the species listed for Kings and Queens Counties, either at the Federal or State level, would be expected to occur within the Study Area due to the lack of preferred habitat for many of the species described. Formal coordination with State and Federal agencies will be conducted to verify the presence or absence of rare, threatened, and endangered species in the Study Area.

If a rare, threatened, or endangered species is present or is likely to be present, the risk assessment will consider the risk on an organism level, and not on a population level as is appropriate for other species (USEPA, 1997). Appropriate surrogates for a given receptor type (e.g., piscivorous birds) may be chosen for the assessment endpoints that are also inclusive of threatened or endangered species of the same type, were such to be identified. In the BERA, consideration of species-specific sensitivity of the listed species in relation to the surrogate for the constituents of potential ecological concern (COPECs) (such as species sensitivity distributions [SSDs], where available) will be considered.

2.3.2 Human Health Conceptual Site Model

This section presents the current understanding of potential exposure routes and pathways from affected media to potential human receptors in and around the Study Area. The preliminary human health exposure pathways are illustrated on Figure 2-10. This figure shows the preliminary sources, affected media, and release mechanisms, and characterizes the various exposure pathways for potential human receptors in and around the Study Area.

Information regarding land use and demographics is used to identify populations that may come into contact with impacted media. Considering both current and likely future conditions around the Study Area and assuming no remediation occurs, potentially complete exposure pathways and receptors are discussed below.

2.3.2.1 Potentially Exposed Receptors

Land use surrounding the Study Area is highly industrialized and has been so for over two centuries. The majority of the land area within one quarter mile of the Study Area is one of six designated SMIAs in the *New York City Comprehensive Waterfront Plan*. This Plan is developed under New York State's *Waterfront Revitalization and Coastal Resources Act of 1981*. Commercial vessels use Newtown Creek to deliver and pick up raw materials, supplies, and finished goods from industries located along Newtown Creek and its tributaries. Access to the Study Area by the public is restricted on the land side by physical controls (e.g., fencing and bulkheads) and security/surveillance controls conducted by the industrial facilities around the Study Area.

Water quality in the Study Area does not currently meet the waterbody classification of SD (fish survival) periodically during the year. Continued discharges and degraded ecological conditions associated with these discharges are expected into the foreseeable future. A majority of the Study Area is also a NYC SMIA, a current and anticipated future use that includes the presence of marine traffic which impacts potential recreational uses. These conditions will be considered in the selection of appropriate exposure pathways and receptors.

There are currently two formal access areas on the Brooklyn side of Newtown Creek; the only locations along the Study Area where the public can currently approach and come in contact with the Study Area media from the shore (see Figure 1-3). One of these access areas, the shoreline promenade at Whale Creek, was temporarily closed by NYC. While the promenade along Whale Creek has been reopened by NYC, cautionary signs have been posted to alert promenade users that Newtown Creek is a heavily trafficked maritime area and, further, has been designated by USEPA has a Federal Superfund Site. Plans have been made to allow additional limited public access to the waterfront along walkways and in designed green spaces near the mouth of Newtown Creek. The presence of public access areas will be updated in the PAR-HHRA based on their status when the PAR-HHRA is prepared. Recreational vessels can also gain access to Newtown Creek from the East River. Although access to the Study Area for recreational vessels is feasible and observations made during the OU6 RI field investigations suggest limited, if any, use of the Study Area for recreational purposes either from the shoreline or from boats, there are reports that recreational groups use the area. These groups include a kayaking group, a scuba diving club which holds outings in the Study Area, and several bicycling groups that are using the paths and bridges on a regular basis. During the Phase 1 RI Field Program, observations will be made of the frequency of these activities. Assumptions used in the HHRA for assessing the exposure potential for various user groups will be evaluated and adjusted as appropriate for the urban environment of the Study Area.

Based on the preliminary analysis of human health exposure pathways following the investigation of OU6 and the potential future land use surrounding the Study Area, the potential for exposure by humans is evaluated below for several types of potential receptor populations along the Study Area.

- **Recreational Anglers/Crabbers (also potential subsistence use).** Recreational anglers and crabbers can potentially contact Study Area-related constituents via surface water and sediment during fishing and collecting activities as well as be exposed via ingestion of the harvested crabs or fish. Fish advisories have been issued for the East River (and are applied, by definition, to its tributaries, e.g., Newtown Creek and its tributaries) and areas of the Study Area have been posted for “no fishing.” Where NYC has posted “no fishing signs” in areas under the jurisdiction of the New York City Department of Parks and Recreation (NYCDPR), the NYCDPR's *Regulation §1-05* prohibits fishing. Additionally, where fishing is allowed in areas under NYCDPR's jurisdiction, the NYCDPR’s *Regulation §1-05(4)* is only for catch and release fishing, so catching fish to eat is prohibited in these areas. Despite these regulations, fishing has been observed within the Study Area. Angling and crabbing are also current and potential future Study Area activities that will be evaluated in the HHRA. Note, however, that while exposure through ingestion of seafood containing COPCs will be considered as a potentially complete exposure pathway, the magnitude of the exposure under current or likely future scenarios is uncertain. Recreational anglers/crabbers are considered a potentially complete exposure pathway for the HHRA.

- **Primary Recreational Users.** The primary recreation definition includes immersive activities such as swimming and scuba diving. Planned improvements in water quality associated with improvements in CSO discharges do not include a primary contact scenario. Although primary recreation use is not a current or likely future scenario for the Study Area under the current SD classification or under reasonably anticipated future conditions, there are no known State restrictions to individuals swimming in the Study Area. As a result, primary recreation will be evaluated during the RI (through observation of Study Area use) and considered a potentially complete exposure pathway and will be included in the HHRA.
- **Secondary Recreational Users.** Secondary recreation use includes boating, kayaking, and fishing consistent with the water quality classification of I, which is the next highest water quality classification above SD. Note for this use as well, continuing loadings contribute to the challenge of meeting this classification. As shown in Figure 2-11, Class I pertains to most of New York Harbor. Current SD classification of Newtown Creek and its tributaries does not include support for secondary contact associated with recreational use, but such contact may be a potentially reasonable future use. Recreational boaters (such as kayakers) within the Study Area could potentially contact surface water and sediment and be exposed to volatiles in air as an incidental part of their activities. Due to the industrial use of this area, this exposure is expected to be limited in duration and frequency. Secondary recreational use is considered a potentially complete exposure pathway for the HHRA.
- **Shoreline Users.** Shoreline use by area residents and visitors is a complete exposure pathway that will be evaluated in the HHRA and includes any general public use of the shoreline of the Study Area. Exposure for this receptor includes potential contact with surface water and sediment. The inclusion of potential inhalation of volatiles from Newtown Creek and its tributaries (including its applicability to the risk assessment) will be discussed with USEPA during the development of the PAR-HHRA following data collection. The proposed contact with sediment is focused on the very limited shoreline where public access to Study Area water and sediment is feasible and is proposed to include areas where sediment is present in two feet or less of water at mean low tide. Potentially complete, but not significant pathways, for this receptor include fish ingestion (already covered through the evaluation of anglers and crabbers above). Shoreline use is considered a potentially complete exposure pathway via contact with surface water and sediment for the HHRA.
- **Land-side Worker.** This category includes commercial/industrial workers in the facilities adjacent to the Study Area. Exposure for this receptor potentially includes inhalation of volatiles from Newtown Creek and its tributaries; this pathway will be discussed with USEPA during the development of the PAR-HHRA. The land-side workers do not contact Study Area media in their daily work, and all other exposure pathways are expected to be incomplete and will not be included in the HHRA.
- **On-water Workers, Construction Workers, and Commercial Shipping Workers.** This category includes workers that may contact surface water and sediment (proposed as sediment present in two feet of water or less at mean low tide) of the Study Area as part of their duties. It also includes crews on ships on Newtown Creek and its tributaries. The on-water worker, construction worker, and commercial shipping worker exposure pathways will be included in the HHRA.
- **Future Residents (adult and child)**. This category provides for zoned residential development that is planned for both sides of the shoreline at the mouth of Newtown Creek. The type of residential housing is important to consider and would likely not include single family homes. If any land adjacent to the Study Area were redeveloped in the future as residential, it is likely this area would be developed with residential complexes. The access by future residents to surface

water, sediment, or fish will be discussed further with USEPA during the development of the PAR-HHRA.

- **Homeless Persons and Other Trespassers**. Although few areas of the Study Area have easy access, evidence of trespassing and homeless persons has been noted along the banks of Newtown Creek and its tributaries. This receptor is proposed for inclusion in a qualitative manner in the risk assessment as homeless persons and other trespassers would be present along the upland banks of the Study Area and would not frequently contact surface water or sediment. Ingestion of fish from the Study Area, currently not an allowable use, will be evaluated as discussed above. The qualitative assessment of homeless persons and other trespassers will include discussion of this possible pathway.

2.3.2.2 Potential Exposure Pathways

Potential exposure pathways for the Study Area include the following:

- Incidental ingestion of and/or dermal contact with sediment
- Incidental ingestion of and/or dermal contact with surface water
- Ingestion of fish and shellfish
- Ingestion of and/or dermal contact with groundwater, where and if groundwater adjacent to the Study Area is directly affected by migration from the Study Area to the adjacent aquifer, and the water is potable (i.e., Class GA)
- Potential inhalation of contaminated air, if it is found that Newtown Creek and its tributaries are a significant source of chemicals to ambient air. This pathway, including its applicability to the risk assessment, will be discussed with USEPA during the development of the PAR-HHRA following data collection.

Although there is no potable groundwater use at or near the Study Area, and surface water is too brackish for consumption (Weston Solutions, 2009), additional evaluation of this pathway in the risk assessment will be considered in the event that Class GA groundwater is present adjacent to the Study Area, and it is determined that COPCs in Study Area media are impacting the groundwater (i.e., Newtown Creek is a “losing” stream).

Potential inhalation of volatile constituents from exposed sediments and surface water in ambient air appears insignificant due to rapid volatilization, mixing, dilution, and dispersion which typically result in negligible air concentrations. According to the USEPA *ESI* (Weston Solutions, 2009), “a release of hazardous substances to air is not observed or suspected.” In addition, the area around the Study Area is highly industrialized and numerous air pollution sources exist which are not related to Newtown Creek or its tributaries. If it is determined that COPCs in Study Area media are significantly impacting ambient air, then additional evaluation of this pathway in the risk assessment will be considered.

Note, sediment exposure will be evaluated for contact with exposed sediments along the Study Area banks as well as covered sediments located within wading distance off shore, proposed as two feet or less of water depth at mean low tide.

2.3.2.3 Complete and Incomplete Exposure Pathways

The HHRA includes the evaluation of all potential exposure pathways; however, not all are necessarily complete or significant enough to warrant detailed analysis. Figure 2-10 shows preliminary determinations for each of the identified pathways and receptors relevant for the Study Area. The following types of pathways are used to describe the potential exposure and the need for further assessment.

- Complete pathways that are likely to be of significance and will be evaluated in the quantitative HHRA.
- Complete pathways that are proposed for evaluation qualitatively using available Study Area information to describe their potential for risk, without calculation of specific risk estimates.
- Potentially complete pathways, but due to minimal exposure, or minimal presence of the receptor, the exposure, if any, is expected to be acceptable within the context of the overall HHRA. These endpoints will be considered on a qualitative, narrative basis.
- Incomplete pathways based on current understanding which will not be evaluated in the HHRA.

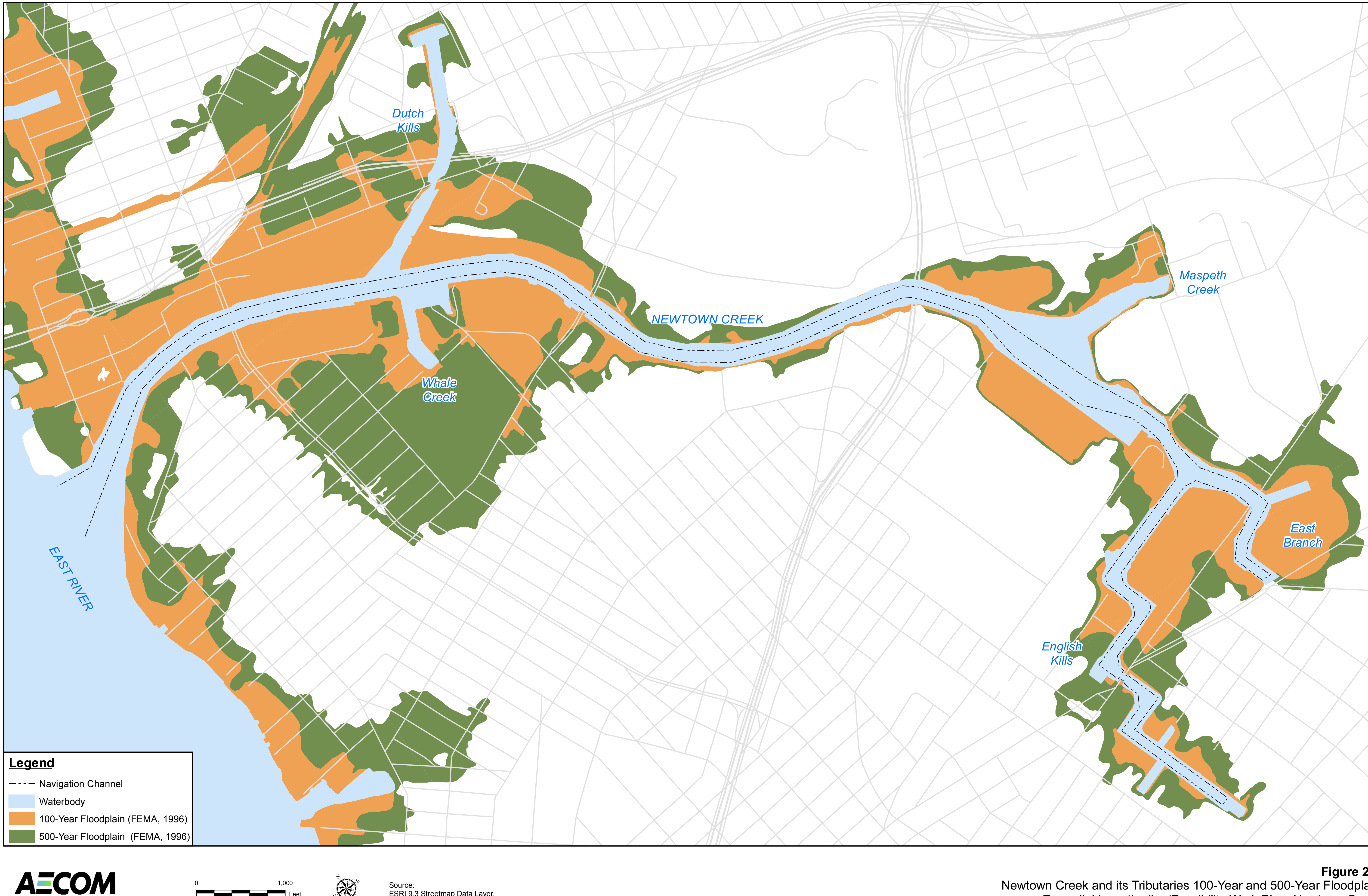

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Figure 2-1
Newtown Creek and its Tributaries 100-Year and 500-Year Floodplain
Remedial Investigation/Feasibility Work Plan, Newtown Creek

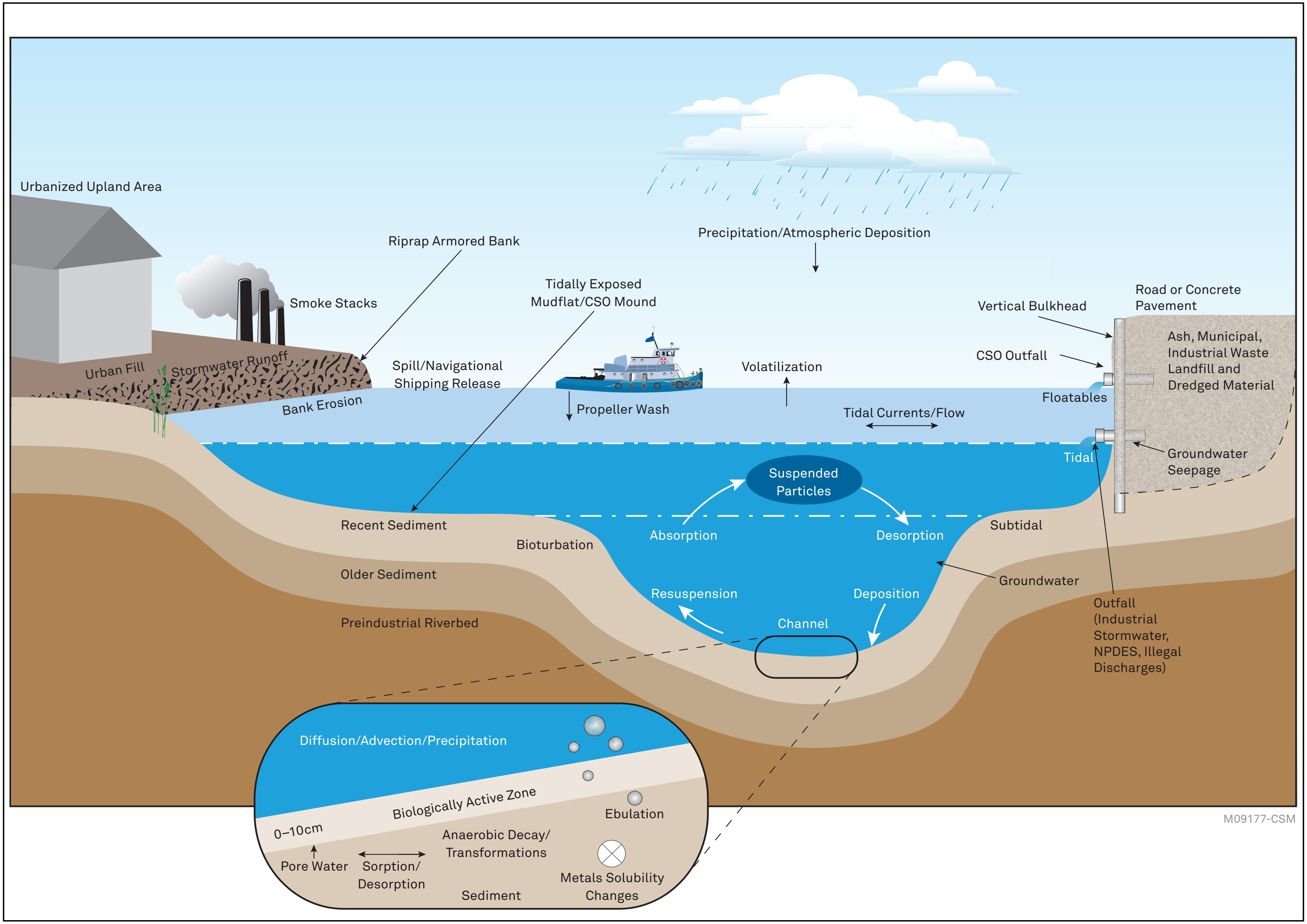

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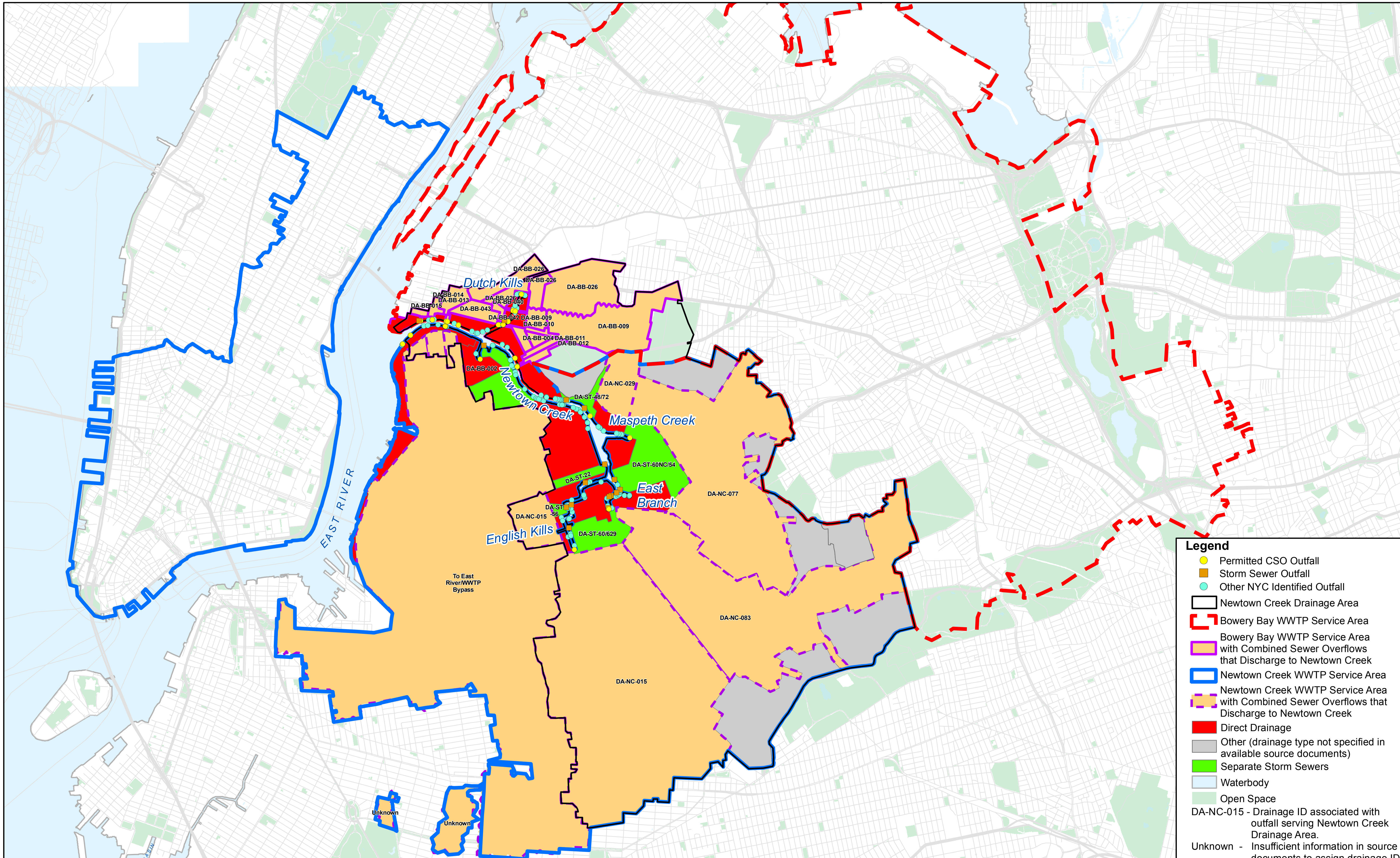
Figure 2-2
Preliminary Physical Conceptual Site Model
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

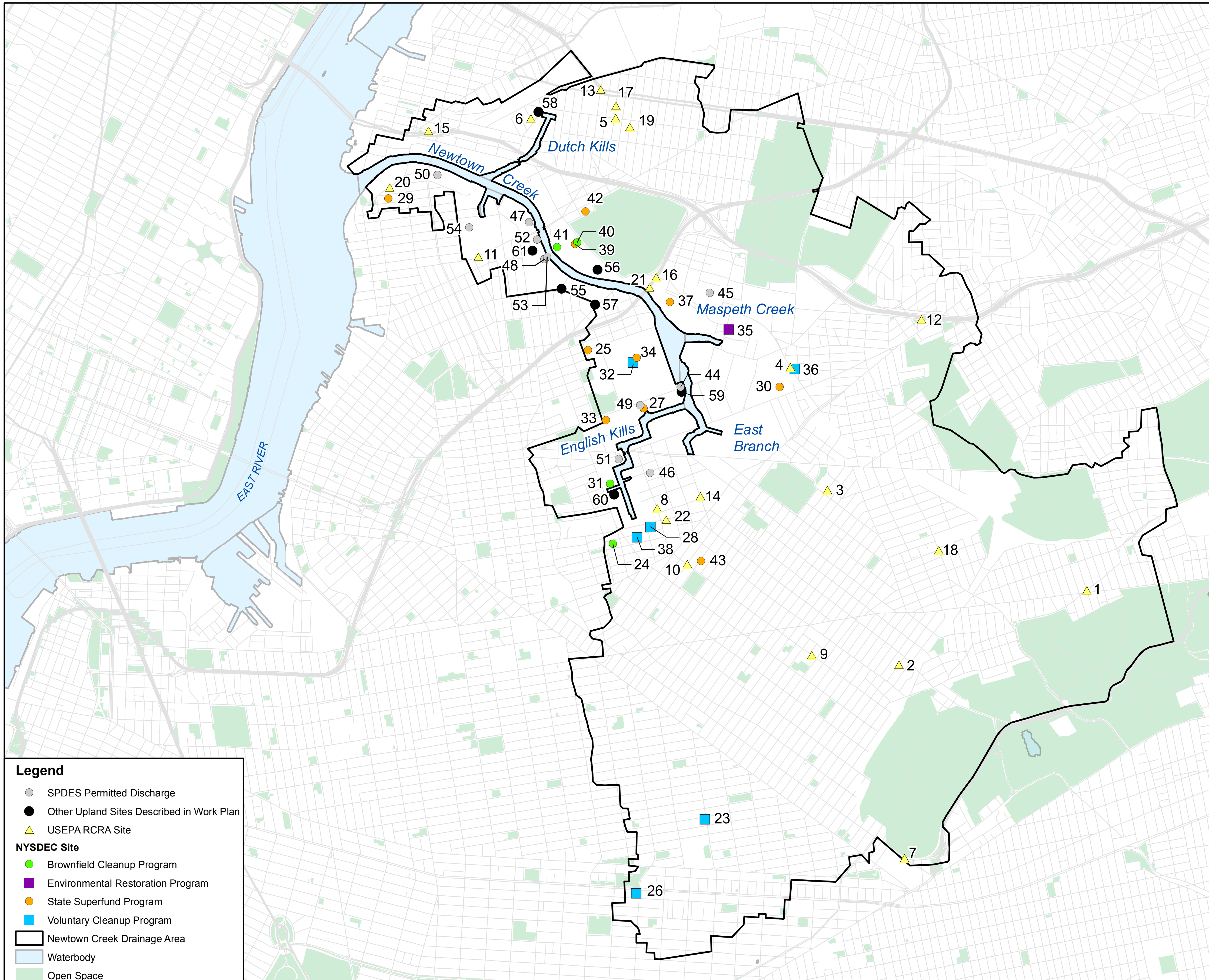
M11039_2-2



AECOM

Sources:
ESRI 9.3 Streetmap Data Layer.
Service area and drainage area boundaries approximated based on mapped information available in NYCDEP, 2007a, NYCDEP, 2007b and NYCDEP, 2006.
Outfall locations from Anchor Environmental, amended using HydroQual, 2006, and modified based on information received from New York City.
Service areas and drainage area boundaries are approximate and may not be accurate. These boundaries are based on best available mapping.

Figure 2-3
Bowery Bay and Newtown Creek WWTP Service Areas Discharging to Newtown Creek and its Tributaries
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



SITE NUMBER	SITE NAME
1	ATLAS PARK
2	BARKER BROS - RIDGEWOOD
3	CLEVELAND HIGH SCHOOL
4	CON EDISON - MASPETH SUBSTATION
5	CON EDISON - NEWTOWN SUBSTATION
6	CONFORT & COMPANY INC
7	EAST NEW YORK CENTRAL MAINTENANCE FACILITY (MTA-NYCT)
8	ENEQUIST CHEMICAL CO INC
9	NYC DEPT OF ED - PUBLIC SCHOOL 480K
10	NYCDEP - TROUTMAN ST VENTURI FLOW CHAMB
11	NYCDEP BWT - NEWTOWN CREEK WPCP
12	NYCDOT BIN 2240410
13	NYCT-KISCO LOT
14	RHODA URETSKY TRUST
15	TBTA QUEENS MIDTOWN TUNNEL
16	PHELPS DODGE CORP
17	UNITED ENVELOPE
18	NYCT-FRESH POND DEPOT
19	REMCO MAINTENANCE LLC
20	NYCT CROSSTOWN ANNEX FACILITY
21	NYSDOT BIN 1075910
22	THE PRINT HOUSE
23	192 RALPH AVENUE
24	2 INGRAHAM STREET
25	ACME STEEL/BRASS FOUNDRY
26	ATLANTIC AVE. AND UTICA AVENUE
27	B.C.F. OIL REFINING, INC.
28	CORNISH KNIT GOODS/CORNISH MINI-MALLS
29	FORMER NUHART PLASTIC MANUFACTURING
30	FORMER W.L.K. CORP.
31	FRITO LAY
32	GREENPOINT
33	K - EQUITY WORKS
34	K - GREENPOINT MGP - ENERGY CENTER
35	MASPETH PROJECT
36	MASPETH SUBSTATION
37	PHELPS DODGE REFINING CORPORATION
38	POPULAR HAND LAUNDRY
39	QUANTA RESOURCES
40	QUANTA RESOURCES A/K/A REVIEW AVE. DEVELOPMENT II
41	REVIEW AVENUE DEVELOPMENT I
42	ROEHR CHEMICALS, INC.
43	TECHNICAL METAL FINISHERS
44	B C F OIL - 360 MASPETH AVE
45	QUEENS DISTRICT 5/5A GARAGE
46	WASTE MANAGEMENT OF NY-123 VARICK AVE
47	GETTY TERMINALS CORP #58220
48	BP PRODUCTS N AMERICA BROOKLYN TERMINAL
49	DITMAS TERMINAL - 364 MASPETH AVE
50	MOTIVA ENTERPRISES LLC
51	BAYSIDE FUEL OIL DEPOT-1100 GRAND ST
52	METRO TERM-498 KINGSLAND AVE
53	EXXONMOBIL GREENPOINT REMEDIATION PROJECT
54	NYC-DEP NEWTOWN CREEK WPCP
55	BPAMOCO TERMINAL GREENPT
56	FORMER PRATT OIL WORKS
57	FORMER TEXACO TERMINAL AND THE APOLLO STREET PARCEL
58	NYCON SUPPLY CORP
59	EMPIRE TRANSIT MIX INC
60	FORMER MORGAN OIL
61	FORMER EXXONMOBIL TERMINAL

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0 3,200 Feet

Sources:
ESRI 9.3 Streetmap Data Layer.
Brownfield Cleanup Program Sites, Environmental Restoration Program Sites, State Superfund Program Sites, Voluntary Cleanup Program Sites and SPDES Program Sites from NYSDEC (as provided by NYSDEC in August 2010).
RCRA sites from EPA Geospatial Data (downloaded from http://www.epa.gov/enviro/geo_data.html in August 2010).

Figure 2-4
Locations of Potential NYSDEC Sites, USEPA RCRA Facilities, and Other Upland Sites in the Newtown Creek Drainage Area
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

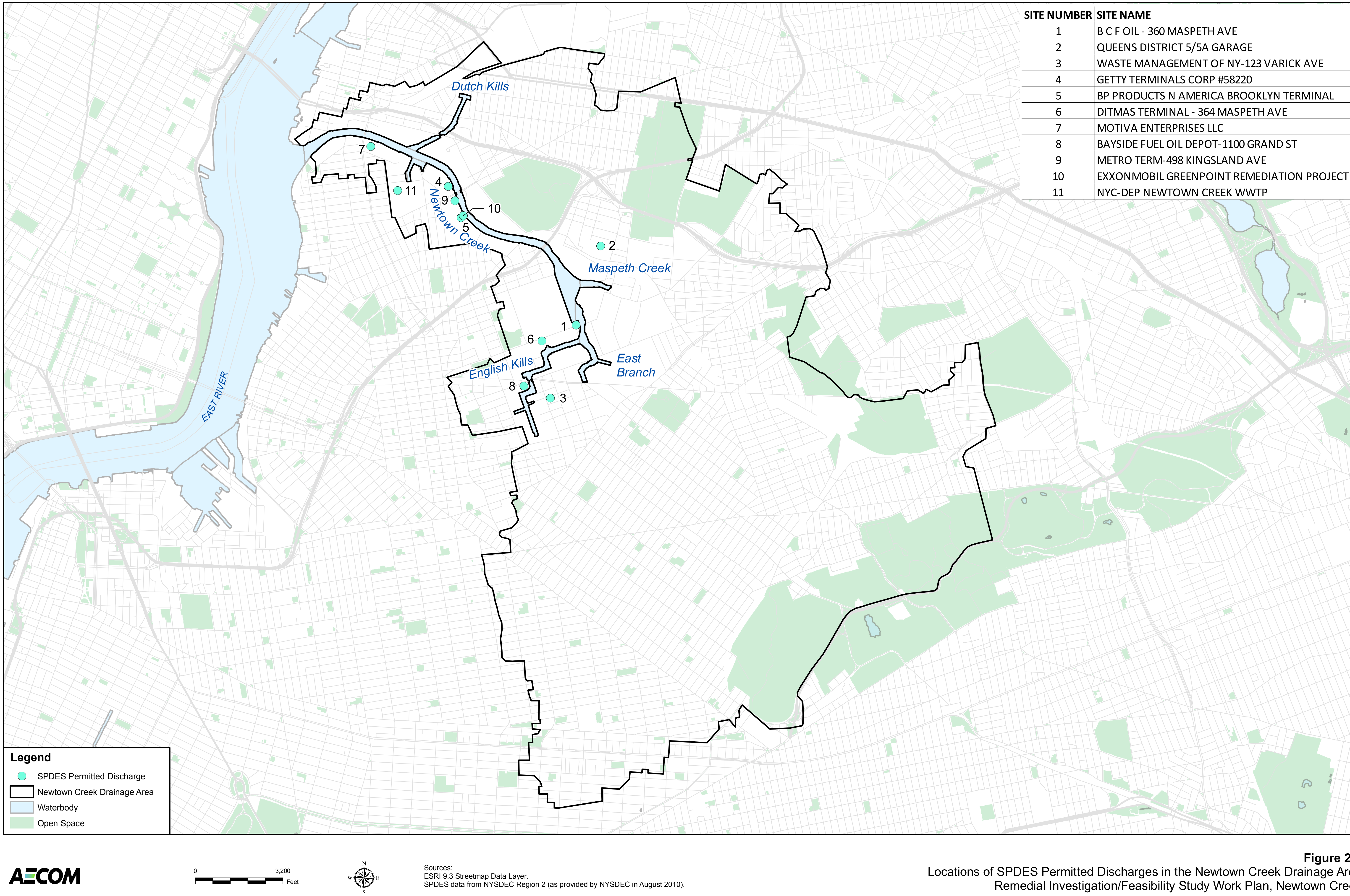
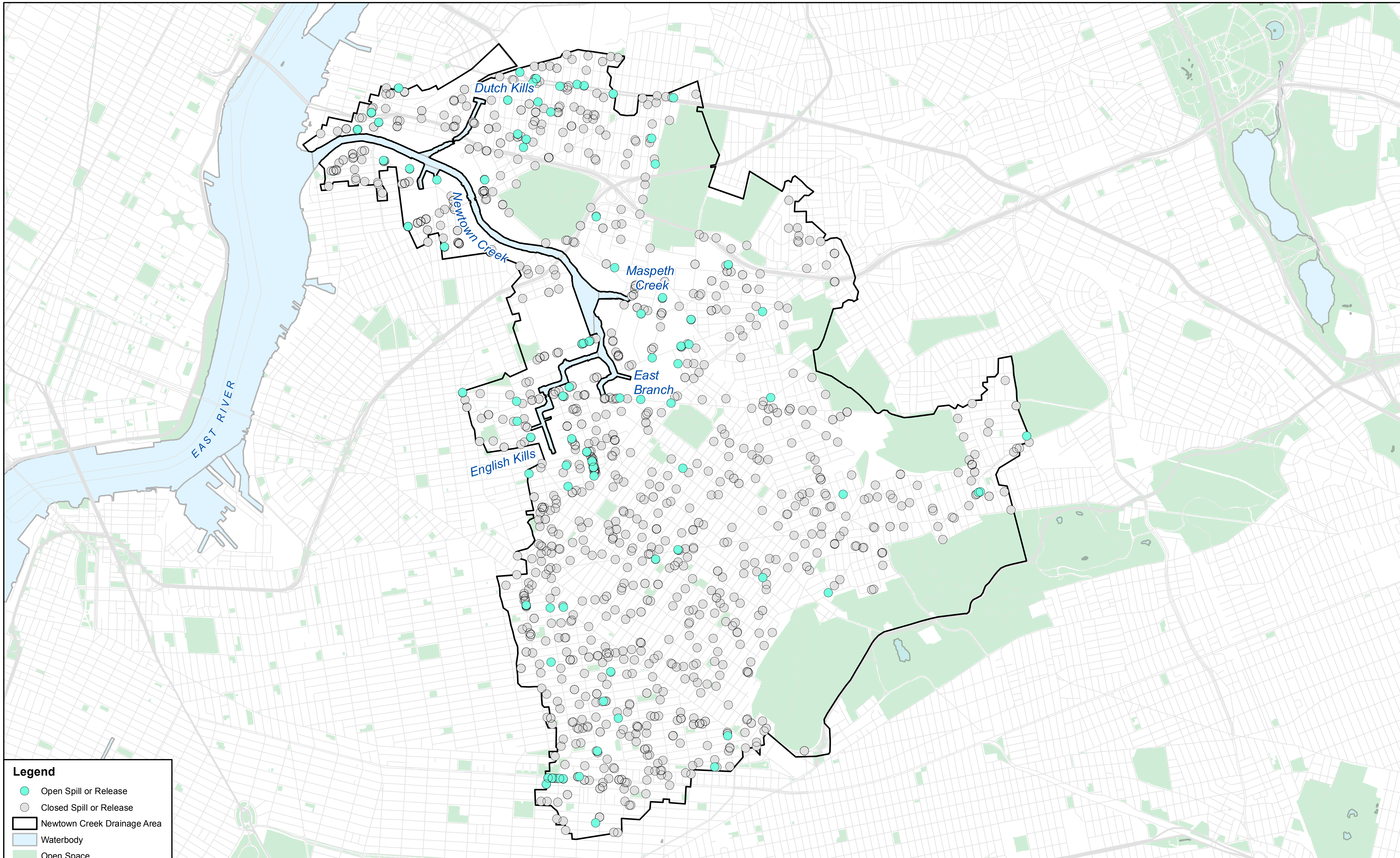


Figure 2-5
Locations of SPDES Permitted Discharges in the Newtown Creek Drainage Area
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



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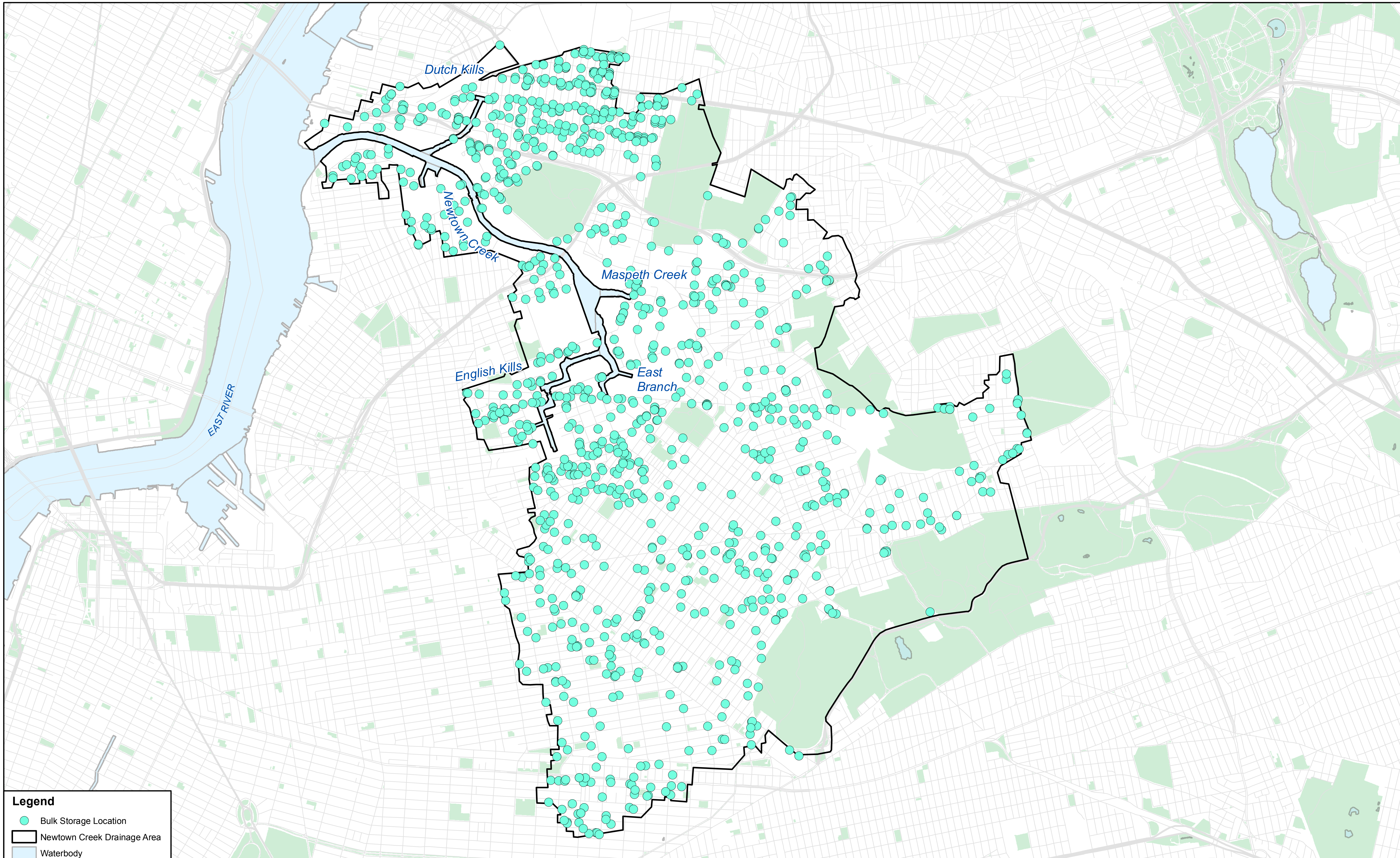
0 3,200 Feet

Sources:
ESRI 9.3 Streetmap Data Layer.
Spills and releases from NYSDEC Region 2 (as provided by NYSDEC in August 2010).

Figure 2-6
Locations of Reported Spills and Releases in the Newtown Creek Drainage Area
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



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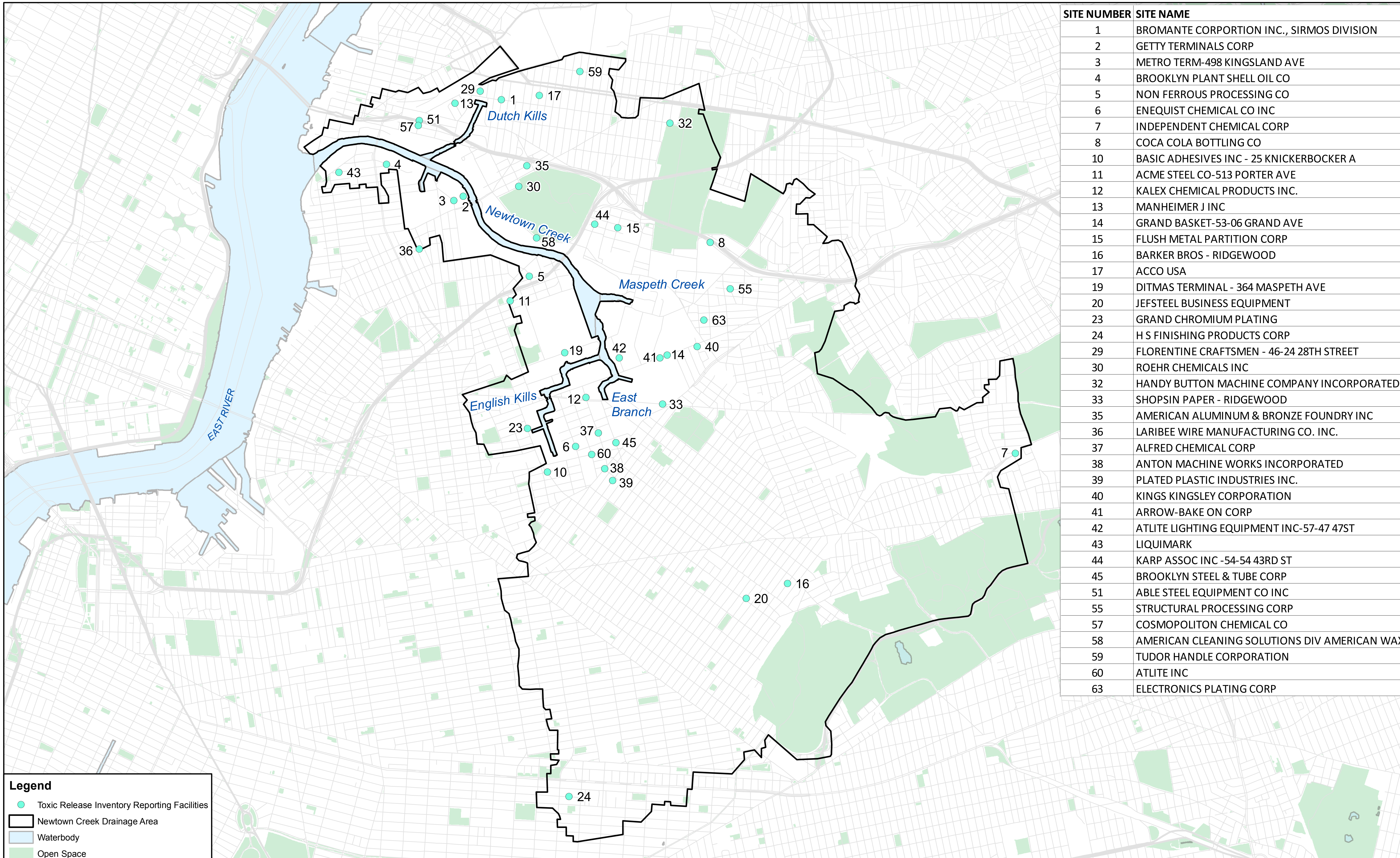
0 3,200 Feet

Sources:
ESRI 9.3 Streetmap Data Layer.
Bulk Storage Locations from NYSDEC Region 2 (as provided by NYSDEC in August 2010).

Figure 2-7
Bulk Storage Locations in the Newtown Creek Drainage Area
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



SITE NUMBER	SITE NAME
1	BROMANTE CORPORTION INC., SIRMOS DIVISION
2	GETTY TERMINALS CORP
3	METRO TERM-498 KINGSLAND AVE
4	BROOKLYN PLANT SHELL OIL CO
5	NON FERROUS PROCESSING CO
6	ENEQUIST CHEMICAL CO INC
7	INDEPENDENT CHEMICAL CORP
8	COCA COLA BOTTLING CO
10	BASIC ADHESIVES INC - 25 KNICKERBOCKER A
11	ACME STEEL CO-513 PORTER AVE
12	KALEX CHEMICAL PRODUCTS INC.
13	MANHEIMER J INC
14	GRAND BASKET-53-06 GRAND AVE
15	FLUSH METAL PARTITION CORP
16	BARKER BROS - RIDGEWOOD
17	ACCO USA
19	DITMAS TERMINAL - 364 MASPETH AVE
20	JEFSTEEL BUSINESS EQUIPMENT
23	GRAND CHROMIUM PLATING
24	H S FINISHING PRODUCTS CORP
29	FLORENTINE CRAFTSMEN - 46-24 28TH STREET
30	ROEHR CHEMICALS INC
32	HANDY BUTTON MACHINE COMPANY INCORPORATED
33	SHOPSIN PAPER - RIDGEWOOD
35	AMERICAN ALUMINUM & BRONZE FOUNDRY INC
36	LARIBEE WIRE MANUFACTURING CO. INC.
37	ALFRED CHEMICAL CORP
38	ANTON MACHINE WORKS INCORPORATED
39	PLATED PLASTIC INDUSTRIES INC.
40	KINGS KINGSLEY CORPORATION
41	ARROW-BAKE ON CORP
42	ATLITE LIGHTING EQUIPMENT INC-57-47 47ST
43	LIQUIMARK
44	KARP ASSOC INC -54-54 43RD ST
45	BROOKLYN STEEL & TUBE CORP
51	ABLE STEEL EQUIPMENT CO INC
55	STRUCTURAL PROCESSING CORP
57	COSMOPOLITON CHEMICAL CO
58	AMERICAN CLEANING SOLUTIONS DIV AMERICAN WAX
59	TUDOR HANDLE CORPORATION
60	ATLITE INC
63	ELECTRONICS PLATING CORP

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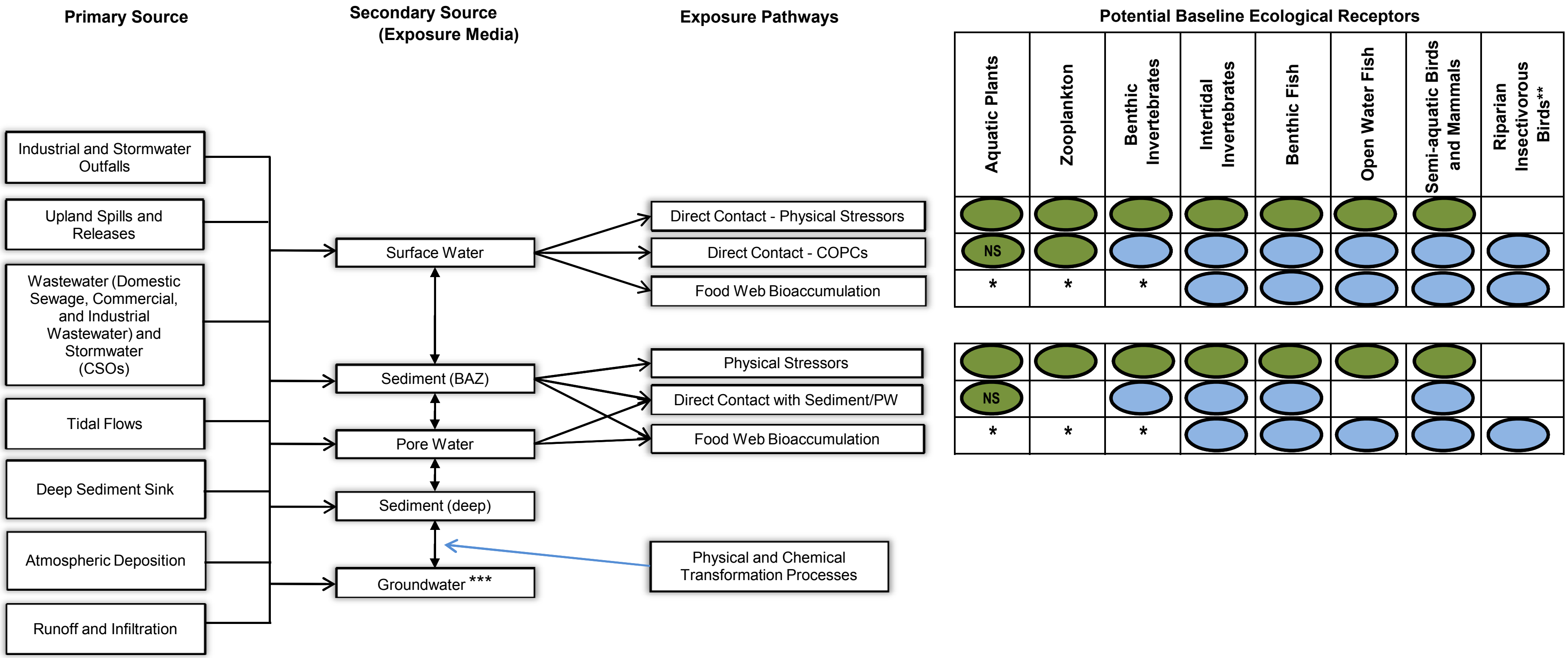
0 3,200 Feet

Sources:
ESRI 9.3 Streetmap Data Layer.
Toxic Release Inventory Reporting Facilities from EPA Geospatial Data
(downloaded from http://www.epa.gov/enviro/geo_data.html in August 2010).

Figure 2-8
Locations of Toxic Release Inventory Reporting Facilities in the Newtown Creek Drainage Area
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Key:

- (blue oval) Complete and Significant Pathway - Quantitative Assessment
- NS Complete but not Significant Pathway - Qualitative Assessment
- (green oval) To be Assessed Qualitatively - Limited Evaluation Methods
- * Considered as Steps in Food Web Model
- ** Insectivorous birds may feed on emerging insects which may biotransfer COPC from water and sediment
- *** Exposure to be determined after collection and evaluation of data
- Blank cell indicates incomplete pathway

BAZ = Biologically Active Zone
CSO = Combined Sewer Overflow
PW = Pore Water
COPC = Constituent of Potential Concern

Figure 2-9
Preliminary Ecological Exposure Pathways
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

M11039_2-9

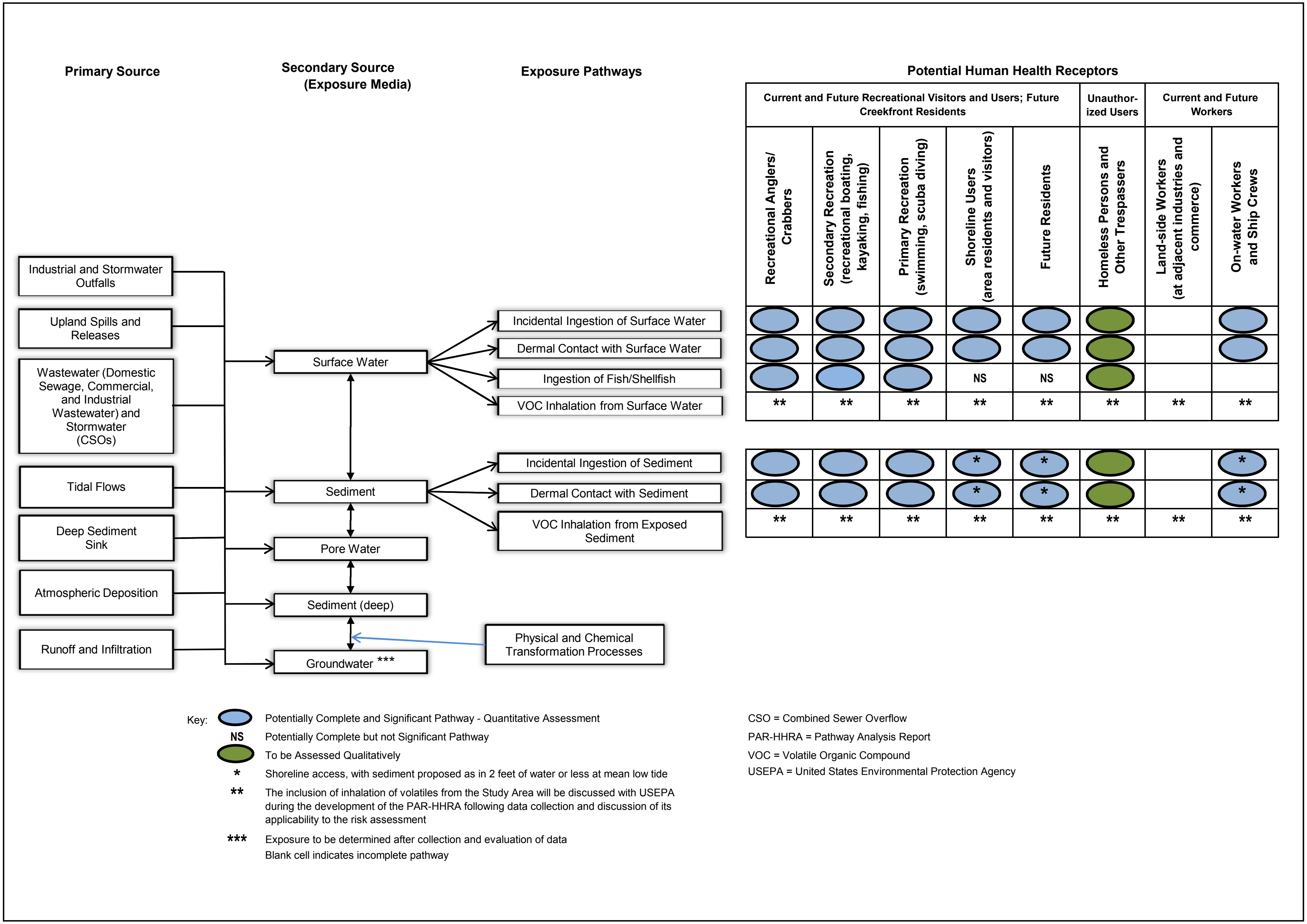


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Figure 2-10
Preliminary Human Health Exposure Pathways
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

M114039_2-10

Current Waterbody Classifications in New York Waters

06/11/2007

Source: New York-New Jersey Harbor Water Quality Report, 2006

M11039_2-11

Figure 2-11
Waterbody Classifications in New York Waters
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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3.0 Remedial Investigation/Feasibility Study Program Approach

The successful completion of the RI/FS program for the Study Area will require an understanding of the dynamics of Newtown Creek and its tributaries, which has been affected by extensive urban and industrial use. The selection of a remedy will require evaluation of remedial alternatives designed to interact with the timeline of other remedial efforts in a complex technical, ecological, and regulatory setting.

3.1 RI/FS Data Quality Objectives

The DQO process is a systematic planning tool derived from the scientific method (Intergovernmental Data Quality Task Force, 2005; USEPA, 2006). It is designed to clarify the objectives of data collection and maximize efficiency during the data collection process.

DQOs are qualitative and quantitative statements which clarify the objectives of the project, define the procedures to be used to gather data, and identify the error tolerance appropriate for the use of each data type. There are seven steps in the DQO process; the output of each step influences the choices of the next step. The DQO process is also iterative; output from one step may lead to reconsideration of previous steps; and complex projects such as the RI/FS for Newtown Creek may require that the DQO process be used repeatedly as the project progresses and decisions require a sharper focus.

The DQO steps along with general statements relative to the Study Area are presented below. Detailed DQOs will be presented in the QAPP.

- Define the Problem – This step defines issues to be addressed in the RI/FS. Newtown Creek and its tributaries have had 200 years of use as an industrial waterway with discharges from a variety of industrial and municipal sources. It is necessary to understand the nature and, where appropriate, the extent of physical, chemical, and biological stressors and to identify and understand major ongoing sources of these stressors to the Study Area in order to make informed decisions regarding future uses and possible remediation approaches.
- Identify the Decision – This step identifies the question that the project will attempt to resolve and the actions which will be taken. The project goals are to understand the major ongoing sources and the physical, chemical, and biological stressors in the Study Area and the processes controlling chemical distribution within the Study Area. The data obtained during the RI/FS, including data obtained in previous studies, will be used to develop options for remediation and future use. The principal study questions of the RI/FS are listed below.
  - What are the COPCs and other stressors that impact the ecology and quality of the media within the Study Area?
  - What are the COPCs that have the potential to impact human health within the Study Area?
  - What are the nature and extent of these COPCs and other stressors within the Study Area?

- What are the key geomorphological, chemical, and biological processes controlling constituent distribution within the Study Area?
- What are the major current and ongoing sources (including upland sources) of COPCs and other stressors to the Study Area (for more details on evaluation of upland sources see Section 3.2.4)?
- What are the complete and reasonably potentially complete exposure pathways and potential human health and ecological risks posed by COPCs and other stressors present within the Study Area?
- What is the nature of future changes to the quality of media over time within the Study Area?
- What are the potential remedial actions, if any, that will provide meaningful risk reduction in consideration of the urban nature of the Study Area, other stressors of, and future discharges to the Study Area?

- Identify the Information Inputs – This step involves evaluation of existing data, identification of data gaps, and identification of new data needs. Section 3.2.1 of this Work Plan addresses the approach to the Historical Data Review; Section 4 of this Work Plan presents the data gaps identified and new data needs.
- Define the Study Boundaries – This step is used to define both geographic and temporal boundaries. The Study Area is defined in Section 1 of this Work Plan. The estimated program schedule is discussed in Section 3.5 of this Work Plan.
- Develop a Decision Rule – The decision rule summarizes what specific information the decision maker aims to learn and how that information will guide the selection of an appropriate solution. This decision rule step includes identification of: the parameters of interest; the subset of the population for which decisions will be made; the action level which provides the criterion for choosing among alternative actions; and the alternative actions which could be taken. Section 4 of this Work Plan describes the approach which will be taken to collect information integral to the development of decision rules; Section 5 describes the procedures which will be used to develop and evaluate remedial alternatives for the Study Area.
- Specify Performance or Acceptance Criteria – Uncertainty is present in all measurement data; this step estimates the degree of uncertainty that is acceptable to decision makers. During the preparation of the QAPP, specific details will be developed regarding the precision and accuracy control limits for each of the target analytes and matrices, and the overall project goals for completeness and representativeness.
- Optimize the Design for Obtaining Data – This step uses the information developed in the first six steps to design a data collection program that achieves the desired goals in the most cost effective manner. The data collection program is described in this Work Plan and the associated supporting plans.

During the RI/FS, these DQO steps will be repeated as additional data are obtained and the CSM is updated to refine and focus the decision-making process.

3.2 Overview of Approach

This section presents the proposed approach for the program to complete the RI/FS. This approach is designed to be comprehensive. It contains the major components of USEPA RI/FS guidance, including *Guidance for Conducting Remedial Investigation and Feasibility Study under CERCLA* (USEPA, 1988) and NYSDEC *DER-10* guidance, which are augmented to accommodate the additional complexities posed by the Study Area. Specifically, the approach includes the following features:

- A phased field investigation that recognizes that the Study Area is part of a dynamic environment with various potential uses and a series of ongoing water quality improvement efforts.
- The incorporation of data collected by others to enhance the existing the Study Area database.
- Use of analytical and/or more complex numerical modeling to evaluate the fate and transport of constituents in the environment.
- An ERA.
- A HHRA.
- An active CIP designed to engage the public and stakeholders around the Study Area in the process.
- A FS to identify remedial alternatives and evaluate whether they will meet remedial action goals, RAOs, and technical feasibility.
- Incorporation of a number of decision points throughout the process to help direct the RI/FS.

Figure 3-1 presents the major components (i.e., RI, including historical and cultural research, modeling, and risk assessments including ERA and HHRA, and FS) of the RI/FS program as described in this section. These major components are further subdivided into the major tasks as defined in USEPA *CERCLA* guidance documents. Figure 3-2 shows major information flow linking the various components throughout the process. This figure shows how data and information obtained in each task are used in subsequent tasks. Figure 3-3 lists major deliverables and key decision points in the RI/FS process over time. This figure shows where in the process specific documents will be prepared and submitted to USEPA. The remainder of this section provides a detailed description of this RI/FS program.

In reviewing the approach presented in this Work Plan, it is important to understand that there will be two, or possibly more, separate field data collection efforts. The scheduling of these efforts is dependent on several factors including completion of preliminary data collection tasks and approval of work plans. The implementation of the field sampling events is also dependent on seasonal and precipitation cycles. The sampling phases discussed in this approach include the following.

- A Phase 1 RI Field Program that focuses on extending the current understanding of significant sediment impacts throughout the Study Area. This phase of field work may also include groundwater sampling using in-creek techniques and/or land-based monitoring wells (should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b) to evaluate if certain upland sites are sources of significant loadings of COPCs and, to the extent of the available information, sources of such loadings to the Study Area. Surface water and baseline ambient air data will also be collected in this phase. Initial ecological sampling to support the development of the ecological CSM will also be conducted. An evaluation of existing recreational uses will also be made. Prior to the midpoint of the Phase 1 RI Field Program, the results of the surveys performed (bathymetric, side-scan sonar, and magnetic surveys; aerial photography survey; and shoreline assessment) and the Historical Data Review information obtained up to that point in time will be evaluated to identify potential sources of significant contaminant loadings to the Study Area. This evaluation will use a weight-of-evidence approach and identify locations where sampling using in-creek techniques and/or land-based monitoring wells will be proposed to evaluate if those locations are sources of significant contaminant loadings to the Study Area. It is anticipated that the data to be evaluated will include available data from NYSDEC files on investigations conducted of upland sites under various state programs (e.g., *RCRA*, State Superfund, VCP, and SPDES) and data from the Respondents' activities on their own upland sites. The locations of any groundwater samples will be identified in a work plan addendum anticipated to be submitted prior to the midpoint of the Phase 1 RI Field Program. The sampling approach for the Phase 1 RI is included in Section 4 of this plan.

- A Phase 2 RI Field Program that focuses on sampling significant ongoing sources. This phase of field work includes sampling of outfalls, nonpoint source discharges (seeps), surface water, sediments, and groundwater as necessary to fill data gaps identified after the review of existing historical data for the Study Area and the Phase 1 RI data. The approach for the Phase 2 RI Field Program will be described in a Phase 2 RI Work Plan, prepared after the review of historical data and the Phase 1 RI data.
- A BERA Field Sampling Program that supports the BERA. This field work may include additional sampling activities, toxicity testing, bioaccumulation and biotransfer testing, community structure evaluation, and biological testing. The approach for this program will be developed in the BERA Work Plan.
- FS field work, if necessary, that supports the evaluation of remedial alternatives. Additional data collection efforts to support the evaluation of technologies and development of remedial alternatives will be conducted as part of the FS. The approach to these field studies will be laid out in the FS Field Program Work Plan developed as part of the FS process.

3.2.1 Historical Data Review

The Study Area is situated in a complex urban setting that has been industrialized for 200 years. Environmental data have been collected for the Study Area over the past 100 years. The types of information that have been collected include: (1) surface water monitoring in the Study Area; (2) discharge monitoring in the Study Area; and (3) the data that the industries around the Study Area have been required to collect through a series of environmental programs such as the *Clean Water Act*, *Clean Air Act*, *CERCLA*, *RCRA*, and various State programs, which have been in place since the 1970s. The data collected under these programs will: (1) provide a robust base of input to the development of the CSM; (2) provide an understanding of the current state of the Study Area; and (3) aid in the evaluation of potential sources of significant contaminant loadings (i.e., pipe discharges, nonpoint source stormwater, and groundwater) to the Study Area. To confirm whether these contaminant loadings are significant, sampling will be conducted during Phase 1 and Phase 2 of the RI, and other phases of field work, as described in Section 4.9.

The Respondents will compile and evaluate environmental, ecological, and hydrogeologic data collected on the Study Area and potential significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area. Potential sources of historical data include the following.

- Physical data on the Study Area, including prior surveys, dredging records, USGS modeling and other hydrogeologic data (water levels, surface water/groundwater interaction, groundwater withdrawals), groundwater withdrawals associated with existing remediation systems along the Study Area, groundwater monitoring records, outfall surveys, fill records, Army Corps of Engineers historical hydraulic models of the New York Harbor, etc. These data will be used to help refine the CSM and will also develop inputs to the hydraulic and sediment transport models.

- Data from governmental agencies like the Metropolitan Transportation Authority (MTA), which conducts subway dewatering activities in Brooklyn and Queens.
- Data on historical uses of the Study Area. Land use data and general industrial data will be used to verify the types of industry formerly located near the Study Area and the areas of the Study Area that might have been affected. These data will be used to further understand potential sources of significant contaminant loadings to the sediments and surface water.
- Data from NYSDEC files on investigations conducted of sites near the Study Area under various state programs (e.g., *RCRA*, State Superfund, VCP, and SPDES). NYSDEC has already provided current database and GIS information that identifies NYSDEC-managed sites in the areas adjacent to the Study Area, but site files are outstanding.
- Data from the Respondents' activities on their own sites near the Study Area, including hydrogeologic information and remedial activities.
- Data on current and historical discharges to the Study Area. This includes data on storm and combined sewers, and permitted and non-permitted discharges from adjacent properties, including discharges from pumping wells. Historical spills, land-side releases, and land-side groundwater impacts will also be evaluated.
- Additional data sources that may provide potentially relevant data including historical maps, historical aerial photographs, industrial atlases, water well maps, and Sanborn Maps.

The Respondents will use a dual-component approach to execute the Historical Data Review. In the first component, the Respondents will obtain sampling data and similar information relating to sites such as (but not limited to) those undergoing environmental restoration, sites at which *RCRA* Large Quantity Generators have operated, SPDES-permitted sites, Brownfields sites, sites that have or are undergoing remedial activities under the New York State VCP, environmental remediation sites with institutional or engineering controls in place, and sites at which leaks and/or spills are known to have impacted groundwater.

Under the second component of the Historical Data Review, the Respondents will obtain and review historical information that will further assist in identifying significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area and physical data not already obtained under the first component. The historical information to be obtained and reviewed may include:

1. Graphical materials such as, aerial photographs, Sanborn maps, industrial atlases, water well maps, hydrographic figures, and the like;
2. Information publicly available on the history and development of the Study Area and surrounding uplands;
3. Information from the USGS including hydrogeologic data and its groundwater flow computer model of the Brooklyn/Queens area, if available;
4. Information from agencies like the MTA, who conduct subway dewatering activities in Brooklyn and Queens; and

5. Information from the Army Corps of Engineers historical hydraulic models of the New York Harbor and NYCDEP hydrologic/hydraulic models of the Bowery Bay and Newtown Creek WWTP service areas.

As described above, various technical reports, sampling results, and other relevant information will be collected during the Historical Data Review. As files are obtained from the various agencies and repositories, the Respondents will use an established protocol to catalog and electronically store the data. As materials are received, relevant documents will be scanned to Adobe Acrobat PDF files. All PDFs will be processed using Optical Character Recognition (OCR) to enable free text searches to the extent allowable based on the condition of the document. The relevant records will be sorted into three categories:

- Graphical Information: Sanborn Maps, aerial photographs, site diagrams, hydrographic figures, etc.
- Technical Information: Site investigation/remediation plans and reports, sampling data, etc.
- Key Correspondence: Plan approvals, closure letters, notice of violations, spill reports, etc.

Contextual, non site-specific materials will also be included in the repository.

Analytical data that are obtained from the Historical Data Review will be evaluated and considered for inclusion in the RI/FS analytical database. These analytical data will be evaluated against the following criteria for consideration of inclusion in the project database:

- Data are from a known documented literature source
- Data are from the original source versus quoted in a secondary source
- Specific information on date, time, method of sampling, and who collected the samples is documented
- Data tables are available (i.e., data are not in summary format)
- Laboratory reports and data validation information (i.e., validated qualifiers and data validation reports) are available
- Standard published methods (USEPA, ASTM, or Standard Methods) were used for analysis
- Appropriate detection limits are achieved so that the data meets RI/FS DQOs.

If all of these criteria are successfully met and there are no other questions concerning the data (e.g., the data are collected in a scientifically defensible manner), the data will be entered into the project database. Any data from a historical source entered into the project database will include a data field specifying the source of the data.

Historical analytical data not added to the project database and non-analytical information will be considered during the Historical Data Review for identifying data gaps concerning identification of sources of significant contaminant loadings. Although these data will still be considered, they may be given less weight in identifying data gaps.

There is one major deliverable and there are two key decision points associated with this effort.

- Data Collection Plan – A memorandum will be prepared at the beginning of the effort detailing how records collected will be cataloged, organized, and made available for review and analysis. This plan will include a summary of the efforts to be made to obtain documents and a list of resources requiring assistance from USEPA or NYSDEC to access. This plan will also discuss data acceptability criteria and how data will be evaluated for use in the RI/FS.
- Phase 1 RI Interim Data Report – Prior to the midpoint of the Phase 1 RI Field Program, the results of the surveys performed (bathymetric, side-scan sonar, and magnetic surveys; aerial photography survey; and shoreline assessment) and the Historical Data Review information obtained up to that point in time will be compiled and presented in a data report. This Phase 1 RI Interim Data Report will serve as the basis to identify potential significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area using a weight-of-evidence approach and identifying locations where further sampling using in-creek techniques and/or land-based monitoring wells will be proposed to evaluate if those locations are sources of significant contaminant loadings to the Study Area. The purpose of identifying sources of significant contaminant loadings is not to fully characterize or delineate contaminant sources in the uplands located outside the Study Area, rather it is to identify where upland sources contribute significant contaminant loadings to the Study Area Should an upland site ultimately require the installation of upland wells to fully characterize the significant contaminant loadings, this characterization will be the subject of the process outlined in AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b and in Work Plan Section 3.2.4. It is not within the jurisdiction of this RI to investigate contaminants or plume extents outside the Study Area. A quantitative estimate of significant contaminant loading to the Study Area, however, is within the purview of this investigation, subject to the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b.
- Data Applicability Report – This report will summarize the historical data collected and evaluate the usefulness of the data in developing the CSM or providing input to modeling, risk assessments, and/or the FS. This report will also identify data gaps to be addressed in the Phase 2 RI Work Plan.

The Historical Data Review will be a comprehensive review of available data. This data review will be conducted concurrent with the Phase 1 RI Field Program. Following completion of the Phase 1 RI Interim Data Report and the Data Applicability Report, a Phase 2 RI Work Plan will be prepared to address data gaps identified.

3.2.2 Cultural Resources Survey

A Stage IA Cultural Resources Survey (CRS), comprised of a literature search and land-side field reconnaissance, will be conducted concurrent with the Phase 1 RI Field Program. The purpose of this survey, in compliance with Section 106 of the *National Historic Preservation Act* (*NHPA*) (*36 CFR Part 800*), is to identify any archaeological and architectural resources within the Study Area that might be affected by potential remedial action. Additional cultural resource investigation may be required based on the result of the Stage IA CRS. Results of this survey will be considered during the FS.

There are two key decision points associated with this effort.

- CRS Stage 1A Work Plan – This work plan will describe the literature search and land-side field reconnaissance activities planned to identify any known archaeological and architectural resources within the Study Area. The CRS Stage 1A Work Plan will be submitted to USEPA and New York State Historic Preservation Office for review.

- CRS Stage 1A Report – This report will describe the archaeological and architectural resources identified within the Study Area that must be considered during the FS and identify any additional cultural resource investigation activities that may be required.

3.2.3 Phase 1 RI Field Program

The first phase of RI field work is designed generally to characterize the nature and extent of significant contamination and other stressors along the length of the Study Area. The objectives of the field program, described in more detail in Section 4, are described below:

- Broadly characterize the physical properties and chemical nature of the sediments and surface water along the length of the Study Area.
- Broadly characterize the hydraulic properties and flow dynamics of surface water within the Study Area.
- Evaluate sediment depositional history and stability.
- Conduct resource and habitat characterization, including habitat and shoreline survey and initial biological data collection (benthic macroinvertebrates and fish) to improve the ecological CSM and to support BERA Problem Formulation (which will include the outcome of the SLERA).
- Monitor the Study Area's ambient air quality to evaluate baseline concentrations of specific airborne chemicals, to measure the level of ambient concentrations that would be experienced within the breathing zone on or along the Study Area, and to estimate the portion of the measured concentrations that are potentially attributable to the Study Area.
- Perform reconnaissance to support future evaluations of contributions from point source and nonpoint source discharges, other pipe discharges, and the presence of floatables.
- Collect data to support the identification of sources of constituents to Study Area sediments and surface water.
- Make observations of existing recreational uses occurring in the waterways.
- Evaluate existing data on sources and the potential for these sources to impact Study Area sediments and surface water through flux of groundwater containing COPCs and other stressors.
- Identify significant loadings of COPCs and, to the extent of the available information, sources of such loadings to the Study Area. As explained in this paragraph, should a site warrant further evaluation, install monitoring wells (both land-based and/or creek-based) in areas where the early Phase 1 RI investigations indicate that wells will be needed. It is anticipated that during the period which Phase 1 RI activities are carried out, there will be situations where obvious groundwater data gaps are identified. These data gaps will be addressed, as is feasible, during Phase 1 using in-creek techniques and/or land-based monitoring wells (should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b).
- Collect data to support potential future FS alternatives evaluations.

To meet these objectives, the Phase 1 RI Field Program will include bathymetric, side-scan sonar, and magnetic surveys (to identify metallic objects within the Study Area), obtaining aerial photographs, an assessment of the shoreline, ambient air sampling and analysis, surface sediment sample collection and analysis, core subsurface sediment sample collection and analysis, surface water sampling and analysis, groundwater sampling, current meter deployments, applicable supplemental analyses, and initial biological data collection.

There are three major deliverables associated with this effort:

- Phase 1 RI Interim Data Report – This report will be prepared prior to the midpoint of the Phase 1 RI Field Program to summarize the results of the surveys performed (bathymetric, side-scan sonar, and magnetic surveys; aerial photography survey; and shoreline assessment) and the Historical Data Review information obtained up to that point in time. This Phase 1 RI Interim Data Report will serve as the basis to identify potential significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area using a weight-of-evidence approach and identifying locations where further sampling using in-creek techniques and/or land-based monitoring wells will be proposed to evaluate if those locations are sources of significant contaminant loadings to the Study Area. The purpose of identifying sources of significant contaminant loadings is not to fully characterize or delineate contaminant sources in the uplands located outside the Study Area, rather it is to identify where sources contribute significant contaminant loadings to the Study Area.
- Phase 1 RI Work Plan Addendum – This addendum will be prepared concurrently with the Phase 1 RI Interim Data Report and will present the locations, procedures, and constituents for the collection of in-creek and/or land-based samples.
- Phase 1 RI Data Summary Report – The Phase 1 RI Data Summary Report will be prepared at the completion of the Phase 1 RI. This report will summarize the data collected during the Phase 1 RI and provide data to use in various aspects of the modeling, BERA, and HHRA efforts. It will also provide data to update the CSM, which will be used to identify remaining data gaps, if any.

3.2.4 Phase 2 RI Field Program

The Phase 2 RI Field Program will be implemented following collection and review of the significant preexisting data for the Study Area as described in the Historical Data Review detailed in Section 3.2.1. This data review will be conducted concurrent with Phase 1 RI activities. The Phase 2 RI field work will be initiated after the completion of this data review and preparation of the Phase 2 RI Work Plan. Data collected during the Phase 2 RI Field Program are intended to establish the relationship between continuing significant sources and COPCs and other stressors present in the Study Area sediments and surface water and to provide information in support of the modeling, BERA, and HHRA. The specific objectives of the Phase 2 RI Field Program are as follows.

- Characterize point source and nonpoint source discharges to the Study Area by performing sampling of discharges.
- Identify significant contaminant loadings having potential significant impact on the implementation of the remedy using a multiple-lines-of-evidence approach consisting of information obtained from the aforementioned Historical Data Review, Phase 1 RI data from the shoreline survey and sampling of various media, in-creek assessment methodologies (including use of a Trident Probe or similar sampling technology and/or groundwater monitoring wells), and Phase 2 RI data. This process is illustrated in Figure 3-4 and will be detailed in the Phase 2 RI Work Plan.

- As described below, develop additional studies to fill data gaps for understanding the impact of sources of significant contaminant loadings on the implementation of the remedy or risk drivers. Such studies will be:
  - Limited to those upland sources of significant contaminant loadings that the data indicate have a potential significant impact on the implementation of the remedy or risk drivers;
  - Determined in consultation with the USEPA; and
  - Performed by the appropriate owner/operator of the identified upland site/facility that is the source of the contaminant loading at the direction of the USEPA or NYSDEC (should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b).

The specific objectives of the Phase 2 RI Field Program, therefore, may be expanded to include:

- Collecting physical or chemical data to fill data gaps identified at the end of the Phase 1 RI Field Program.
- Collecting the data needed to support the HHRA by filling data gaps identified at the completion of the Phase 1 RI Field Program.

To the extent that the data to be collected during the Phase 1 and Phase 2 RI field programs are not sufficient to identify upland sources along the Study Area, a data gap analysis will be conducted and the results incorporated into the RI Report.

Should an upland site ultimately require the installation of upland wells to fully characterize significant loadings of COPCs to the Study Area, this characterization will be the subject of the process outlined in AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b. If further investigation beyond in-creek groundwater is deemed necessary to confirm potential sources of contamination identified in Study Area sediments or groundwater, the Respondents or USEPA may propose to install a groundwater monitoring well(s) or use an alternative sampling methodology (including piezometers) on an upland property. If such property is owned by or under the control of a Respondent, that Respondent will install the groundwater monitoring well or wells pursuant to plans approved by USEPA and/or NYSDEC. If the upland property suspected to be a source of significant groundwater contamination or flow to the Study Area is not owned by or under the control of a Respondent, the Respondents will identify the current facility owner and operator to USEPA and/or NYSDEC for further action. If, after reasonable efforts by USEPA and/or NYSDEC, the facility owner refuses to install the requested upland groundwater well, one or more of the Respondents may agree on a voluntary basis and under a separate agreement to do so if access is obtained under reasonable terms and conditions.

There is one key decision point and there are two major deliverables associated with this effort.

- Sources Sampling Approach Memorandum – A memorandum will be prepared proposing a sampling approach for the various sources identified. This sampling strategy will be the basis for identifying discharges to the Study Area. If the Phase 1 RI in-creek sampling (to evaluate whether upland sites are significant sources of contaminant loadings to the Study Area) is complete when this memorandum is prepared, the results of the Phase 1 RI in-creek sampling will be included in this memorandum.

- Phase 2 RI Work Plan – A work plan will be prepared following completion of the Historical Data Review and the Phase 1 RI Field Program. This work plan will describe the activities that will be performed to achieve the Phase 2 RI objectives.
- RI Report – At the completion of the Phase 2 RI, it is anticipated that sufficient data will be available to prepare the RI Report. This RI Report will summarize the data collected during the Phase 1 RI Field Program, the Phase 2 RI Field Program, and any historical data of sufficient quality to be included in the RI Report. The data collected during the Phase 2 RI Field Program will also be used in various aspects of the modeling, BERA, and HHRA efforts and the FS. As part of the RI Report, the CSM will be updated and used to identify remaining data gaps, if any. If data gaps are identified, it is anticipated that they will be addressed in the FS Field Program.

3.2.5 BERA Field Sampling Program

The BERA Field Sampling Program is the implementation of the BERA Work Plan, and the primary objective of this field program is to provide data needed to evaluate the ecological risk endpoints outlined in the BERA Problem Formulation (Step 3 of the USEPA [1997] ERA process [Figure 3-5]). As described in more detail in Section 3.2.8, this field program will be implemented following the completion of the BERA Problem Formulation (including the outcome of the SLERA) and preparation of the BERA Work Plan (Step 4 of the ERA process). The BERA Field Sampling Program will also include collection of aquatic biota tissue data, for completion of the HHRA as part of the RI/FS process.

Completion of the BERA Problem Formulation (including the outcome of the SLERA) will include data as available from the Phase 1 RI Field Program. Data gaps from the Phase 1 RI Field Program that cannot be addressed during the Phase 2 RI Field Program will be addressed during the BERA Field Sampling Program. This field program is discussed in Section 3.2.8.4.

3.2.6 Other Sampling Program Opportunities

During the course of the RI/FS, opportunities may arise to collect data to support the Study Area characterization or remedial decision process. Should such an opportunity arise, the Respondents will discuss this opportunity with USEPA and will provide a work plan detailing the sampling that will be performed. Following completion of the sampling described in the work plan, a report, or memorandum will be prepared summarizing the results of the sampling effort.

3.2.7 Modeling

During the RI/FS, analytical and/or more complex numerical modeling will be used as a diagnostic tool to further develop portions of the CSM and as a predictive tool to estimate sediment and surface water quality in the future. Models often serve as one of the tools in an investigation to support the CSM, risk assessments, and development of the FS. The strength of computer modeling is that it provides a tool that can be used to gain additional insight into system behavior, assimilate and understand field data, look at system responses for conditions where limited or no data are available, predict exposure to ecological receptors and humans, and develop a comparative analysis of the likely effectiveness of remedial alternatives. It can also predict future conditions as source control continues to improve, and provide a context of when/where the system may reach some point of equilibrium with background conditions. Models will be used together with a thorough knowledge of the Study Area characteristics and nature and extent of COPCs and other stressors developed during the RI to complete the FS.

Model applications that will be used for the Study Area will consist of individual models and models that can be linked in a step-wise manner. Each model will be developed to ensure that model results are sufficient to answer the study questions, as well as provide adequate input to successive models. In each case, as simple a model as possible will be used to sufficiently meet the objectives of the study (USEPA, 2005a). The models that will be developed for the Study Area include a hydrodynamic model, a sediment transport model, a water quality/fate and transport model, and a food web model. Model predictions from one model will be used as inputs to the subsequent model. Processing of input and output data will be automated to facilitate model development and increase efficiency for numerous model runs that may be required for model calibration or application.

The models will be populated with data of known quality and approved by USEPA for use collected during the OU6 RI, USEPA ESI, the NYCDEP predredging investigation, this RI, and other previous studies (as available and as appropriate). Previously collected data and previously developed models (e.g., Contaminant Assessment and Reduction Project [CARP] model, NYCDEP CSO model) will be reviewed, if available, and incorporated into the current modeling effort, as appropriate. Data will be collected to support model set up, as well as provide calibration and validation data. Data collected to support model setup will include bathymetry, tidal flows, upland inflows, sediment grain size and chemical characteristics, sediment and chemical loads, and biota COPC concentrations. Data collected to support model calibration and validation will include flow velocities, water column sediment and COPC concentrations, and biota COPC concentrations.

The model results will provide information that will support the CSM, RI, and FS. The models, as described below, are anticipated.

- The hydrodynamic model will provide characterization of hydrodynamic patterns under a variety of flow events, as well as predictions of bottom velocities and shear stresses to evaluate potential sediment erosion and deposition.
- The sediment transport model will provide predictions of erosion and deposition under varying flow conditions, predictions of where sediment coming into and going out of the system and sediment resuspended within the system will move, and another line of evidence in the sediment stability assessment. Potential movement of sediment between Newtown Creek and the East River will be evaluated in the sediment transport modeling effort. The confluence of Newtown Creek with the East River will be considered a boundary in the model with careful consideration given to how this boundary is established.
- The water quality/fate and transport model will provide descriptions of movement of constituents throughout the system and, once calibrated, will provide comparative predictions of COPC concentrations under potential future remedial alternatives and provide input to the food web model.
- The food web model will provide predictions of fish tissue concentrations over time for potential alternative remedial scenarios.

The specifics of model application will be detailed in memoranda, submitted to USEPA for its approval, that specify requirements of the models to support the RI and FS. Once the specific goals of the modeling study are identified, the tools or particular models will be selected to develop the model application, and the strategy to populate and apply the models will be specified. A variety of models are available that may be appropriate for the Study Area, ranging from analytical to more complex numerical models. The model selection process will include identifying the simplest model that addresses the needs of the RI and FS and predicts relevant processes within the Study Area system.

There are three key decision points associated with this effort.

- Modeling Approach (1) Memorandum – This memorandum will detail the modeling strategy, including which models are proposed and how the models will be parameterized, calibrated, and validated. Preliminary identification of what model runs will be performed and how the model results will be used will also be identified. This memorandum will focus mostly on the hydrodynamic and sediment transport models. How the model results are used may change during the RI/FS process and as the CSM is updated with the collection of additional data.
- Preliminary Modeling Results Memorandum – This memorandum will provide the results of the preliminary modeling for the hydrodynamic and sediment transport models. This memorandum will identify data gaps in the preliminary modeling results to be addressed in the Phase 2 RI Work Plan.
- Modeling Approach (2) Memorandum – A second memorandum will be prepared following development of the hydrodynamic and sediment transport models and after the submittal of the Preliminary Modeling Results Memorandum. This Modeling Approach (2) Memorandum will discuss any modifications to the hydrodynamic, sediment transport models, and modeling strategies for the fate and transport model that may be necessitated by evaluation of RI data, updates to the CSM, and the results of the hydrodynamic and sediment transport models.

3.2.8 Ecological Risk Assessment

The ERA for the Study Area will follow the *Ecological Risk Assessment Guidance for Superfund* (USEPA, 1997) process. This guidance outlines a seven-step process for ERA which is outlined on Figure 3-5.

To be consistent with *DER-10* (NYSDEC, 2010), data collection will also be designed to address data needs for a NYSDEC FWRIA (NYSDEC, 2010). The ERA process, as shown in Figure 3-5, is intended to present the data needs required by this guidance to the extent that the USEPA process does not provide it. In general, the *DER-10* process and the USEPA process are consistent. Part I of the FWRIA (Resource Characterization) corresponds with Steps 1 to 3 of the USEPA process, and Part II corresponds to the BERA (Impact Assessment).

The USEPA (1997) outlines a process that is not very prescriptive on methods and approaches. It is anticipated that additional Federal, State, and other guidance will be brought to bear in the ERA.

The ERA, as outlined in Figure 3-5, will correlate with the overall RI/FS process. The key correlative points are outlined below.

- Steps 1, 2 and part of Step 3 constitute the SLERA. The SLERA will be completed primarily using existing data (OU6 RI data, USEPA ESI data, NYCDEP data, and NYSDEC data). In addition, it will use habitat survey and biological evaluation from the Phase 1 RI Field Program, as available, to assist with preparation of the BERA Problem Formulation, and will result in a SLERA report. The process and scope of these steps is further outlined in Appendix C to this Work Plan.
- The SLERA will be combined with the BERA Problem Formulation (the rest of Step 3 of the USEPA process) and both will be embodied in the BERA Problem Formulation document. The SLERA and BERA Problem Formulation are intended to be combined into one document. The document will be produced following a BERA Workshop where preliminary SLERA results and a BERA Problem Formulation outline will be discussed in detail with USEPA. These activities will be conducted prior to the completion of the BERA Work Plan to ensure identification of data

gaps. This document will address Scientific Management Decision Points (SMDPs)[12] related to Steps 2 and 3 of the ERA and will guide data needs for the BERA Field Sampling Program.

- The BERA itself (Steps 4 though 7) will be implemented following approval of the BERA Problem Formulation SMDP and the BERA Work Plan SMDP. The final product is the BERA Report.
- The outcome of Step 7 and Step 8 (Risk Management) feeds into the overall RI/FS process for the Study Area, allowing the incorporation of ecological issues into the remedial decision framework.

3.2.8.1 SLERA (Steps 1 and 2)

The proposed scope and process for the SLERA is outlined in Appendix C of this Work Plan. The SLERA level analysis, using existing data, will be incorporated into the BERA Problem Formulation document at the end of Step 3.

An important consideration to note is that the SLERA will be taken to the “refined” screening level per USEPA (2001b) guidance, which constitutes part of Step 3 of the risk assessment process. The refined screening level is also based on existing data, but may incorporate habitat and biological data from the Phase 1 RI Field Program to the extent needed to support the SLERA. Habitat survey and biological evaluation tasks in the Phase 1 RI Field Program will be expedited to allow their use in the evaluation.

As outlined in Appendix C, the assumptions and end vision related to the SLERA, as well as subsequent steps, will be developed interactively with USEPA and other stakeholders. Steps 1 and 2 and the refined level analysis will be reported in a technical memorandum. The final SLERA will be presented as part of the BERA Problem Formulation process and will be reported as described below.

3.2.8.2 BERA Problem Formulation (Step 3)

The goal of the Problem Formulation step is to:

- Define the goals, breadth, and focus of the BERA based on SLERA results, Phase 1 RI Field Program results, habitat survey, BERA workshops, and ongoing feedback from USEPA and stakeholders.
- Establish assessment endpoints (receptors and attributes) and exposure pathways to be evaluated under current and/or reasonable future conditions (see discussion of current and future use in Section 2.3.1.3).
- Refine the list of COPECs to be evaluated (i.e., incorporate the outcome of the SLERA), including appropriate literature survey data.
- Formulate risk questions and define measurement endpoints.

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[12] Although there is a SMDP at the end of Step 2 of the ERA process (the SLERA), the proposed approach streamlines the process by presenting it concurrently with the SMDP for Step 3. Similarly, the SMDP at the end of Step 4 (Study Design and DQO process) will be presented concurrently with the Step 5 SMDP (Verification of Field Sampling Design) into a single deliverable, the BERA Work Plan.

- Establish an approach for assessing ecological risk that considers the urban background, continuing sources of contamination, and reasonable future conditions.

The habitat survey and biological evaluation tasks in the Phase 1 RI Field Program will be expedited to allow their use in developing critical elements of the BERA Problem Formulation.

The outcome of this step is a single deliverable, the BERA Problem Formulation document (Step 3 SMDP). This document will also include the outcome of the SLERA (Step 2 SMDP), and therefore is a single document containing Steps 1 through 3 of the ERA process.

To properly scope the BERA Problem Formulation, one or more BERA Problem Formulation workshops will be held with USEPA and stakeholders in advance of document production to address these matters. Results of the SLERA level analysis and Phase 1 RI Field Program habitat survey and biological analyses will be presented ahead of these meetings to allow USEPA and stakeholder feedback in developing the BERA Problem Formulation.

3.2.8.3 Study Design and DQO Process, and Field Verification Design (Steps 4 and 5)

The goal of the Study Design and DQO Process step is to:

- Define a scientifically valid and sufficient study design to answer the risk questions.
- Select Study Area investigation methods and measurement endpoints that meet management goals.
- Identify potential background and reference locations to define actionable risk (i.e., the risk exceeding that associated with background concentrations of constituents resulting from urban runoff and permitted discharges).
- Define any data gaps necessary to finalize study design.

Data gaps may be identified during development of the BERA Work Plan that require resolution or confirmation. For example, data gaps relative to various physical characteristics and other stressors, such as DO levels in the water column, or elevated sulfide content in sediment, may be identified prior to final selection of proposed background or reference sediment locations. Before the BERA is agreed upon, these data gaps will need to be identified and verified in the field. The primary purpose of field verification of the sampling plan (Step 5 of the 8-step process) is to ensure that the samples specified by the BERA Work Plan can actually be collected.

The deliverable for Step 4 and Step 5 is the BERA Work Plan which describes the assessment and measurement endpoints, exposure pathways, questions and testable hypotheses, measurement endpoints and their relation to assessment endpoints, data reduction and interpretation techniques, and uncertainties and assumptions. It will also describe the data needs, a scientifically valid and sufficient study design, data analysis procedures, study methodology and protocols, data reduction and interpretation techniques (including statistical analyses), and quality assurance (QA) procedures and quality control (QC) techniques.

3.2.8.4 Study Area Investigation and Data Analysis (BERA Field Sampling Program) (Step 6)

The Study Area Investigation and Data Analysis step of the ERA (step six of the eight-step process) is the implementation of the BERA Work Plan in the BERA Field Sampling Program.

The analysis phase of this step includes the integration of the ecological exposure and effects assessments. The ecological exposure assessment involves the identification of complete exposure pathways between constituents and ecological receptors and an evaluation of the magnitude of exposure of identified ecological receptors. The ecological effects assessment describes the potential adverse effects associated with the identified COPECs and other stressors to ecological receptors and reflects the type of assessment endpoints selected. The results of this step are used to characterize the potential for ecological risks in the following step.

The outcome of the Step 6 field investigation is evaluated and presented in the BERA Report (Step 7). A SMDP is only needed in this step if there are changes to the BERA Work Plan. However, ongoing interaction with USEPA and stakeholders is anticipated to ensure that the ERA is meeting the overall project objectives.

3.2.8.5 Risk Characterization (Step 7)

Step 7, Risk Characterization, integrates data on exposure and effects into a statement about risk to the assessment endpoints established during BERA Problem Formulation (USEPA, 1997). Data will be analyzed and interpreted to determine the likelihood of adverse environmental effects, and to determine whether a conclusion of acceptable risk can be reached for each assessment endpoint evaluated. The risk characterization will also provide interpretation of any ecologically unacceptable risks and any uncertainties associated with them. Aspects of ecological significance that will be considered to help place the Study Area into a broader ecological context include the likely future condition of the Study Area, the nature and magnitude of effects, the spatial and temporal patterns of effects, and the potential for recovery once a stressor has been removed.

Individual measurement endpoint results will be evaluated to determine whether they support a finding of acceptable risk for each assessment endpoint. Factors to be considered will include the strength of association between the assessment and measurement endpoint, the data quality, and the temporal and spatial representativeness of the data. The conclusions regarding overall risk(s) to ecological receptors will be based on a weight-of-evidence approach, which will consider the results of all components of the assessment methodology (i.e., an approach that integrates results of physical, biological, toxicological, and field measurement endpoints to draw risk-based conclusions).

Cleanup levels to protect ecological resources will be developed, if necessary, at the end of the Risk Characterization step. These risk-based cleanup levels will be considered in the FS evaluation of remedies and by risk managers in the establishment of final cleanup levels.

The documentation of the risk characterization will include a summary of assumptions, uncertainties (both generic and Study Area-specific), strengths and limitations of the analysis for the phase of work, and justification of conclusions regarding the ecological significance of the estimated (i.e., risk of harm) or actual (i.e., evidence of harm) risks.

The outcome of Step 6 and 7 will be presented in a deliverable, the BERA Report, which constitutes the SMDP for Step 7 of the ERA process, and the end of the formal ERA.

3.2.8.6 Risk Management (Step 8)

The final step in the ERA process is risk management. The BERA determines if a risk is present and identifies a range of potential effects on the endpoints from Study Area-related impacts, along with associated uncertainties. As part of risk management, risk reduction associated with remedial alternatives is balanced with the potential impacts of the remedial alternatives themselves. The factors considered include the *CERCLA* threshold and balancing criteria to be evaluated for remedial alternatives. This process is carried forward in the FS, and the final SMDP is ultimately the selected alternative as presented in the ROD.

The role of the ecological risk assessors in this step will be to support the process of evaluating the ERA and considering remedial needs based on ecological endpoints and other stressors in the context of overall Study Area objectives and the *CERCLA* process.

3.2.8.7 Ecological Risk Assessment Deliverables

There are three major deliverables associated with this effort.

- BERA Problem Formulation Memorandum – This memorandum is independent of the Phase 1 RI Field Program data collection, but is expected to track the progress of the Phase 1 RI data collection, incorporate some of the Phase 1 RI data collected, and include the results of the SLERA. The final product is a single document reporting Steps 1 through 3 of the ERA process. Once agreement is reached with the USEPA on these SMDPs, the BERA Work Plan can be prepared.
- BERA Work Plan – The BERA Work Plan provides the details of the BERA Field Sampling Program and defines how data will be analyzed and the framework for interpretation.
- BERA Report – This report will summarize the results of field sampling and ecological risk characterization.

There are two key decision points associated with the ERA.

- SLERA Technical Memorandum – This memorandum will summarize the SLERA screening level analysis and the refined screening level analysis.
- Reference Site and Background Location Selection Memorandum – This memorandum will present the process to be used to identify reference sites and background locations.

3.2.9 Human Health Risk Assessment

An HHRA will be conducted in accordance with baseline risk assessment guidance developed by the USEPA (USEPA, 1989; USEPA, 2001d). New York's *DER-10* guidance will be consulted along with other sources as appropriate (see Appendix A). The objective of the HHRA is to determine whether Study Area media pose unacceptable risk for receptors under current and/or likely future land uses and, if warranted, to aid in decisions regarding remedial actions for the Study Area. The quantitative HHRA will characterize Study Area conditions, explain the human exposure setting (including the physical environment and potentially exposed human populations), identify exposure pathways, evaluate constituent fate and transport with respect to exposed human populations, and quantify potential risks from exposure to Study Area media and other stressors.

In accordance with USEPA guidance, the HHRA will include the following five steps:

- Data Evaluation
- Exposure Assessment
- Toxicity Assessment

- Risk Characterization
- Uncertainty Analysis.

The preliminary proposed methodology/approach applied during each step is discussed in greater detail in the following sections. However, the HHRA approach will be modified as appropriate as information is collected during the RI/FS.

3.2.9.1 Data Evaluation

This step of the HHRA involves compiling and summarizing the data determined to be acceptable for use in the HHRA, selecting COPCs which will be retained for quantitative evaluation, and identification of the dataset to be used in the risk characterization.

Data Review

The Study Area characterization will involve a review of sampling data for environmental media associated with the Study Area collected during the OU6 RI, the USEPA ESI, NYCDEP predredging investigation, and this RI, as well as applicable environmental data identified during the Historical Data Review that are of adequate quality to be included in this assessment. In addition, non-chemical stressors in the Study Area and background levels from surrounding areas will be incorporated into the HHRA as warranted.

Data Adequacy Evaluation

Once the available data have been compiled, a data adequacy evaluation will be conducted in accordance with USEPA guidance (1992a) to determine whether sufficient data have been collected to adequately characterize an exposure area for screening, defining risks, and identifying protective remedies. Each Newtown Creek tributary (i.e., Dutch Kills, Maspeth Creek, Whale Creek, East Branch, and English Kills) may be considered a separate exposure area. The Study Area may also be divided into segments for defining exposure areas based on accessibility.

Once the data are determined to be adequate for risk assessment purposes, data will be screened for COPCs, exposure areas will be identified, exposure point concentrations (EPCs) will be determined, and human health risks quantified. Summary statistics (including the minimum and maximum concentrations, location of the maximum detected concentration, reporting limits, detection frequency, and arithmetic mean) will be included for each media and exposure area.

Applicable screening levels will be presented in the HHRA. However, screening levels are anticipated to consist of residential and/or industrial USEPA Regional Screening Levels (RSLs) (USEPA, 2009a), USEPA National Recommended Water Quality Criteria (NRWQC) (USEPA, 2009b), and corresponding New York State values. Human health screening levels are not available for sediment exposures and, therefore, the soil screening levels will be used to identify sediment COPCs.

3.2.9.2 Exposure Assessment

The purpose of the exposure assessment is to estimate the magnitude and frequency of potential human exposure to COPCs present in media of interest at the Study Area. The first step in the exposure assessment process is determining potential receptors (i.e., people who may contact the impacted environmental media of interest). Potential exposure scenarios identifying appropriate environmental media and exposure pathways for current and potential future Study Area uses are then developed.

Although the Study Area and industrial portions of the surrounding area are designated as a SMIA, portions of the area surrounding the mouth of Newtown Creek have been rezoned for residential purposes. The preliminary human health exposure pathway evaluation was presented in Section 2.3.2. Exposure assumptions will be developed mainly from current USEPA sources (USEPA, 1991; USEPA, 2000; USEPA, 2002; USEPA, 2004b; USEPA, 2009e) and NYSDEC guidance (*DER-10*) as appropriate. Study Area-specific information will be incorporated to the extent possible. This is particularly significant in regards to fish consumption rates and it is undetermined at this time whether subsistence fish and shellfish ingestion takes place for any potential receptor.

For each receptor, the intakes (for ingestion and potential inhalation exposures), and doses (for dermal exposure) will be estimated for each COPC via the applicable exposure pathway by which the receptor is assumed to be exposed. Intake and dose factor equations combine the estimates of constituent concentration in the environmental medium of interest with assumptions regarding the type and magnitude of each receptor's potential exposure to provide a numerical estimate. These factors are defined as the amount of COPC taken into the receptor and are expressed in units of milligrams of COPC per kilogram of body weight per day (milligrams per kilogram per day [mg/kg-day]).

The COPC concentrations that go into the intake factor equations are called EPCs. For surface water and sediment, an EPC may be calculated using samples within appropriate exposure areas along the Study Area. EPCs will be calculated in accordance with USEPA 2002 guidance on calculating the upper confidence limit (UCL) and using the most recent version of USEPA's statistical software program ProUCL (USEPA, 2011a). Specific exposure areas and data sets for these areas will be discussed and agreed upon with USEPA prior to completion of the HHRA. EPCs for other media, such as fish, will also need to be discussed with USEPA.

Exposure to non-chemical stressors (e.g., bacteria and pathogens) will be considered and chemical specific parameters such as dermal absorption factors and permeability constants will be applied (from USEPA, 2004b) as appropriate.

3.2.9.3 Toxicity Assessment

The purpose of the toxicity assessment is to identify the types of adverse health effects a constituent may potentially cause, and to define the relationship between the dose of a constituent and the likelihood or magnitude of an adverse effect (response) (USEPA, 1989). Adverse effects are classified by USEPA as potentially carcinogenic or noncarcinogenic (i.e., potential effects other than cancer). Dose-response values for potentially carcinogenic effects are called Cancer Slope Factors (CSFs) or Inhalation Unit Risks (IURs), and those for non-carcinogenic effects are called Reference Doses (RfDs) or Reference Concentrations (RfCs). USEPA's updated Cancer Guidelines (USEPA, 2005b), which identifies that an Age-Dependent Adjustment Factor will be used when assessing carcinogenic risk from exposure to those chemicals acting through a mutagenic mode of action for those chemicals quantitatively evaluated in the HHRA. Combining the results of the dose-response assessment with information on the magnitude of potential human exposure provides an estimate of potential risk.

Guidance from USEPA (2003) was reviewed and the preferred sources for toxicity values include: 1) USEPA's IRIS database (USEPA, 2011b); 2) USEPA Provisional Peer Reviewed Toxicity Values (PPRTVs); and 3) values obtained from agencies such as the Agency for Toxic Substances and Disease Registry (ATSDR), California Environmental Protection Agency, and Health Effects Assessment Summary Tables (HEAST). The USEPA RSL Table (USEPA, 2009a) contains toxicity values for hundreds of constituents using this hierarchy and will be consulted to obtain current toxicity values at the time of the risk assessment. Note, dermal toxicity values are not currently available; therefore, route-to-route extrapolation from oral toxicity data is the preferred method for evaluating the dermal exposure route. Constituents lacking toxicity values will be discussed qualitatively in the uncertainty section of the risk assessment, with the exception of lead for which USEPA guidance on assessing lead exposures will be consulted (USEPA, 2003).

3.2.9.4 Risk Characterization

Risk characterization provides an integrated endpoint of the risk assessment process, identifying the nature and magnitude of a receptor's potential risk. Two general types of health risk are characterized for each potential exposure pathway considered: potential carcinogenic risk and potential noncarcinogenic risk. Here, the noncancer and cancer toxicity information is combined with the exposure intake to estimate human health effects.

Carcinogenic risk is defined as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. For carcinogens, risk within the range of $1x10^{-4}$ to $1x10^{-6}$ is considered acceptable (USEPA, 1992a). For noncarcinogens, an acceptable noncancer effect is equal to or less than a hazard index (HI) of 1.0.

Special Considerations

Lead is not considered part of the cumulative risk assessment due to its unique toxicity and thus evaluation of lead is a departure from the standard approaches used to evaluate other COPCs. If lead is determined to be a COPC in Study Area media, site-specific risk models such as the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK), the Adult Lead Model (ALM), or the time-weighted average approach in accordance with USEPA's *Assessing Intermittent or Variable Exposure at Lead Sites* (USEPA, 2003) will be used to determine lead cleanup levels for comparison to Study Area data. Given that lead risks are calculated separately from other constituents, cumulative risk may be underestimated and this issue will be acknowledged in the uncertainty section.

In addition, individual risks from petroleum hydrocarbon fractions will be calculated and presented in the HHRA; however, they will not be included in the cumulative risk calculation with other constituents as each petroleum fraction is a mixture of many different constituents already being accounted for. Differences in calculated risk from bulk hydrocarbons versus petroleum constituents will be discussed in the uncertainty section.

Background Considerations

Distinguishing Study Area contamination from naturally occurring background concentrations is an important factor to consider in the HHRA. If an inorganic contaminant exceeds applicable risk-based screening criteria, it will be included as a COPC and will be compared to background data as part of the risk characterization in accordance with USEPA's *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (USEPA, 2002a). Contribution of naturally occurring inorganics to cumulative risk will either be presented separately or using the levels in excess of background values. Due to the Study Area being a highly industrialized area, anthropogenic sources of background for organic constituents will also be considered in the HHRA.

The identification of background, including the selection of background locations and reference sites, will be discussed in the Reference Site and Background Location Selection Memorandum. The background location and reference site selection process is discussed in Section 4.10.4. Although several preliminary background sites are illustrated in Section 4, these sites are examples of potential sites. Final identification of background locations and reference sites will be discussed with USEPA following their review of the Reference Site and Background Location Selection Memorandum.

3.2.9.5 Uncertainty Analysis

Evaluation of uncertainty is a standard component of risk assessment as defined by the USEPA (1989). USEPA recognizes that quantitative evaluation of risks to humans from environmental impacts is frequently limited by uncertainty (lack of knowledge) regarding analytical data, exposure, toxicity, and risk factors. The methods used and assumptions made in assessing potential human health risks are subject to a certain degree of uncertainty. Although risk assessment follows a formal scientific approach, making assumptions, or estimates, based on the limited data that are available or incorporating professional judgment is an inherent part of the process. Uncertainties built into the estimation of exposure and risks may act either to increase or decrease the identified risks depending on the source of the uncertainty.

The objective of the uncertainty analysis is to identify the key Study Area-related variables, assumptions, and scientific judgment that contribute most to the uncertainty in the risk assessment process. To account for potential limitations in risk characterization methodology, the uncertainty associated with the risk assessment components for the Study Area will be qualitatively discussed in the HHRA.

3.2.9.6 Human Health Risk Assessment Deliverables

There are two major deliverables associated with the HHRA.

- PAR-HHRA – The PAR-HHRA provides the decision criteria for including historical data in the HHRA, the process to select COPCs, the selected receptors and exposure pathways to be included in the HHRA, and the toxicity values used in the HHRA and their sources. This interim deliverable will be submitted once all final data have been validated. Any comments generated by USEPA will not require a revision to the document, rather, once responses to the comments are accepted, revisions will be included in the draft HHRA Report.
- HHRA Report – This report will summarize the results of the HHRA.

3.2.10 Feasibility Study

The purpose of an FS is to develop and evaluate remedial alternatives and assess whether they will meet the remedial action goals and RAOs for the Study Area. The FS will be performed in accordance with the following guidance: *USEPA Guidance for Conducting Remedial Investigation and Feasibility Studies Under CERCLA* (USEPA, 1988); *CERCLA National Contingency Plan*; *6 NYCRR Part 375*; and *DER-10* (NYSDEC, 2010). The recommendations provided by the *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a) will be considered. Sustainable environmental practices will also be considered in the FS process (USEPA, 2008; USEPA, 2009c; and USEPA, 2009d). The FS will follow the completion of the RI, the ERA, and the HHRA.

Although it is too early in the RI/FS process to fully describe the specific FS process that will be followed for the Study Area, it is anticipated that the Study Area may be divided into sediment management areas (e.g., segments) depending on RI characterization and risk (HHRA and ERA) results, anticipated future or ongoing sources of COPCs (e.g., continuing discharges), and sediment fate and transport considerations. During the FS, each of these sediment management areas will progress through the various FS steps: evaluation of data gaps (and, where necessary, implementation of a field program to resolve these data gaps), identification and screening of potential remedial alternatives, performance of treatability study investigations and pilot tests of likely alternatives (if necessary), and the detailed analysis of alternatives. As a first step of the FS, Federal and State Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) guidance and criteria will be preliminarily identified. USEPA regulations and guidance require that ARARs and TBCs be met during the implementation of remedies. Once identified, the ARARs and TBCs will be evaluated to identify those that may be technically impracticable to achieve and for which waivers may be required. This early preliminary screening will allow the collection of data during the planned field investigations to support the evaluation of compliance with ARARs and TBCs. This identification of ARARs and TBCs will be updated, as necessary, during the development and screening of alternatives step of the FS.

The approach to the FS for the Study Area is provided in Section 5. Following completion of the RI, this FS approach will be updated as the FS Work Plan and will describe in detail the FS process and the FS schedule. Inputs to the FS process include the results of the RI, the Historical Data Review, the BERA, the HHRA, and ARARs and TBCs (including consideration of the technical impracticability of meeting these requirements and criteria and the ability to obtain waivers), which are used to develop the remedial action goals and RAOs for the Study Area. During the performance of the FS, additional data may be necessary to evaluate the extent and effectiveness of potential technologies. Once the initial technology screening has been completed, data needs will be defined and incorporated into an FS Field Program Work Plan. The FS Field Program Work Plan will describe additional data needed to develop and evaluate alternatives for remediation of the Study Area, including any or all of the following:

- Additional delineation of constituents of concern (COCs), as identified during the ERA and HHRA.
- Collection of engineering data on the Study Area, including physical data on shoreline features and physical parameters on the behavior of sediments.
- Collection of specific data in areas of the Study Area where remedies may be considered, including data on local discharges, navigational impacts on sediments, etc.
- Performance of treatability studies to assess the applicability of specific technologies under conditions present in the Study Area.
- Conducting of pilot studies to determine the effectiveness of full-scale technologies in the Study Area.

The following documents will be prepared in support of the FS process.

- ARARs/TBCs Memorandum – This memorandum will identify the promulgated standards, requirements, criteria, and limitations that must be met during implementation of the remedy and nonpromulgated criteria, advisories, guidance, and proposed standards that must be considered during implementation of the remedy and will be prepared early in the RI/FS process. It will also identify the ARARs and TBCs that may be technically impracticable to achieve and for which waivers may be required.
- Preliminary Alternatives Memorandum – This memorandum will provide an initial consideration of technologies appropriate for remedial action.
- FS Work Plan – This FS Work Plan will update the FS approach presented in this Work Plan (Section 5) and will provide a detailed description of the approach to the FS and provide an anticipated schedule for implementation of the FS.

- FS Field Program Work Plan – If additional data are required to evaluate the extent and effectiveness of potential technologies, an FS Field Program Work Plan will be developed.
- Refined Alternatives Memorandum – This memorandum will document the development of alternatives developed to address the RAOs and will identify the alternatives that will be evaluated in the detailed analysis of alternatives.
- FS Report – This report will summarize the results of the FS and present the detailed evaluation of remedial alternatives. Any field work required to complete the FS will be described as an appendix to the FS.

3.2.10.1 Adaptive Management Strategy

Because of the complexity of the potential remedial alternatives in the Study Area, an adaptive management strategy is appropriate for the FS. The Study Area consists of a complex system of physical, chemical, and biological processes that, when combined, significantly affect the potential exposure of humans and ecological receptors to COPCs and other stressors. In particular, the stochastic processes of sediment erosion and deposition during storm events and the input of constituents from continuing sources render the assessment of future risk following a proposed remedial alternative difficult to predict. Prospective risk following any proposed remedial alternative is even more difficult to assess given the dynamic human component of the Study Area's highly urbanized environment. Factors which will have long-term implications on the success of a proposed remedial action for the Study Area include the following.

- Future economic and development activity in and around the Study Area, including changes in zoning (currently the majority of the waterfront is zoned M3-1 for heavy manufacturing and industrial uses, except for a small area near the mouth of Newtown Creek), changes in property use, introduction of new industries, and the continuation of the SMIA.
- Changes in public access associated with development of green space, public waterfront access, and recreational use of the waters.
- Long-term implementation of the WWTP improvements and CSO upgrade program. Dates for implementation, funding, and efficacy of proposed measures are all highly uncertain at this point.
- Impacts from significant contaminant loadings that may affect the implementation and effectiveness of a remedy.

The uncertainty of the future economic and political environment near the Study Area makes the human dimension an essential component in the assessment of future risk at the Study Area. In particular, the political desire and economic resources that are necessary for waterfront economic redevelopment, navigational dredging, flood control management, CSO/stormwater quality improvement, TMDLs regulation, and habitat restoration all affect future use; yet all of these future human activities have a high degree of uncertainty. The human dimension associated with each remedial alternative imposes important constraints on the development and evaluation of remedial alternatives in the FS. Even more importantly, the potential scale of a selected remedy for the Study Area may create stresses on the economic and political environment of the community and its stakeholders. The natural complexity of the physical, chemical, and biological processes, combined with the human dimension, will ultimately require that an adaptive management strategy be evaluated and developed as part of the FS.

USEPA *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a) encourages project managers to use an adaptive management strategy, especially at complex sediment sites, to provide additional certainty in the information used to support decisions (USEPA, 2005a, Section 2.7 and Appendix A – Horinko Principle Number 5 [USEPA, 2002b]). In general, an adaptive management strategy means that the assumptions used to develop the selected alternative, along with the hypotheses regarding the relationships between factors, and conclusions from the FS are reevaluated as new information is gathered. According to USEPA *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a), "Phasing in remedy selection and implementation may be especially useful at sites where contaminant fate and transport processes are not well understood or the remedy has significant implementation uncertainties. Phasing may also be useful where the effectiveness of source control is in doubt."

3.3 Community Relations and Stakeholder Involvement Activities

Citizen participation is an important component of the RI/FS. The Respondents will work with the USEPA to develop and implement an effective CIP. Because the Study Area is in a highly urbanized setting, the plan and associated efforts at communication will need to account for the large and varied number of stakeholders. The plan will also need to communicate the length and complexity of the RI/FS process for the Study Area and provide for frequent updates to the community on progress. A draft of the CIP will be prepared, and submitted to USEPA for approval pursuant to the AOC and this Work Plan, as one of the supporting documents for this Work Plan. The Respondents will work with USEPA on the long-term implementation of the plan.

3.4 Deliverables and Decision Points

The RI/FS program for the Study Area will require the completion of a number of technical documents. This section describes two sets of deliverables (major deliverables and key decision points) that will be used to document the process and provide discussion materials at key points in the process. Figure 3-3 shows how these deliverables and key decision points interact with the RI/FS process.

3.4.1 Major Deliverables

The following memoranda, work plans, and reports will document major components of the process. These memoranda, work plans, and reports (except this Work Plan which has been reviewed and approved by USEPA) will be submitted by the Respondents to USEPA for approval pursuant to the AOC and this Work Plan. The numbers in parentheses refer to the document references on Figure 3-3.

- RI/FS Work Plan (1) (this document) - Note this Work Plan, not including the supporting plans, has been reviewed and approved by USEPA and is included as an attachment to the AOC.
- RI/ FS Work Plan Supporting Plans (FSAP, QAPP, HASP, DMP, and CIP) (2) – The RI/FS supporting plans will document the procedures that will be followed to implement the RI/FS.
- Phase 1 RI Interim Data Report (3) – Prior to the midpoint of the Phase 1 RI Field Program, the results of the surveys performed (bathymetric, side-scan sonar, and magnetic surveys; aerial photography survey; and shoreline assessment) and the Historical Data Review information obtained up to that point in time will be complied and presented in a data report. This Phase 1 RI Interim Data Report will serve as the basis to identify potential sources of significant contaminant loadings to the Study Area using a weight-of-evidence approach and identifying locations where further sampling using in-creek techniques and/or land-based monitoring wells will be proposed to evaluate whether those locations are sources of significant loadings of

COPCs, and to the extent of the available information, sources of such loadings, to the Study Area.

- Phase 1 RI Work Plan Addendum (4) – Based on the evaluation of the Phase 1 RI survey data and available Historical Data Review information, a sampling work plan addendum will be developed and submitted as a Phase 1 RI Work Plan Addendum concurrently with the Phase 1 RI Interim Data Report. This addendum will present the locations, procedures, and constituents for the collection of in-creek and/or land-based samples. Should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b.
- Phase 1 RI Data Summary Report (5) – At the conclusion of the Phase 1 RI Field Program sampling activities, the results will be compiled and presented in a data report. This report will include the tables, maps, and analyses required to identify and scope subsequent phases of field work. This report is intended to document the field activities and provide sufficient data to use in various aspects of the modeling, ERA, and HHRA efforts, as well as supply an update to the CSM.
- Phase 2 RI Work Plan including supporting plans (FSAP, QAPP, HASP, and DMP) (6) – A work plan will be prepared for the Phase 2 RI Field Program. This plan will be developed following the review of historical data and the Phase 1 RI data, identification of data needs to support the modeling effort, and an update of the CSM. The Phase 2 RI Field Program is expected to include sampling of the pipes, seeps, and, to the extent necessary to identify significant loadings, nonpoint source stormwater and groundwater (using in-creek techniques and/or land-based monitoring wells). This work plan effort will include all of the supporting documentation (FSAP, QAPP, HASP, and DMP). This work plan will also include a schedule for implementation of the Phase 2 RI Field Program and submittal of the RI Report.
- RI Report (10) – Following the Phase 2 RI Field Program, the RI Report will be issued documenting the tasks completed and providing analytical and field information on the results of sampling.
- BERA Problem Formulation Memorandum (7) – At the beginning of the BERA process, a problem formulation memorandum is developed to define and guide the risk assessment field sampling and data analysis efforts. The problem formulation will be documented in this memorandum and supported by relevant technical and regulatory information. This document will also present the SLERA.
- BERA Work Plan (8) – Scope, methods, and DQOs for the BERA that implement the data needs of the BERA Field Sampling Program will be developed. The work plan will document the DQOs, approach to data collection, and the sampling and analytical methods to be used in the BERA Field Sampling Program.
- PAR-HHRA – HHRA (9) components and specific inputs will be presented in this work plan following the completion of the Phase 1 RI Field Program, including details for evaluation of the data set, receptors, and toxicity data to be utilized. Key issues will be discussed with USEPA prior to submittal of the PAR-HHRA.
- BERA Report (11) – At the conclusion of the ecological assessment activities, a final BERA report will be issued identifying areas of the Study Area for which remedial action may be necessary for management of risk to ecological receptors.

- HHRA Report (12) – The final HHRA will be based on the results of RI field sampling, BERA field data, and modeling for the Study Area and will summarize the results of the evaluation of potential risk to human health.
- FS Work Plan (13) – A work plan will be prepared to update the FS approach presented in this Work Plan (Section 5). It will refine the approach to the FS and provide an anticipated schedule for implementation of the FS.
- FS Field Program Work Plan (14) – If additional data are needed to evaluate the extent and effectiveness of potential technologies, a work plan will be prepared during the performance of the FS.
- FS Report (15) – At the conclusion of the FS, a report will be completed in accordance with *CERCLA National Contingency Plan*, *6 NYCRR Part 375*, and *DER-10*. The FS Report, together with other plans, reports, and other items that will be developed pursuant this and other work plans for the RI/FS, will be used by the USEPA as a basis for remedy selection, and eventually the ROD for the Study Area. The FS Field Program Report will be appended to the FS Report. The FS Field Program Report will document the tasks completed and provide analytical and field information on the results of sampling.

3.4.2 Key Decision Points

In addition to the major deliverables described in the preceding section, there are a number of key decision points in the RI/FS process, as indicated on Figure 3-3. For each of these key decision points, the Respondents will prepare a memorandum summarizing the decision to be made and presenting a position with technical and regulatory documentation. These memorandums will serve as the basis for discussion between USEPA and the Respondents. As agreement is reached, the position will be documented and used as the basis for moving forward in the process.

Since the DQO procedure is intended to be an iterative process, each of these key decision points may require that the DQO process be revisited to incorporate and assess the impact of additional information which may more tightly focus or modify goals, required information inputs, or decision rules for the next phase of the project.

Following is a summary of the key decision points identified for the program. The letters in parentheses refer to the document references on Figure 3-3.These decision points are subject to USEPA's review and approval.

- SLERA Technical Memorandum (i) – This memorandum will summarize the SLERA screening level analysis and the Phase 1 RI Field Program biological sampling results for use by USEPA and stakeholders during the BERA Workshop.
- Data Collection Plan (a) – At the beginning of the Historical Data Review task, the Respondents will provide USEPA with a memorandum summarizing the types of data that will be collected, potential uses for the data, and how records collected will be cataloged, organized, and made available for review and analysis. Sources of data that may be retrievable by the USEPA or NYSDEC will be identified in the memorandum and a procedure for accessing the data will be discussed.
- CRS Stage 1A Work Plan (b) – This work plan will describe the literature search and land-side field reconnaissance activities planned to identify any known archaeological and architectural resources within the Study Area.

- Modeling Approach Memorandum (1) (c) – At the beginning of the modeling process, the Respondents will document the proposed approach to numerical modeling. This memorandum will discuss the hydraulic and sediment transport models, key parameters coming from the field work and Historical Data Review, and lay out the plan for using numerical modeling to support the overall understanding of the Study Area and development of the CSM.
- CRS Stage 1A Report (d) – This report will describe the archaeological and architectural resources identified within the Study Area that must be considered during the FS and identify any additional cultural resources investigation activities that may be required.
- Data Applicability Report (g) – At the conclusion of the Historical Data Review task, the information will be reviewed to determine the quality of the data and to confirm if it can be used in the RI. Data deemed to be reliable will be identified and catalogued for inclusion in the Study Area database and documented in this Data Applicability Report. The Data Applicability Report will include a data gap analysis.
- Preliminary Modeling Results Memorandum (e) – This memorandum will provide the results of the preliminary modeling for the hydrodynamic and sediment transport models.
- Modeling Approach Memorandum (2) (f) – Once the sediment transport and hydraulic models are operational, a second scoping memorandum for the modeling effort will identify modeling and/or mass balance calculations used to develop an understanding of constituent fate and transport in the environment. This memorandum will present the proposed approach to the sediment transport and hydraulic modeling and identify data sources for the models.
- Sources Sampling Approach Memorandum (h) – The permitted and non-permitted point source and nonpoint source discharges and groundwater represent important potential continuing sources to the Study Area. Following the completion of the Historical Data Review and review of the Phase 1 RI data, the Respondents will develop a proposed sampling strategy for the various discharges. This memorandum will document the proposed approach including sampling methods, analytical methods, locations, and frequency of sampling. In addition, if other significant sources are identified, this memorandum will document the proposed approach to sampling these sources. Results of this memorandum will be incorporated into the Phase 2 RI Work Plan.
- Reference Site and Background Location Selection Memorandum (j) – Reference sites for background sampling and reference condition evaluation for comparison to the Study Area will be selected and presented in this memorandum.
- ARARs/TBCs Memorandum (k) – Early in the RI/FS process, ARARs and TBCs will be preliminarily defined so that they can be considered during the development of field work plans. This memorandum will document the ARARs/TBCs identified and those ARARs and TBCs that may be technically impracticable to achieve and for which waivers may be required.
- Preliminary Alternatives Memorandum (l) – Following the development of the RAOs in the FS process, technologies that are potentially applicable to address issues identified in the Study Area must be identified and screened. The technologies that pass this screening process will eventually be combined into remedial alternatives. This memorandum will document this important screening process. Results of this process will be used to identify technologies that require treatability or pilot testing in the FS Field Program.
- Refined Alternatives Memorandum (m) – Once the technologies have been successfully screened and, if necessary, field tested in the FS Field Program, remedial alternatives will be developed for the Study Area. It is important that a realistic set of alternatives is developed to meet the RAOs and comply with *CERCLA National Contingency Plan*, *6 NYCRR Part 375*, and

DER-10. This memorandum will document the development process and will be used to advance to the detailed analysis of alternatives step of the FS.

3.5 Estimated Program Schedule

Table 3-1 presents the estimated schedule for the RI/FS program. This schedule through Phase 1 is presented in Figure 3-6. The schedule was prepared with the following assumptions.

- All tasks are linked to the effective date of the AOC, which acts as the start date for the schedule. Some pre-investigation tasks, e.g., initiation of the SLERA, may be started before the effective date of the AOC.
- The following major deliverables, which are not contingent on earlier tasks in the program, are scheduled based on the effective date of the AOC:
  - Deliverable (1) RI/FS Work Plan
  - Deliverable (2) RI/FS Work Plan Supporting Plans
  - Deliverable (3) Phase 1 RI Interim Data Report
  - Deliverable (4) Phase 1 RI Work Plan Addendum
  - Deliverable (5) Phase 1 RI Data Summary Report
  - Deliverable (6) Phase 2 RI Work Plan, including supporting plans
  - Deliverable (7) BERA Problem Formulation including SLERA Report.
- The following key decision points, which are not contingent on earlier tasks in the program, are scheduled based on the effective date of the AOC:
  - Decision Point (a) Data Collection Plan
  - Decision Point (b) Cultural Resources Survey Stage 1A Work Plan
  - Decision Point (c) Modeling Approach Memo (1)
  - Decision Point (g) Data Applicability Report[13]
  - Decision Point (i) SLERA Technical Memo (and the BERA Workshop pre-meeting materials)
  - Decision Point (j) Reference Site and Background Location Selection Memo
  - Decision Point (k) ARARs/TBCs Memo.
- All of the rest of the major deliverables and key decision points are contingent on successful completion of earlier tasks in the program. As with any complex program, the schedule for later deliverables and key decision points is dependent upon the timing of completion of earlier tasks. Delays in the completion of these tasks may delay the completion of the later tasks. The schedule for these later major deliverables and key decision points, therefore, is considered approximate and updated schedules for these items will be laid out in future work plans or memoranda.

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[13] This report is contingent on obtaining the historical data from a number of parties in a timely manner.

- Each of the major deliverable include the following assumptions for preparation and review of documents (presented in calendar days):
  - Document preparation time
  - 60 days for USEPA review
  - 30 days for the Respondents to address USEPA comments and provide a response or a revised document
  - 30 days for USEPA final review.
- The schedule for key decision points include the following assumptions for preparation and review of documents:
  - Document preparation time
  - 45 days for USEPA review
  - 15 days for the Respondents to address USEPA comments and provide a response or a revised document
  - 30 days for USEPA final review.
- Some of the tasks (e.g., surface water sampling) are season and weather dependent. The actual schedules for field sampling may be affected by weather conditions and when they fall on the calendar.

Table 3-1
Estimated RI/FS Schedule

Deliverable or Milestone	Critical Preceding Element	Duration between Critical Preceding Element and Deliverable or Milestone (Months)	Review Periods USEPA / Respondents / USEPA (Calendar Days)
RI/FS Work Plan (RI Start)	Administrative Order on Consent Execution	0	NA
Supporting Plans (FSAP/QAPP/CIP/DMP/HASP)	Administrative Order on Consent Execution	1.5	45/15/30
Data Collection Plan	Administrative Order on Consent Execution	1.5	45/15/30
SLERA Evaluation Technical Memorandum	Administrative Order on Consent Execution	3	45/15/30
Cultural Resources Survey Stage 1A Work Plan	Administrative Order on Consent Execution	3	45/15/30
Reference Site and Background Location Selection Memo	Administrative Order on Consent Execution	4	60/30/30
ARARs and TBCs Memo	Administrative Order on Consent Execution	4	45/15/30
Modeling Approach Memo (1)	Administrative Order on Consent Execution	4	45/15/30
Phase 1 RI Field Program Initiated*	Supporting Plans	3	NA
Phase 1 RI Interim Data Report	Phase 1 RI Field Program Initiated	3	NA
Phase 1 RI Work Plan Addendum (Groundwater)	Phase 1 RI Field Program Interim Data Report	0	45/15/30
Cultural Resources Survey Stage 1A Report	Cultural Resources Survey Stage 1A Work Plan Approval	3	45/15/30
Groundwater Sampling Initiated (as part of Phase 1 RI Field Program)	Phase 1 RI Work Plan Addendum Approval	1	NA
Data Applicability Report	Data Collection Plan Approval	6	45/15/30
Phase 1 RI Field Program Completed	Phase 1 RI Field Program Initiated	13	NA
Pathway Analysis Report	Four months after Phase 1 RI Field Program Initiated	1	45/15
Sources Sampling Approach Memo	Data Applicability Report Approval	1	45/15/30
BERA Problem Formulation and Final SLERA Report	End Phase 1 RI Field Work	1	60/30/30
Phase 2 RI Work Plan with Supporting Plans	End Phase 1 RI Field Work	1.5	60/30/30
BERA Work Plan	Problem Formulation & SLERA Report & Reference Site and Background Location Selection Submittals Approval	1	60/30/30
Phase 1 RI Data Summary Report	End Phase 1 Field Work	8	60/30/30
BERA Field Sampling Program Initiated	BERA Work Plan Approval	1	NA
Phase 2 RI Field Program Initiated	Phase 2 RI Work Plan Approval	1	NA

Table 3-1
Estimated RI/FS Schedule

Deliverable or Milestone	Critical Preceding Element	Duration between Critical Preceding Element and Deliverable or Milestone (Months)	Review Periods USEPA / Respondents / USEPA (Calendar Days)
Preliminary Modeling Results Memo	Phase 1 RI Data Summary Report Submittal & Modeling Approach Memo (1) Submittal	6	60/30/30
Modeling Approach Memo (2)	Preliminary Modeling Results Memo & End Phase 1 RI Field Work	2	45/15/30
BERA Field Sampling Program Completed	Initiation of BERA Field Sampling Program	12	NA
Phase 2 RI Field Program Completed	Phase 2 RI Field Program Initiated	12	NA
BERA Report	End BERA Field Work & Modeling Approach Memo (2) Approval	7	60/30/30
Human Health Risk Assessment Report	End BERA Field Work & Modeling Approach Memo (2) Approval	7	60/30/30
RI Report	End Phase 2 RI Field Work	8	60/30/30
Preliminary Alternatives Memo	BERA Report and HHRA Report Approval	1	45/15/30
FS Work Plan	BERA Report and HHRA Report Approval	1	45/15/30
FS Field Program Work Plan	BERA Report and HHRA Report Approval	1	45/15/30
FS Field Program Initiated	FS Field Program Work Plan Approval	1	NA
FS Field Program Completed	Initiation of FS Field Program	12	NA
Refined Alternatives Memo	Completion of FS Field Program	1	45/15/30
FS Report	Refined Alternatives Memo Approval	14	60/30/30

Notes:
* Groundwater sampling will be initiated approximately halfway through the Phase 1 RI Field Program, contingent upon USEPA approval of the Phase 1 RI Work Plan Addendum.
The Schedule as presented:
● is very optimistic and based on reasonable and defined Agencies review times and turn-around times.
● does not include time for activities for groundwater investigations.
● does not include time for an additional field mobilization to fill data gaps.
● will be adversely impacted by inclement weather, e.g., storms, hurricanes, snow, ice, fog.
● does not account for labor strikes, slow downs, interference, or unavailability of specialized equipment or parts.
● does not include laboratory slowdown in turnaround time or lab errors and correction.
● does not account for acts of God, riots, terrorism, war, etc.
● does not include time for delays associated with soliciting public and other stakeholder comments or extended third party reviews.
● assumes time frames for some tasks that are beyond the control of the Respondents, e.g., obtaining information from third parties.
● requires close coordination and creative collaboration between the Respondents and USEPA to address a variety of issues that will be raised during the course of the RI/FS.
Some field activities require sampling during specific seasons or range of seasons and schedule may be adjusted based on these seasonality requirements.

Table 3-1
Estimated RI/FS Schedule

Notes (continued)

ARAR = Applicable or Relevant and Appropriate Requirement
BERA = Baseline Ecological Risk Assessment
CIP = Community Involvement Plan
DMP = Data Management Plan
FS = Feasibility Study
FSAP = Field Sampling and Analysis Plan
HASP = Health and Safety Plan
NA = Not Applicable
QAPP = Quality Assurance Project Plan
RI = Remedial Investigation
TBC = To Be Considered
USEPA = US Environmental Protection Agency

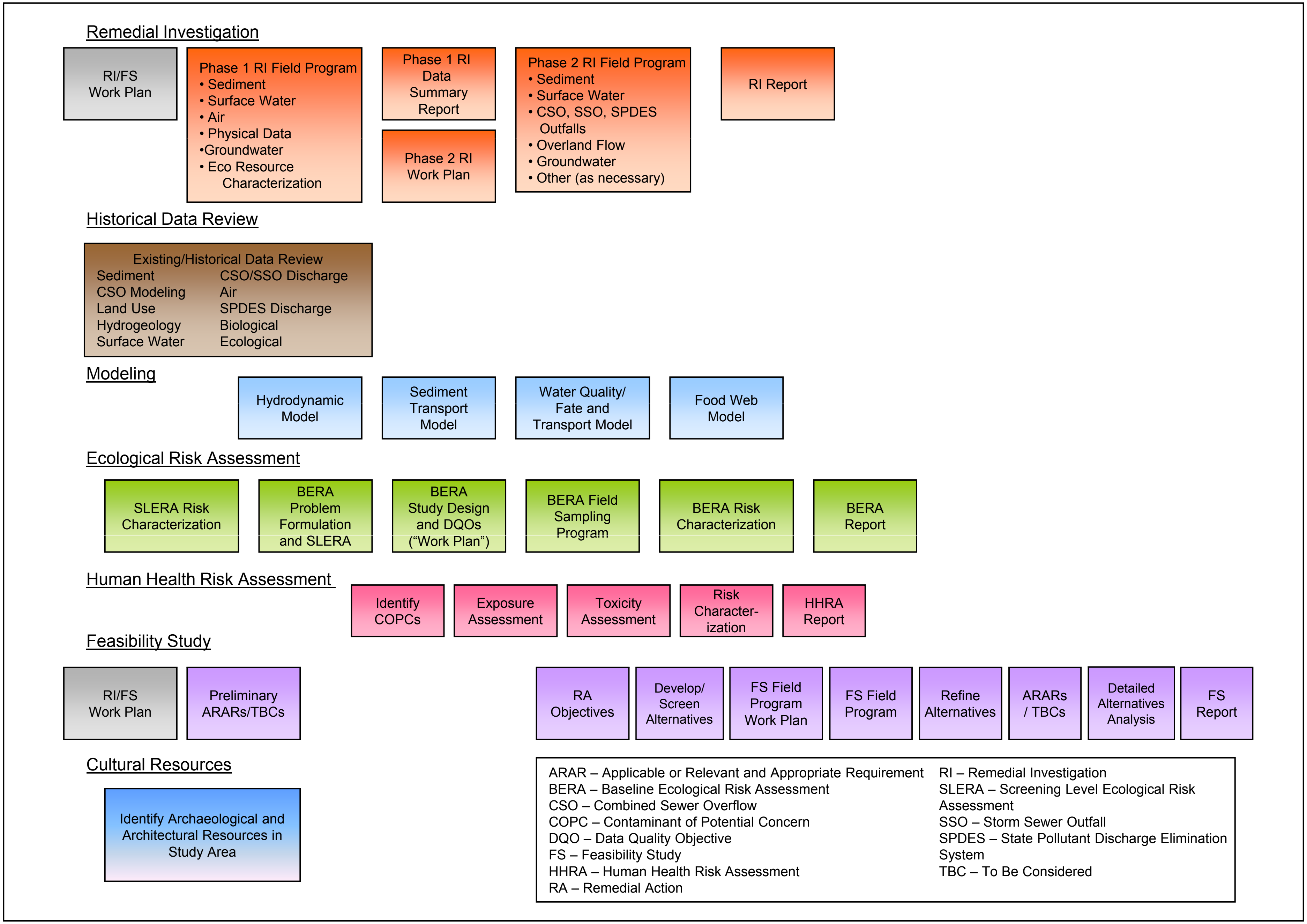

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Figure 3-1
Major Program Elements
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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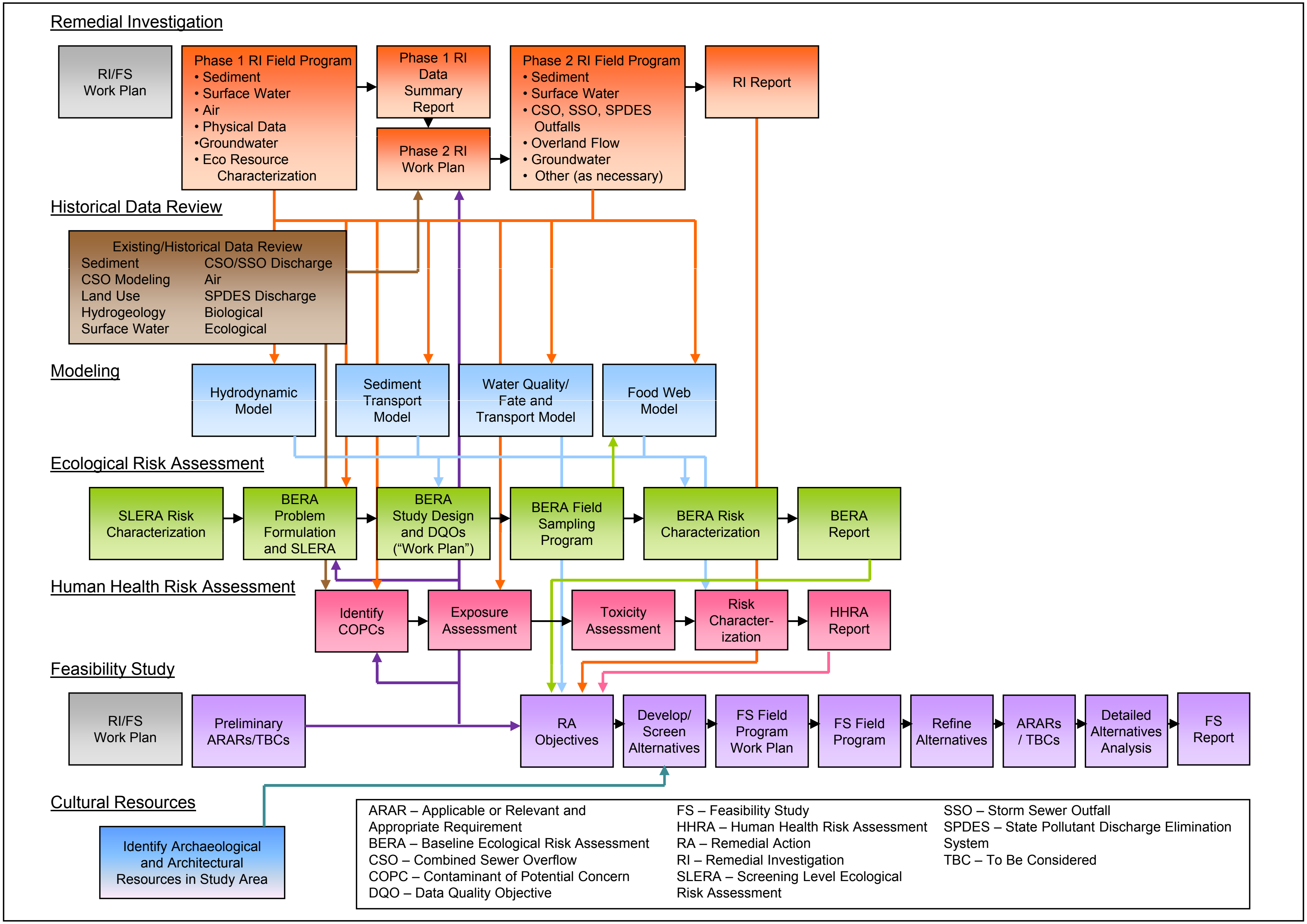

Figure 3-2
Information Flow
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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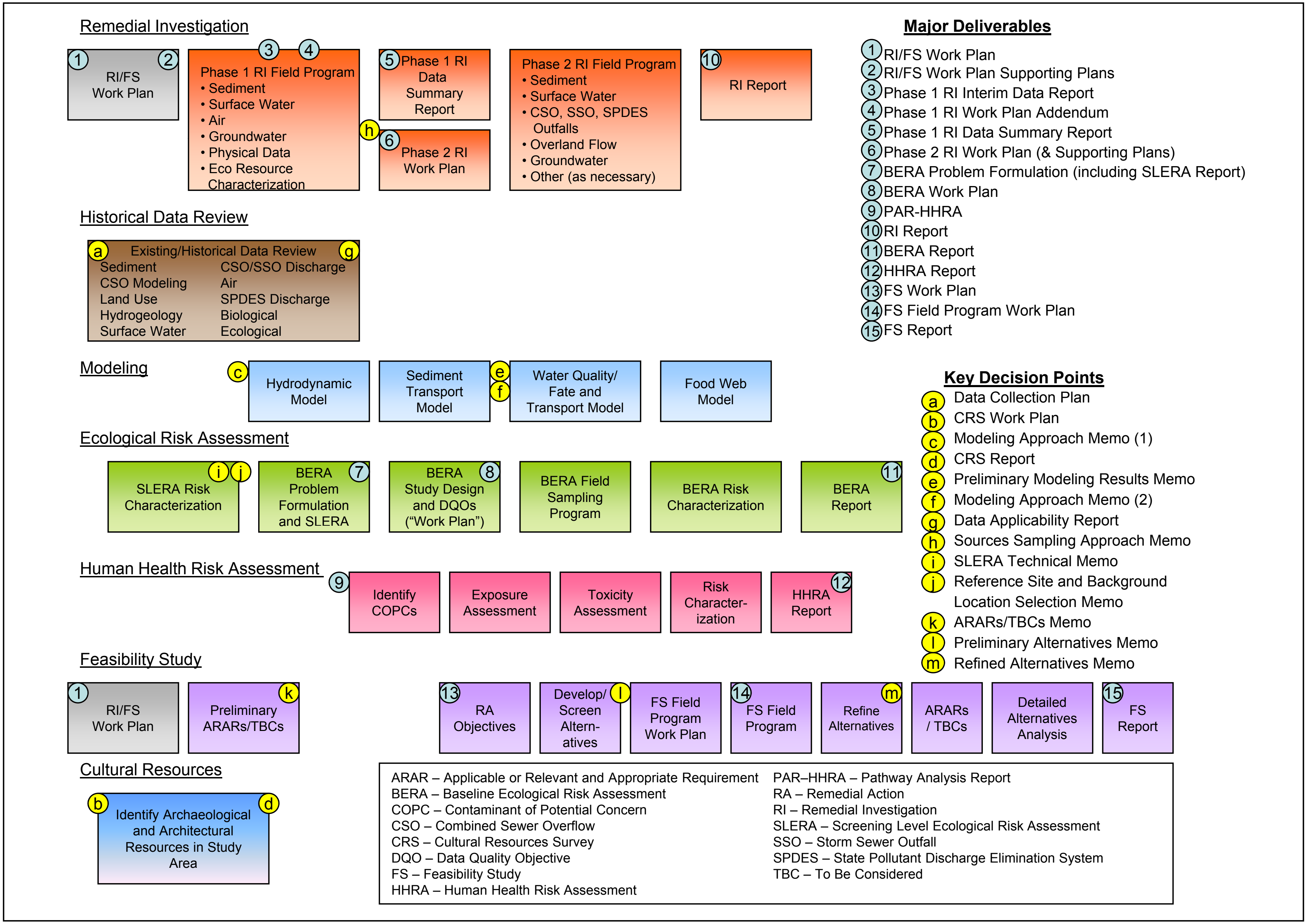

Figure 3-3
Major Deliverables and Key Decision Points
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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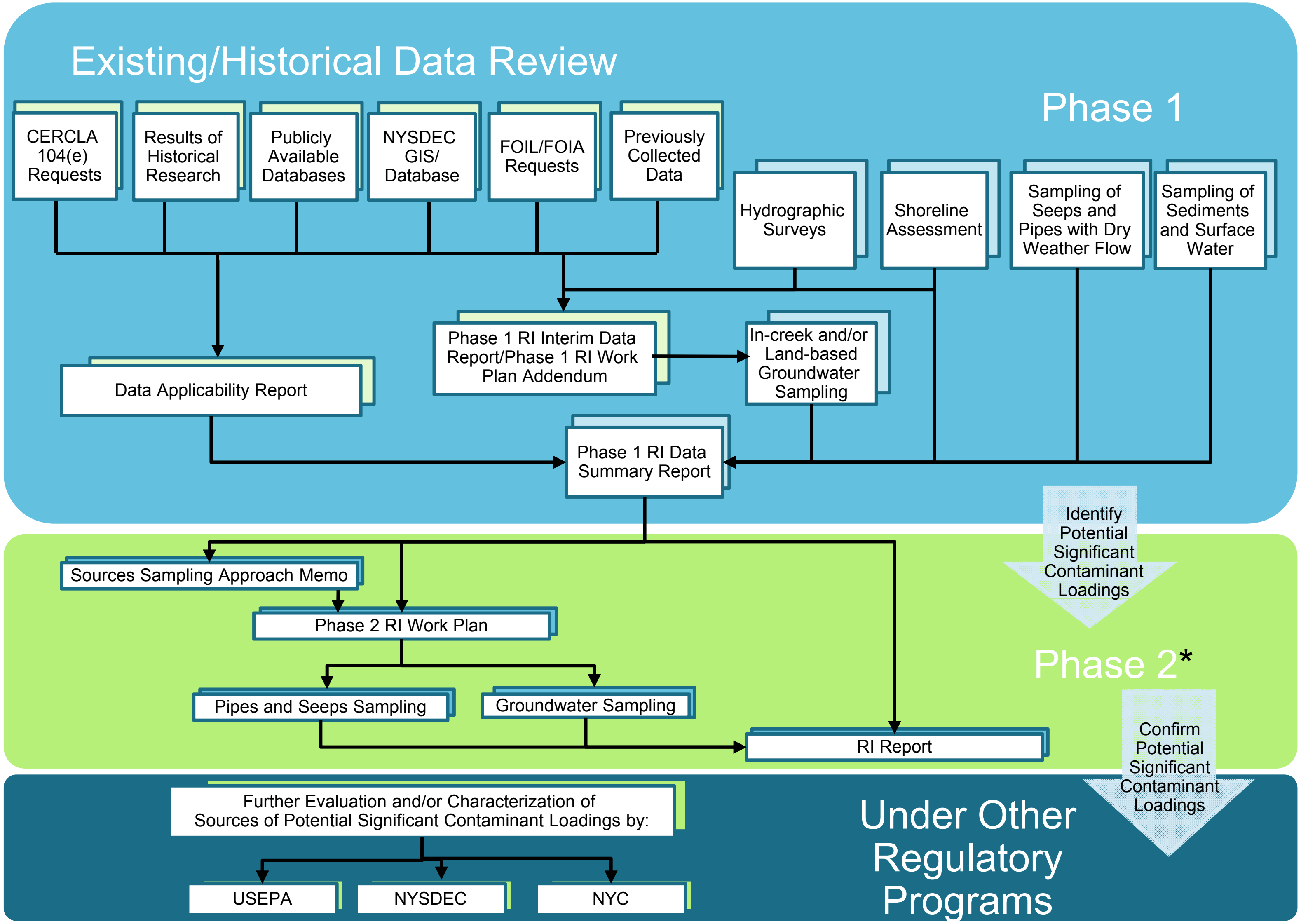

*If data gaps are identified during any phase of the RI, additional RI Work Plan Addenda will be written to address those gaps, and additional phases of investigation will be conducted prior to compiling the RI Report.

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
GIS – Geographic Information System
FOIA – Freedom of Information Act
FOIL – Freedom of Information Law
NYC – New York City
NYSDEC – New York State Department of Environmental Conservation
RI – Remedial Investigation
USEPA – United States Environmental Protection Agency

Figure 3-4
Identifying Sources of Potential Significant Contaminant Loadings
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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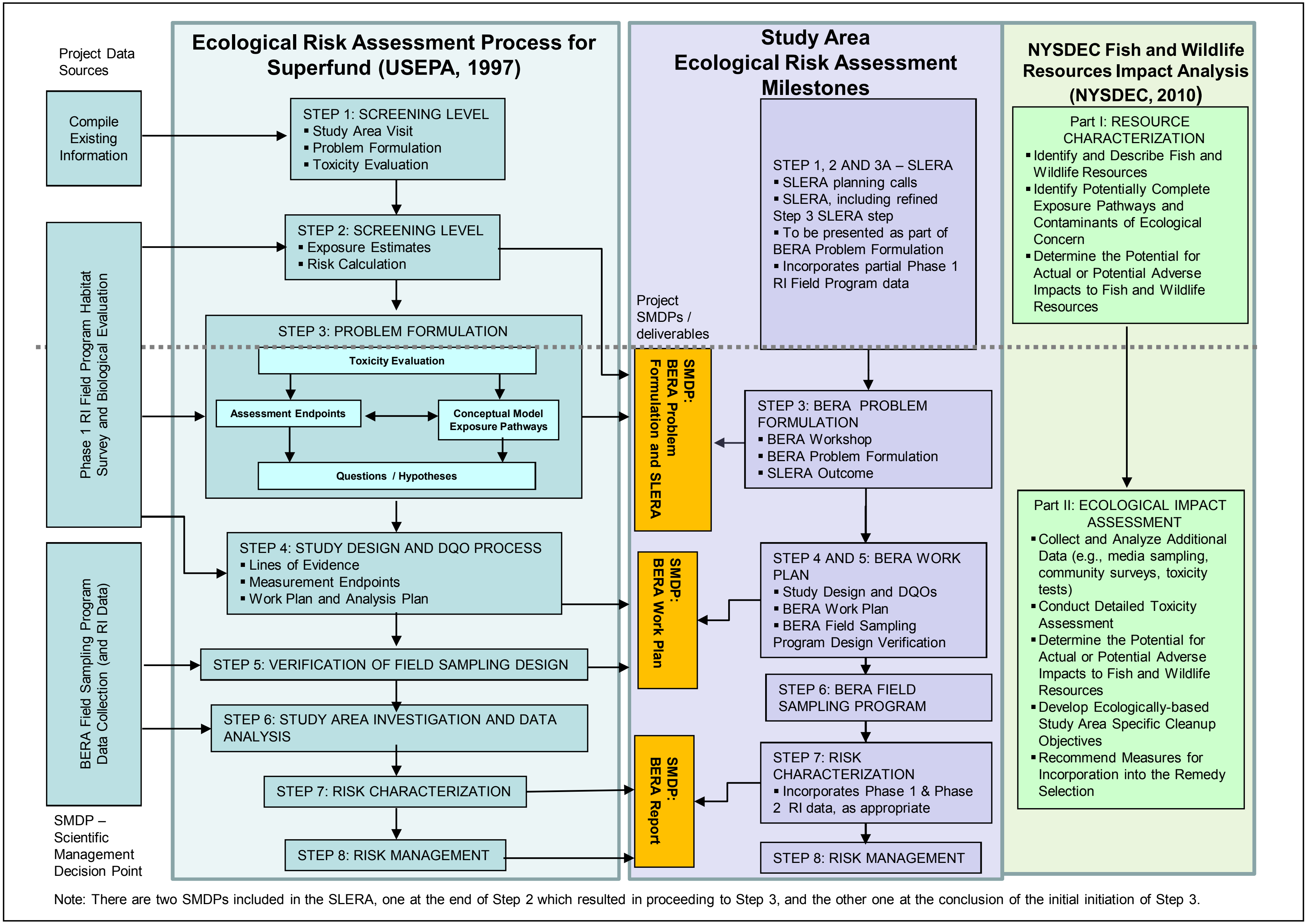

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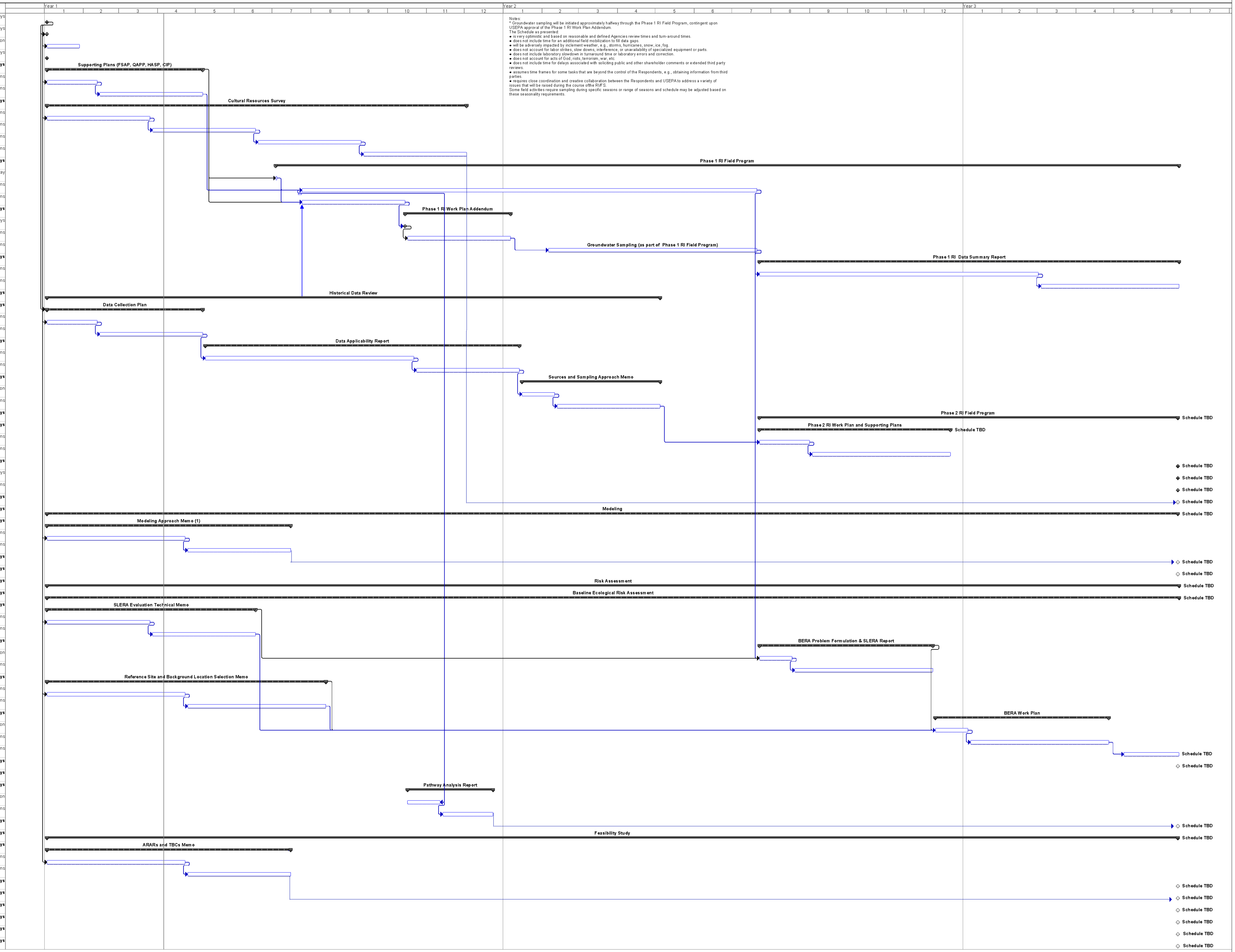
Figure 3-5
Tiered Ecological Risk Assessment Framework
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

M11039_3-5

ID	Task Name	Duration
1	Administrative Order on Consent	0 days
2	Provide access for USEPA, State, representatives to property owned by Respondents	0 days
3	Notify USEPA of contractors and consultants and submit Quality Management Plan	1 mon
4	RI/FS Work Plan	0 days
5	**Supporting Plans (FSAP, QAPP, HASP, CIP)**	**90 days**
6	Prepare and Submit Plans	1.5 mons
7	Review and Approval Periods	3 mons
8	**Cultural Resources Survey**	**240 days**
9	Prepare and Submit Stage 1A Workplan	3 mons
10	Review and Approval Periods	3 mons
11	Prepare and Submit Report	3 mons
12	Review and Approval Periods	3 mons
13	**Phase 1 RI Field Program**	**515 days**
14	Notify USEPA of Phase 1 RI Field Program Initiation	1 day
15	Phase 1 RI Field Program	13 mons
16	Phase 1 RI Interim Data Report	3 mons
17	**Phase 1 RI Work Plan Addendum**	**60 days**
18	Prepare and Submit Report	0 days
19	Review and Approval Periods	3 mons
20	Groundwater Sampling (as part of Phase 1 RI Field Program)	6 mons
21	**Phase 1 RI Data Summary Report**	**240 days**
22	Prepare and Submit Report	8 mons
23	Review and Approval Periods	4 mons
24	**Historical Data Review**	**350 days**
25	**Data Collection Plan**	**90 days**
26	Prepare and Submit Plan	1.5 mons
27	Review and Approval Periods	3 mons
28	**Data Applicability Report**	**180 days**
29	Prepare and Submit Report	6 mons
30	Review and Approval Periods	3 mons
31	**Sources and Sampling Approach Memo**	**80 days**
32	Prepare and Submit Memo	1 mon
33	Review and Approval Periods	3 mons
34	**Phase 2 RI Field Program**	**239 days**
35	**Phase 2 RI Work Plan and Supporting Plans**	**110 days**
36	Prepare and Submit Plans	1.5 mons
37	Review and Approval Periods	4 mons
38	**Phase 2 RI Field Program (TBD)**	**0 days**
39	Notify USEPA of Phase 2 Field Initiation	0 days
40	Phase 2 Field Program	0 mons
41	**RI Report (TBD)**	**0 days**
44	**Modeling**	**644 days**
45	**Modeling Approach Memo (1)**	**140 days**
46	Prepare and Submit Memo	4 mons
47	Review and Approval Periods	3 mons
48	**Preliminary Modeling Results Memo (TBD)**	**0 days**
51	**Modeling Approach Memo (2) (TBD)**	**0 days**
54	**Risk Assessment**	**645 days**
55	**Baseline Ecological Risk Assessment**	**645 days**
56	**SLERA Evaluation Technical Memo**	**120 days**
57	Prepare and Submit Memo	3 mons
58	Review and Approval Periods	3 mons
59	**BERA Problem Formulation & SLERA Report**	**100 days**
60	Prepare and Submit Report	1 mon
61	Review and Approval Periods	4 mons
62	**Reference Site and Background Location Selection Memo**	**160 days**
63	Prepare and Submit Memo	4 mons
64	Review and Approval Periods	4 mons
65	**BERA Work Plan**	**100 days**
66	Prepare and Submit Work Plan	1 mon
67	Review and Approval Periods	4 mons
68	**BERA Field Sampling Program**	1.6 mons
69	**BERA Report (TBD)**	**0 days**
72	**Human Health Risk Assessment**	**439 days**
73	**Pathway Analysis Report**	**50 days**
74	Prepare and Submit Report	1 mon
75	Review and Approval Periods	1.5 mons
76	**Human Health Risk Assessment Report (TBD)**	**0 days**
79	**Feasibility Study**	**644 days**
80	**ARARs and TBCs Memo**	**140 days**
81	Prepare and Submit Memo	4 mons
82	Review and Approval Periods	3 mons
83	**Preliminary Alternatives Memo (TBD)**	**0 days**
86	**FS Work Plan (TBD)**	**0 days**
89	**FS Field Program Work Plan (TBD)**	**0 days**
92	**FS Field Program (TBD)**	**0 days**
95	**Refined Alternatives Memo (TBD)**	**0 days**
98	**FS Report (TBD)**	**0 days**



Task | Summary | Rolled Up Milestone | Split | Project Summary | Inactive Task | Inactive Summary | Duration-only | Manual Summary | Finish-only | Deadline

Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | Progress

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Figure 3-6
Estimated Elapsed Time Schedule through Phase 1
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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4.0 Planned Phase 1 RI

This section summarizes the investigations planned as the first phase of RI field work. As identified in Section 3.2.3, the objectives of this first phase of RI field work are to:

1. Broadly characterize the physical properties and chemical nature of the sediments and surface water and the bottom conditions (debris, obstructions, etc.) along the length of the Study Area. This objective will be achieved by conducting physical surveys of the Study Area (bathymetric, side-scan sonar, and magnetic surveys), and collecting and analyzing surface sediment samples, subsurface sediment samples, and surface water samples. These data will provide information on the geometry of the bottom of Newtown Creek and its tributaries, general characterization on a broad scale (e.g., subsurface sediment samples, and surface sediment samples, will be collected spatially along the Study Area at approximately 1,000-foot intervals) of the presence and distribution of COPCs in sediments, seasonal and tidal variability in basic surface water parameters (e.g., temperature, salinity, DO, turbidity, pH, and conductivity), and COPCs in surface water. Samples will also be collected for performing supplemental analyses to aid in identifying sources of COPCs to the Study Area. These data will be used to refine the CSM, refine the list of COPCs, identify where additional sediment characterization data are needed to complete the characterization of the sediments, support hydraulic and sediment transport computer modeling, support the ERA, and support the FS.
2. Broadly characterize the hydraulic properties and flow dynamics of surface water within the Study Area. This objective will be achieved by performing monthly field surveys of water quality parameters for one year and by deploying current meters. These data will provide information on seasonal and tidal variability in basic surface water parameters (e.g., temperature, salinity, DO, turbidity, pH, and conductivity), and information on surface water flow, tidal influences on surface water flow, and the potential for sediment scour from propeller wash. This information will be used to refine the CSM, support hydraulic and sediment transport computer modeling, and support the FS.
3. Evaluate sediment depositional history and stability. This objective will be achieved using radioisotope analyses of surface and subsurface sediments and by collecting geotechnical and other physical data (e.g., Sedflume data and bathymetric, side scan sonar, and magnetic surveys). These data will provide information on areas of deposition and erosion, in addition to rates of sediment deposition, will support identification of potential sources of COPCs to Study Area sediments, and will provide information to support the sediment transport model.
4. Collect the data needed to support a SLERA and a BERA Problem Formulation to define the scope of a BERA Field Sampling Program. The SLERA will, to a large extent, use existing data for the Study Area in order not to be dependent on the Phase 1 RI timeline. However, the Phase 1 RI Field Program will include several tasks directed towards supporting the SLERA and especially the BERA Problem Formulation, including a wildlife habitat survey (including a shoreline survey), benthic community surveys, and fish community surveys. In addition, the sediment and surface water data will allow refinement of the CSM for the BERA Problem Formulation and BERA Field Sampling Program.

5. Evaluate baseline concentrations of specific airborne chemicals, measure the level of ambient concentrations that would be experienced within the breathing zone on or along the Study Area, and the contributions, if any, that are potentially attributable to the Study Area. These objectives will be achieved by performing simultaneous air measurements at selected locations on opposite sides of Newtown Creek and its tributaries as well as measurements at a height of about two and a half feet above the water surface. These data will provide concentrations of volatile constituents and PCBs that may be present upwind (background) and on and downwind of the Study Area and will facilitate an upwind-downwind analysis to estimate the contribution, if any, from the Study Area to measured air concentrations both on the banks and over the water surface.

6. Perform reconnaissance to describe the physical nature of the shoreline and to support future evaluations of discharges to the Study Area. This objective will be achieved by obtaining aerial photography of the Study Area and performing a shoreline assessment. The data obtained from the aerial photography survey will provide information on the presence of pipes, seeps, and overland flow. This information will support refinement of the CSM and provide information to help confirm the presence of known discharges to the Study Area and potentially identify other discharges to the Study Area. The reconnaissance data will be combined with the information obtained from the review of data on loadings to the Study Area, and other available data (e.g., as-built drawings, historical maps and figures) to aid in the preparation of the sources sampling approach.

7. Collect data to support the identification of sources of COPCs to the Study Area sediments and surface water. This objective will be achieved by analyzing sediment and surface water samples for a broad list of COPCs that are representative of potential sources of COPCs to the Study Area and by sampling select seeps, outfalls, overland flows, discharge pipes, and/or sediments in the areas of potentially significant surface water contributions or in other areas where sediment is visually impacted. It will also include sampling of groundwater using in-creek techniques and/or land-based monitoring wells as part of a weight-of-evidence approach to identify significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area (should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b). The information evaluated includes general chemistry data and specific data collected for this purpose, referenced to in this Work Plan as supplemental data.

8. Make observations of existing recreational uses occurring in the waterways. This objective will be achieved by observing and recording occurrences of recreational uses within the Study Area during the various Phase 1 RI field activities.

9. Perform historical research into available data on geology, hydrogeology, and potential upland sources to evaluate the impact to Study Area sediments and surface water through flux of groundwater containing COPCs. This objective will be achieved by obtaining available upland data from publicly available data sources (e.g., USGS publications) and from reports on site investigations for properties through which groundwater may potentially flow to the Study Area. After reasonable efforts are made to obtain information, the Respondents may need USEPA assistance to obtain some of these reports.

10. Collect data to support potential future FS alternatives evaluations. This objective will be achieved by collecting sediment samples and analyzing these samples for geotechnical parameters.

In summary, the Phase 1 RI Field Program will include the following activities:

- Bathymetric, side-scan sonar, and magnetic surveys
- Aerial photography survey
- Shoreline assessment
- Air monitoring
- Sediment sampling (surface sediments and subsurface sediments)
- Surface water sampling and analysis
- Current meter deployments
- Supplemental analyses
- Groundwater sampling and analysis using in-creek techniques and/or land-based monitoring wells. Should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b
- Ecological habitat survey and biological evaluation.

4.1 Sampling Rationale

The proposed Phase 1 RI sampling locations for sediments and surface water were initially selected using a non-biased systematic sampling approach with a lower density of sampling locations in the area previously sampled during the OU6 RI. A biased sampling approach for sediments was overlaid on non-biased sampling locations to collect a higher density of samples in select portions of the Study Area. These biased sampling locations were selected based on a review of the OU6 RI, USEPA ESI analytical results, locations of industrial facilities, and anticipated future dredging activities in the Study Area (e.g., maintenance dredging areas). A non-biased systematic sampling approach was also used to select a subset of the Phase 1 RI sediment samples distributed throughout the Study Area to be analyzed for additional parameters (e.g., dioxin, methyl mercury, geochronology indicators, etc.). A biased sampling approach was used to select biological data sampling locations (e.g., fish and shellfish sampling reaches and benthic macroinvertebrate community survey sample locations) to represent the variety of habitat conditions present throughout the Study Area and seasonal conditions (e.g., two events to account for higher and lower DO conditions). A non-biased systematic sampling approach was used for the ambient air sampling locations to obtain samples throughout the Study Area, with a biased approach for selection of downwind and on-water sampling locations and in areas of potential public access to obtain data on Study Area contributions to ambient air quality. Based on prevailing wind direction, air sampling locations were selected to be distributed throughout the Study Area. A summary of the sampling rationale is provided in Table 4-1. Specific rationales for each sampling location are provided in the FSAP.

A broad range of organic and inorganic analytes were selected for the Phase 1 RI Field Program investigation of sediment and surface water. The Phase 1 RI analytical program consists of constituents associated with:

- Potential historical discharges to the Study Area including discharges associated with industries known to be present along the Study Area during its 200 years of industrial use

- Expected ongoing discharges from current industries in the discharge areas to the Study Area
- Expected urban runoff and pipe or outfall discharges
- Supplemental chemical characterization of potential sources.

The analytical program has been developed to support assessment of the nature and extent of Study Area-related constituents; provide preliminary data supporting the hydrologic, sediment stability, and chemical fate and transport modeling; assess hydrodynamics; and support the ERA and HHRA. A number of sediment and water column physical and chemical data will be measured as part of the Phase 1 RI (e.g., radioisotope analysis of sediment stratigraphy, current meter deployment, salinity, total suspended solids, etc.) to understand sediment stability and depositional history, and provide data to support future modeling of Study Area hydrology and estuarine flow dynamics. The parameters and their data use objectives are provided in the Table 4-2.

Groundwater sampling will be performed in designated locations based on the results of the hydrographic (bathymetric, side scan sonar, and magnetic) and aerial surveys, the shoreline assessment, and historical research. A Phase 1 RI Work Plan Addendum will present the locations, rationale, and procedures for this sampling.

The Study Area has been divided into river miles and reaches to be used for reference in the collection of all RI/FS data. A depiction of the river miles and reaches is included as Figure 4-1.As this figure shows, nine reaches have been established for the Study Area (labeled A through I).

The following sections describe the activities that will be performed during the first phase of RI field work. For each activity, the purpose is presented along with a description of known or potential existing data, an assessment of the data gaps with respect to the CSM, and a summary of the work to be performed to close the data gaps. Figure 4-2 shows all of the sampling locations proposed during this phase of RI field work. Figures 4-3 through 4-8 show the sampling locations by media or survey type. The locations on these figures are considered conceptual in nature and may be modified based on field conditions found during sampling. The Phase 1 RI analyte lists are presented in Tables 4-3 through 4-5. Table 4-3 provides the analyte list for ambient air, Table 4-4 provides the analyte list for sediments, and Table 4-5 provides the analyte list for surface water. Specific procedures for the field work described in this section will be compiled in a FSAP, and will be submitted along with a QAPP, HASP, DMP, and a CIP as required by the AOC.

4.2 Bathymetric, Side-Scan Sonar, and Magnetic Surveys

Purpose: The purpose of the bathymetric, side-scan sonar, and magnetic surveys is to establish the bottom topography and depths for the modeling domain, locate obstacles or other impediments that may require refining of sampling locations, assist in the evaluation of sediment depositional history and stability, evaluate scour and depositional zones for the ERA, and evaluate the location and size of sediment mounds at the outfalls. This information will be used for various purposes during the RI, including revising the CSM, adjusting sample locations, performing the hydraulic analysis and associated computer modeling, and conducting the ecological assessment.

Existing Data Review: Bathymetric information is available for portions of the Study Area from the work conducted during the OU6 RI, from the draft *City-Wide Long Term CSO Control Planning Project, Newtown Creek, Waterbody/Watershed Facility Plan Report* (NYCDEP, 2007a), and from the Army Corps of Engineers 2009 survey (USACE, 2009).

Data Gap Assessment Relative to CSM: Based on a preliminary data review, there appear to be data gaps for detailed bathymetric survey data along Newtown Creek tributaries and for side-scan sonar data along the entirety of Newtown Creek and its tributaries. In order to continue to refine the CSM, bathymetric, side-scan sonar, and magnetic data will be required along the entirety of the Study Area.

Summary of Work to be Performed to Close Data Gaps: The data gaps will be addressed through obtaining and evaluating existing data and supplementing existing data with new bathymetric, side-scan sonar, and magnetic surveys, as needed. The Historical Data Review, discussed in Section 3.2.1 of this document, will include a search for the raw bathymetric data presented in the NYCDEP report cited above, as well as for any other sources of bathymetric, side-scan sonar, and magnetic data. For areas of the Study Area that have not been adequately surveyed, an integrated bathymetric survey and side-scan sonar survey will be performed. Where possible, the results of previous surveys conducted for OU6 and the Study Area will be incorporated with these surveys.

The bathymetric survey will be completed in general conformance with a USACE Class I survey (EM 1110-2-1003, 2002), with the reported elevation datum in North American Vertical Datum (NAVD) 88, and horizontal datum in North American Datum of 1983 (NAD83). The survey will be performed at a horizontal accuracy of 1 foot (30 centimeters [cm]) and a vertical accuracy of 0.1 foot (3 cm). Side-scan sonar data will be recorded digitally using an Analog Control Interface (ACI) board and Chesapeake Technology's SonarWiz acquisition software, or similar. Precise measurements of towfish layback (offset from Differential Global Positioning System [DGPS] antenna) will be recorded during the survey, allowing preparation of an accurately georeferenced sonar mosaic and other imagery in real time. Conceptually, the integrated bathymetric survey and side-scan sonar survey would be conducted through simultaneous deployment of two survey-grade precision echo sounders in order to increase data density, productivity, and usability. Longitudinal (i.e., shore-parallel) transects spaced 20 feet apart would be occupied throughout most of the survey area. These longitudinal transects would be augmented by shore-perpendicular “cross-tie” transects spaced approximately 200 feet apart. The magnetic survey will be conducted using a system capable of at least a 1 Hz digital output and 0.2 nT resolution. The magnetometer altitude will not exceed 5 meters (m) off the bottom during data collection. The location, magnitude, and signature characteristics of all identified anomalies will be recorded. Conceptually the magnetic survey will be conducted parallel to the shore with 2 to 3 transects dependent on the width of the area of Newtown Creek or tributary. Details on the survey lines and locations will be provided in the FSAP.

Because the sediments in this system are enriched in organic matter and, as a result, contain gas bubbles, sub-bottom profiling using sonar will not be part of this survey. The gas content in sediments reduces the effectiveness of sub-bottom profiling by prohibiting acoustic signal penetration, absorbing or scattering most of the acoustic energy back to the surface (USEPA, 1994).

4.3 Aerial Photography Survey and Shoreline Assessment

Purpose: The goal of the aerial photography survey and shoreline assessment is to document the physical characteristics of the Study Area shoreline. They will also support the identification of upland sources of loadings to the Study Area; evaluate the presence, absence, and general condition of bulkheads along the Study Area; identify access points to the Study Area from the shoreline; and be used in the habitat survey and biological evaluation portion of the ERA process to identify potential bird and mammal habitat at or near the shoreline (see Section 4.10 for additional detail on the habitat identification effort) and the presence of wetlands to support the BERA Problem Formulation.

Existing Data Review: There are publicly available historical and current aerial photographs of the Study Area. The quality and usefulness of these photographs has not yet been assessed. Comprehensive shoreline assessments have not been identified.

Data Gap Assessment Relative to CSM: The extent of the current data gaps relative to the goals for the aerial photography survey is not yet known. In order to best develop the CSM, high resolution, low-angle oblique aerial photography of the entirety of the Study Area at low tidal elevations may be necessary. The shoreline survey represents a data gap, as well.

Summary of Work to be Performed to Close Data Gaps: The data gaps will be addressed through obtaining and evaluating existing photographs and supplementing existing data with a low angle aerial survey, as necessary, and by performing a shoreline assessment. The Historical Data Review, discussed in Section 3.2.1 of this Work Plan, will include a search for high resolution, low-angle oblique aerial photographs of the entirety of the Study Area at low tidal elevation. If suitable photographs are not identified or available, an aerial survey of the Study Area will be performed.

4.3.1 Aerial Photography Survey

The aerial photography survey will be conducted by collecting high resolution, low-angle oblique aerial photographs of the entirety of the Study Area at low tidal elevations. The digital photographs will then be reviewed and used to develop maps presenting shoreline observations (e.g., presence of pipes or outfalls, presence and absence of bulkheads, the presence of habitat [Section 4.10.1], and presence and size of public access points, etc). Currently available aerial photographs will be examined to identify potential bird and mammal habitat at or near the shoreline for the habitat survey.

4.3.2 Shoreline Assessment

The results of the evaluation of the aerial survey will be verified using a boat-based shoreline assessment. The Phase 1 RI Field Program includes one assessment, but additional surveys may be required under different conditions (e.g., during dry and wet weather conditions). The shoreline assessment will be conducted at low tide, and shoreline observations will be located using a DGPS. Observations made during the shoreline assessment will be added to an aerial survey observation map. Observations made during the shoreline assessment may include, but are not limited to, the following: flowing water out of pipes or overland sheet flow, intertidal shoreline seeps or hydrocarbon-like sheens, extent and types of bulkheads and shoreline substrate (bulkhead, riprap, mudflat, etc.), condition of bulkheads (e.g., cracks, seeps), eroding banks, vegetation, presence of wetlands, and the nature and condition of access points. The survey will also include a confirmation of the presence/absence of over-water features shown on the aerial survey (e.g., piers, pilings). For over-water pier structures, the type, diameter, and construction of each pier will be noted. Public access points and the nature and condition of these access points will also be recorded. In addition, observations of the presence and types of floatables will be recorded.

The shoreline assessment will also be used to provide information for the completion of the BERA Problem Formulation and BERA Work Plan.

Field notes of observations and locations will be maintained as the shoreline assessment is performed and during other field activities. In addition, photographs will be taken to document observations.

4.4 Air Monitoring

Purpose: The objectives of the air monitoring program are threefold: to evaluate baseline concentrations of specific airborne chemicals, to measure the level of ambient concentrations that would be experienced within the breathing zone on or along the Study Area, and to estimate the portion of the measured concentrations that are potentially attributable to the Study Area. Although "a release of hazardous substances to air is not observed or suspected" (Weston Solutions, 2009), air sampling will also be conducted as appropriate during other field efforts to characterize and facilitate the control of emissions arising from RI activities and to insure the protection of both personnel performing field sampling and sample processing, and the public. A discussion of the air monitoring activities is provided below.

Existing Data Review: Several potential data sources for air quality information have been identified. These data include regional and Study Area-specific studies. NYSDEC maintains the New York State Volatile Organic Compound Ambient Monitoring Network, which monitors VOCs across the State and includes monitoring stations in the general area of the Study Area (http://www.dec.ny.gov/chemical /8406.htmlin). NYSDEC has also performed ambient air monitoring in the Greenpoint area (http://www.dec.ny.gov/chemical/38605.html). Data are available from these air monitoring programs, but some of the recent data were not available at the time this Work Plan was written.

Data Gap Assessment Relative to CSM: Data gaps exist for ambient air monitoring information outside of the Greenpoint area.

Summary of Work to be Performed to Close Data Gaps: The data gaps will be addressed through obtaining and evaluating existing air data as part of the Historical Data Review, discussed in Section 3.2.1 of this Work Plan, and by performing additional ambient air monitoring.

4.4.1 Ambient Air Monitoring

To meet the air monitoring objectives, simultaneous air measurements will be made at selected locations on opposite sides of Newtown Creek and its tributaries as well as measurements at a height of about two and a half feet above the water surface (see Figure 4-3). These locations are conceptual and may be adjusted in consideration of field conditions, the ability to obtain access, and if historical research completed at the time of sampling indicates the presence of a potential significant air source. Sampling will be performed for VOCs using SUMMA canisters and for PCBs using Polyurethane Foam (PUF) samplers. The monitoring program will also include continuous meteorological measurements at a single nearby location to be identified at the time of sampling when property access is obtained.

While the results of the concentration measurements directly address the first two objectives (to evaluate baseline concentrations of specific airborne chemicals and to measure the level of ambient concentrations that would be experienced within the breathing zone on or along the Study Area), additional examination and analysis of the concentration measurements and meteorological data will be required to achieve the third objective (estimating the portion of the measured concentrations that are likely to be attributable to the Study Area). Past measurements of constituent concentrations in surface water indicate that the concentrations of volatile constituents are very low, such that water concentrations are unlikely to be sufficient to result in appreciable air emissions. However, observations of gas bubbles sporadically rising to the water surface indicate that airborne emissions from the Study Area cannot be readily discounted. Air concentration measurements taken continuously over a period of 24 hours will reflect these periodic releases.

The planned monitoring will be conducted when the wind direction is generally perpendicular to Newtown Creek and its tributaries which will facilitate an upwind-downwind assessment. Monitors located on either bank will be paired for this analysis. In order for an upwind-downwind analysis to be viable, the wind direction, as measured by a nearby meteorological station, needs to be sufficiently persistent within a range of wind directions that cross the Study Area over the 24-hour period. If a persistent wind direction is not established, the need for additional sampling will be evaluated. The location of the nearby meteorological station will be documented.

The first step in reviewing the data will be to apply an upwind-downwind analysis to estimate the contribution from the Study Area to measured air concentrations both on the bank and over the water surface. The analysis will compare upwind and downwind concentrations to see if a substantial increase in concentrations of total VOCs, total PCBs, or individual detected analytes is evident. If the data suggest that concentrations either over the water surface or at the downwind locations are not substantially greater than the concentrations measured at the upwind locations, then this will be an indication that the Study Area is not an important contributor to the measured concentrations and no further analysis is warranted. If measured downwind PCB and/or VOC concentrations are statistically greater than measured upwind concentrations, then activities taking place within the Study Area, or the Study Area itself, may be potential sources of emissions. If so, the upwind and downwind data will be used to estimate the magnitude and variability of this contribution along various reaches of the Study Area. However, the upwind-downwind analysis cannot determine if the Study Area itself or activities taking place within the Study Area are the chief contributors. The appropriate types of analyses used to evaluate these data will be selected after review of the data and will include consideration of the number of nondetected constituents, how the data are distributed (normal, log normal, not normally distributed), etc.

If further quantification of the contribution of the Study Area and Study Area-related activities to the measured concentrations is warranted based on the upwind-downwind analysis, an analysis of the VOC speciation will be conducted. The analysis will make use of the chemical profiles (ratio of individually detected chemical species concentrations based on the analytical results) of the upwind and downwind samples. For example, if the concentrations of chemical species are systematically greater at the downwind (bank and over water) monitor than at the upwind monitor, the difference between the downwind and upwind concentration for each species will be estimated and the ratio of the incremental concentrations will provide a chemical "signature" of the Study Area-related emissions. A statistical analysis (e.g., USEPA's chemical mass balance, or CMB, type of approach) will be applied to estimate the fraction of measured overwater and downwind concentrations that may be attributable to the Study Area. The CMB approach applies regression techniques to fit the chemical profiles of the monitoring data to chemical signatures of known or suspected sources. In carrying out the CMB analysis, the measured chemical signature of background concentrations from NYSDEC Air Toxics Program monitors in the community, which are likely to sufficiently distant from the Study Area so as not to be materially affected by the Study Area emissions, will be reviewed as well as the chemical signature indicative of ship emissions (i.e., VOC emissions from exhaust from passing ships that might impact the air sampling results).

Following collection and analysis of air monitoring data, a data gap evaluation will be performed to confirm if the three air monitoring objectives have been achieved. If these objectives have not been achieved, the Respondents will discuss this data gap with USEPA.

In addition, following data collection and analysis, the Respondents and USEPA will discuss if the air monitoring data will be incorporated into the HHRA and if it is, how it will be incorporated, either qualitatively or quantitatively.

Volatile organic compounds have been selected as the principal constituents of interest for the ambient air evaluation because they provide the greatest potential for cross-media migration (i.e., sediment to ambient air). Ambient air samples will also be analyzed for PCBs. The air monitoring analyte list is presented in Table 4-3. The ambient air samples for VOC analysis will be collected in pre-cleaned SUMMA canisters in accordance with the procedures detailed in USEPA *Method TO-15, Determination of Volatile Organic Compounds in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry* (USEPA, 1999a). Ambient air samples for PCB analysis will be collected in accordance with the procedures detailed in *USEPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air Second Edition Compendium Method TO-10A Determination Of Pesticides And Polychlorinated Biphenyls In Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed By Gas Chromatographic/Multi-Detector Detection (GC/MD)* (USEPA, 1999b).

Field notes will be maintained as the ambient air monitoring is performed. In addition, photographs will be taken of the air monitoring locations and any significant observations made during the sampling. Given that there may also be a contribution from air emission sources due to shipping activity and powered watercraft, the monitoring program will include a log of such activities.

4.4.2 RI Air Sampling During Sampling and Processing Activities

Real time air monitoring will be conducted, if necessary, during sample collection and processing activities. Sampling procedures will be detailed in the HASP. Field notes will be maintained of the air monitoring results during intrusive activities.

4.5 Sediment Sampling

Purpose: Sediment sampling will be conducted along the length of the Study Area and its tributaries to meet the following objectives:

1. Characterize the physical properties and chemical nature of sediments along the length of the Study Area
2. Establish a list of COCs in Study Area sediments based on their potential contribution to risk to the environment
3. Determine and evaluate the constituents within the BAZ of surface sediments in the Study Area
4. Provide a direct assessment of the benthic macroinvertebrate community during periods of low and high DO in the surface water in the Study Area
5. Characterize the vertical distribution and depositional time history of constituents within the sediment profile, as well as the potential for future natural recovery, using bulk sediment chemistry, radioisotope analyses (lead-210 [^{210}Pb], cesium-137 [^{137}Cs], and beryllium-7 [^{7}Be][14]), grain size, TOC, and percent moisture distribution of subsurface sediment samples and related surface sediment samples
6. Collect geotechnical and other physical data to support the evaluation of potential remedial alternatives

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[14] ^{7}Be radioisotope analysis will be performed on surface sediment samples only.

7. Collect data (e.g., Sedflume data) that will be used to evaluate sediment stability and in the development of the sediment transport model.

The Study Area has been dredged along its entire length at some time during its history. In consideration of this history, for the purpose of this RI/FS, sediments are defined as the deposits that occur above the native materials. As described below, Phase 1 RI sampling will include surface sediment samples, subsurface sediment samples, and samples of the native material depending upon depth. Based on the Phase 1 RI results and the data needs emerging from the BERA Problem Formulation, additional surface sediment sampling, along with the use of other chemical measures (e.g., pore water sampling and/or simultaneously extractable metals/acid-volatile sulfide [SEM/AVS] sampling), may be performed during the BERA Field Sampling Program. These samples will be collected to assess the bioavailability of constituents in Study Area surface sediments.

Existing Data Review: Several sediment studies have been performed in the Study Area. Initial investigations of sediment quality conditions in the Study Area were conducted between 1985 and 2000. A 1993 investigation of the Newtown Creek sediments next to the Laurel Hill facility showed that the sediments contained concentrations of organic compounds (primarily PAHs) and metals at levels above NYSDEC sediment screening criteria. Sediment analytes included metals, PAHs, PCBs, SVOCs, TPH, pesticides, dioxins and furans, VOCs, total solids, TOC, and grain size.

In 1990 and 2000, NYCDEP and NYSDEC collected sediment samples from locations throughout the Study Area. A wide range of metals, including arsenic, cadmium, chromium, copper, and mercury, were detected in surface (0 to 0.33 feet [0 to 10 cm] below the mudline) sediment samples throughout this region at concentrations that exceed NOAA effects range screening levels for potential benthic toxicity.

As part of the investigations of sediments in the Study Area during the OU6 RI (2004 and 2005), surface and subsurface sediment samples were collected for a variety of analyses including bulk chemistry, bioavailability, and geochronology. These analyses showed the presence of a wide range of metals, hydrocarbons (including PAHs), PCBs, pesticides, plasticizers (e.g., phthalates), and other constituents.

Based on the results of the 2009 ESI, USEPA concluded that metals, VOCs, SVOCs including PAHs, and PCBs are present in the sediments at concentrations above the background concentrations established for the ESI. The data showed that constituents above ESI background concentrations were not confined to any particular area, but were present throughout the Study Area, from the navigable portion of English Kills to the mouth of Newtown Creek. Additionally, the ESI concluded that the variety and distribution of the detected constituents suggested a variety of sources.

The NYCDEP predredging sediment sampling in 2009 showed the presence metals, PAHs, PCBs, dioxins, pesticides, and VOCs.

Data Gap Assessment Relative to CSM: A comprehensive analysis of sediment chemistry, geotechnical properties, stability, and transport has not been conducted of the entire Study Area. Each of these components is necessary to complete the CSM.

Summary of Work to be Performed to Close Data Gaps: The data gaps will be addressed through obtaining and evaluating existing data as part of the Historical Data Review (Section 3.2.1) and by conducting additional sediment sampling and related analyses.

4.5.1 Surface Sediment Sampling

Surface sediment samples will be collected using an Eckman sampler, modified Eckman sampler, modified Van Veen sampler, a Petit Ponar sampler, box corer, sediment core, or similar sampling device as appropriate for the type of sediment sample being collected. The sampling technique will be selected based on the field conditions to effectively obtain a 0 to 0.5 ft (0 to 15 cm) sample. Surface sediment samples will be collected for two purposes: (1) to characterize the chemical nature of the surface sediments, and (2) to support the benthic macroinvertebrate community survey.

One round of surface sediment samples will be collected to characterize the chemical nature of the surface sediments. Two rounds of sediment samples will be collected—one in the late summer to reflect low DO levels, and one in the spring to reflect higher DO levels—to support the benthic macroinvertebrate community survey. During the period of high DO, sediment samples will be collected for the benthic macroinvertebrate community survey (Section 4.10.2) and chemical analysis. During the period of low DO, sediment samples will be collected for general chemical parameters that are key determinants of benthic community structure (i.e., grain size, TOC, ammonia, and sulfides). In addition, samples will be evaluated for iron and manganese, which are highly dependent on redox conditions in the sediment. Sediment samples for other chemical analytes will be archived for potential later analysis, as described in Section 4.10.2.

Surface sediments will be collected from 0 to 0.5 feet (0 to 15 cm) below the mudline. The surface mudline is defined as the interface between bulk sediments and overlying surface water. This sampling depth is consistent with the typical depth for the BAZ in the New York-New Jersey Harbor tidal areas. It also exceeds the typical depth of the BAZ (0 to 10 cm) sampled in coastal sediments (USEPA, 2001a; USEPA, 2003), the burrowing depth of the benthic organisms observed in the Study Area during sampling conducted by NYCDEP (NYCDEP, 2007a), and the burrowing depth of benthic organisms observed in the Study Area during sampling conducted at OU6 (Anchor, 2007a).

During the two surface sediment sampling rounds associated with the benthic macroinvertebrate community survey, surface water profiling, and surface water sampling (Section 4.6) will be conducted at each sample location.

Surface sediment samples will be collected during the Phase 1 RI Field Program at the locations shown on Figure 4-4. The sample locations shown on this figure are approximate and may be modified based on field conditions. These sample locations have been selected using two criteria, as follows. One set of surface sediment sample locations was selected for the benthic macroinvertebrate community survey. These sample locations have been selected to be spatially distributed throughout the Study Area, and are intended to allow sampling of representative portions of the Study Area. These sample locations were selected following a review of CSO outfall locations and previous sampling locations (e.g., sampling conducted for the OU6 RI, the USEPA ESI, and the NYCDEP maintenance dredging) to reflect the variety of habitat conditions throughout the main portion of Newtown Creek and in each of the tributaries. A second set of surface sediment samples are either co-located with the subsurface sediment sample locations or were identified to complete the spatial distribution of surface sediment samples. These locations will be sampled to provide information on the chemical nature of the surface sediments. In general, the core locations are located to provide spatial coverage of the Study Area and are spaced at approximately 1,000-foot intervals. Based on the results of this sampling, additional surface sediment samples may be collected during subsequent field programs.

The surface sediment samples will be analyzed for the constituents listed in Table 4-4, as summarized below. This table also shows the standards and analytical methods for each analysis.

1. Chemical - All Samples: TAL metals plus tin, TCL VOCs plus tentatively identified compounds (TICs), TCL SVOCs plus TICs and 1,4-dioxane, the NOAA list organochlorine pesticides (by gas chromatograph/electron capture detector [GC/ECD]), TCL PCBs Aroclors, chlorinated herbicides, PAHs and alkyl PAHs, n-alkanes and isoprenoids including diesel range organics (DRO) and TPH ranges, TOC, soot carbon, ammonia, sulfide, total nitrogen, total phosphorus, cyanide, grain size, bulk density, pH, and percent solids.
2. Chemical – Select Samples: Additional samples from each location will be frozen at -20 degrees Celsius (°C) and archived. Of these archived surface sediment samples, 25% will be selected for analysis for NOAA list organochlorine pesticides (by high resolution mass spectrometer [HRMS]), TCL PCBs (by HRMS as congeners), TCL dioxins and furans, and methyl mercury. These samples will be selected to be spatially distributed throughout the Study Area and among varying sediment types (e.g., gravel, sand, silt, etc.). Tentative sample locations for these analyses are shown on Figure 4-5. Refinement of these locations may be made based on the bathymetric survey and the types of sediments observed.
3. Benthic Samples: At select locations, surface sediment samples will also be collected for the benthic macroinvertebrate community survey during low and high DO periods (Section 4.10.2). These locations are shown on Figure 4-8. During the high DO benthic sampling event, sediment samples will be collected for chemical analysis, as described in item 1 above. During the low DO benthic sampling event, sediment samples will be collected for general chemical parameters that are key determinants of benthic community structure (i.e., grain size, TOC, ammonia, and sulfides). In addition, samples will be evaluated for iron and manganese, which are highly dependent on redox conditions in the sediment. Sediment samples for other chemical analytes will be archived for potential later analysis, as described in Section 4.10.2.
4. Geochronology Samples: Sediment samples for geochronology measurements will be collected at select Phase 1 RI Field Program locations described below and shown on Figure 4-6. In addition, for the remaining Phase 1 RI Field Program surface sediment sample locations, a sediment sample or samples will be archived at -20°C for potential future analysis. Sufficient volume will be archived for selected chemical analyses.
5. Geotechnical Samples: Twenty-five percent of samples will also be analyzed for geotechnical properties not already analyzed for as part of the standard parameter list above (i.e., Atterberg limits, shear stress, and specific gravity).
6. Supplemental Data Samples: In addition to the sampling described above, additional surface sediment samples will be collected and frozen at -20°C for potential future supplemental analyses and coincident chemical analysis, as needed (Section 4.8). Potential supplemental analyses may include, but are not limited to, triterpanes and steranes.

The following table summarizes the number of surface samples.

Group of Samples	Portion of Field Samples to be Analyzed	Number of Field Samples	Targeted Number of QA/QC Samples for Each Analysis
Chemical – All	100 percent	127	13
Chemical – Select	25 percent	32	3
Benthic - High DO Event	100 percent	Included in Chemical - All	Included in Chemical - All
Benthic - Low DO Event*	100 percent Archived samples	34 TBD	3 TBD
Geochronology	17 samples	17	2
Geotechnical	25 percent	32	3
Supplemental Data	To be determined (TBD) (from archived samples)	TBD	TBD

* samples will be analyzed for general chemical parameters that are key determinants of benthic community structure; samples will be archived for potential additional analyses.

The freezing of samples (for later analysis), as described above, is a standard practice accepted by USEPA and follows standard analytical methods.

Sample logs and field notes of all surface sediment samples will be maintained as samples are collected. During sample collection, samples will be described using the United Soil Classification System (USCS) system and the substrate type will be described along with visual evidence of impacts (e.g., hydrocarbon-like sheens), odors, photoionization detector (PID) readings, and date and time of sample collection. Sample logs will include reported elevation datum in NAVD88 and horizontal datum in NAD83. The survey will be performed at a horizontal accuracy of 1 foot (30 cm) and a vertical accuracy of 0.1 foot (3 cm), and location by DGPS. In addition, photographs will be taken of each sample.

4.5.2 Subsurface Sediment Sampling

Subsurface sediment samples will be collected using vibracore methods to achieve contact with the native (pre-navigation channel) soil unit or to a depth of approximately 20 feet (610 cm) below the mudline, whichever comes first. Sediment samples will be collected from each core at the following seven intervals below the mudline: (1) 0.5 to 2 feet (15 to 61 cm); (2) 2 to 3.25 feet (61 to 99 cm); (3) 3.25 to 6.50 feet (99 to 198 cm); (4) 6.50 to 9.75 feet (198 to 297 cm); (5) 9.75 to 13 feet (297 to 396 cm); (6) 13 feet (396 cm) to the top of the native soil unit (this sample interval will terminate at the contact with the native soil unit); and (7) the native soil unit. Where the native soil unit is encountered at a shallower depth, fewer samples will be collected (e.g., if the native materials are encountered at 240 cm below the mudline, a sediment sample would be collected from the 200 to 240 cm interval, followed by a sample of the native materials. These sampling intervals will be followed if the observed stratigraphy appears homogenous with depth. The sampling intervals may be modified around sediment contacts if variations in sediments are observed. If native soil cannot be identified or cannot be reached, the sampling intervals identified above will be used. An additional sample may be collected below 13 feet if the depth to native material exceeds 17 feet. For the areas where there is no non-native soft sediment (e.g., dredge or scour areas), cores will be advanced a minimum of 10 feet below the mudline, if achievable by the vibracore drilling method. It is noted that if compact clay, bedrock, boulders, debris, or other obstructions are encountered at depths of less than 10 feet, the vibracore drilling method will not be capable of advancing to this depth.

Surface sediment samples will be collected coincident to each subsurface sediment sample location (Section 4.5.1). For that reason, the 0 to 0.5-ft interval will not be collected from the core.

The proposed Phase 1 RI Field Program sediment core sampling locations are shown on Figure 4-4. The sample locations shown on this figure are approximate and may be modified based on field conditions. As described above, these sediment core locations are located to provide spatial coverage of the Study Area and core transects are spaced at approximately 1,000-foot intervals. Additional sediment samples have been located at a higher density in select portions of the Study Area, including at point source discharge areas. A lesser density of sample locations was selected for locations sampled during the OU6 RI. Most transects include three core locations, one on each side of and outside of the dredged channel and one within the dredged channel. This results in samples within a transect being located approximately 100 feet apart. In narrower portions of the Study Area fewer samples are collected or the transect orientation is modified from perpendicular to parallel to the length of Newtown Creek or its tributary to allow spacing of sample locations. More detailed rationale for sample locations is provided in Table 4-1. Based on the results of this sampling, additional subsurface sediment samples may be collected during subsequent field programs.

The subsurface sediment samples will be analyzed for the constituents listed in Table 4-4, as summarized below. This table also shows the standards and analytical methods for each analysis.

1. Chemical – All Samples: TAL metals plus tin, TCL SVOCs plus TICs, the NOAA list organochlorine pesticides (by GC/ECD), TCL PCBs (Aroclors), chlorinated herbicides, PAHs and alkyl PAHs, n-alkanes and isoprenoids including DRO and TPH ranges, TOC, soot carbon, ammonia, sulfide, total nitrogen, total phosphorus, cyanide, grain size, bulk density, pH, and percent solids.
2. Chemical – Select Samples (VOCs): A minimum of 25% of the samples collected will be selected for analysis for TCL VOCs plus TICs based on field screening using a PID. Samples will be selected for VOC analysis from zones where PID readings above background are observed as well as zones above and below the zones with readings above background PID readings.
3. Chemical Select Samples (Others): Additional samples from each location will be frozen at -20°C and archived. Of these archived subsurface sediment samples, a minimum of 25% will be selected for analysis for organochlorine pesticides (by HRMS), TCL PCBs (by HRMS as congeners), TCL dioxins and furans, and methyl mercury. These samples will be selected to be spatially distributed throughout the Study Area and among varying sediment types (e.g., gravel, sand, silt, etc.) and based on the chemical analytical results for the other constituents and analytical methods. Tentative sample locations for these analyses are shown on Figure 4-5. Refinement of these locations may be made based on the bathymetric survey and the types of sediments observed.
4. Geochronology Samples: Sediment cores for geochronology measurements will be collected at select Phase 1 RI Field Program locations described below and shown on Figure 4-6. In addition, for the remaining Phase 1 RI Field Program subsurface sediment

core sample locations, a sediment core or cores will be archived at -20°C for potential future analysis. Sufficient volume will be archived for selected chemical analyses.

5. Geotechnical Samples: Ten percent of samples will also be analyzed for geotechnical properties not already analyzed as part of the standard parameter list (i.e., Atterberg limits, shear stress, and specific gravity). These samples will be selected to represent the various sediment types (gravel, sand, silt, etc.) if present in the Study Area (Section 4.5.2.1).
6. Supplemental Data Samples: In addition to the sampling described above, additional subsurface sediment samples will be collected and frozen at -20°C for potential future supplemental analyses and coincident chemical analysis, as needed (Section 4.8). Potential supplemental analyses may include, but are not limited to, triterpanes and steranes.

The following table summarizes the number of core location and subsurface sediment samples.

Parameters	Portion of Field Samples to be Analyzed	Number of Field Samples*	Targeted Number of QA/QC Samples for Each Analysis
Chemical – All	100 percent (95 core locations, up to 7 intervals)	665	67
Chemical – Select (VOCs and Others)	25 percent of core locations (24 cores, up to 7 intervals)	168	17
Geochronology	17 core locations at up to 7 intervals (additional samples to be archived)	119	12
Geotechnical	10 percent (10 core locations, up to 7 intervals)	70	7
Supplemental Data	To be determined (from archived samples)	TBD	TBD

*Up to 7 intervals will be collected at 95 locations; number of samples may vary based on depth of core.

The freezing of samples (for later analysis), as described above, is a standard practice accepted by USEPA and follows standard analytical methods.

Core logs and field notes of all sediment cores will be maintained as samples are collected and processed. During sample collection and processing, samples will be described using the USCS system and the substrate type will be described along with visual evidence of impacts (e.g., hydrocarbon-like sheens), odors, date and time of sample collection, length and depth of each sediment type (visual determination), and a qualitative notation of coring resistance. Core logs will include reported elevation datum in NAVD88 and horizontal datum in NAD83. The survey will be performed at a horizontal accuracy of 1 foot (30 cm) and a vertical accuracy of 0.1 foot (3 cm), location by DGPS. In addition, photographs will be taken of each core during processing.

4.5.2.1 Geotechnical Properties

Representative sediment samples (e.g., samples of each type of sediment type [gravel, sand, silt, etc.]) will be selected for analysis of geotechnical properties (i.e., Atterberg limits, shear stress, and specific gravity). These analyses will support the sediment stability and transport analysis (Section 4.5.2.2) and the FS. During subsurface core processing, sediment samples will be described in accordance with standard geotechnical engineering classifications (e.g., USCS, Burmeister, etc.). Representative sediment samples spatially distributed throughout the Study Area will be collected for analysis. These samples will be collected to represent the various sediment types (gravel, sand, silt, etc.) if present in the Study Area, various depositional environments, and various constituents and constituent distributions.

4.5.2.2 Sediment Stability and Transport

Consistent with recent guidance on sediment remediation developed by USEPA, sediment stability, including the potential for sediment scour and redeposition under both existing and remedial conditions, will be evaluated. Data to be evaluated in the sediment stability analysis will include flow velocities, bathymetry data, sediment physical and chemical characteristics, geotechnical properties, and Sedflume data. A numerical model will be applied to evaluate sediment stability under a range of flow conditions, and data will be collected to support this model. Sediment deposition and/or remobilization will also be evaluated using radioisotope measurements of sediment samples. Each of these elements is described below.

Sediment Geochronology Measurements

During sediment sampling, sedimentation rate and vertical mixing can be determined using the radioisotope abundances for ^{7}Be, ^{137}Cs, and ^{210}Pb. Overall net sedimentation rates are calculated using profiles of ^{137}Cs and ^{210}Pb activity with depth. Cesium-137 was deposited in fallout from atmospheric testing of nuclear weapons, and profiles of ^{137}Cs in sediments indicate its deposition history. The first appearance of ^{137}Cs in sediments generally coincides with 1950, and ^{137}Cs reaches a maximum in 1963. A secondary peak is sometimes observed at the year 1959. By measuring the profile of ^{137}Cs abundance in sediments, these dates can be determined and associated with sediment depth. Evaluation of sedimentation rates will also consider the level of bioturbation and available dredging records for the Study Area.

In contrast, ^{210}Pb is a naturally-occurring radioisotope deposited in sediments at a constant rate due to soil erosion and decay of radon-222 gas in the atmosphere. Since it is deposited at a constant rate and decays at a constant rate (half-life of 22.26 years), ^{210}Pb abundance has a decreasing trend with sediment depth. A constant sedimentation rate (cm/year) is calculated from the slope of the natural logarithm of excess ^{210}Pb activity below the active mixed layer.

To improve the resolution for these analyses, relatively thin sections of sediment cores will be collected (i.e., generally 0.07-foot [2-cm] segments). This section thickness was selected to represent the low end of the range of sediment deposition observed during the OU6 RI and still provide sufficient volume of sample for analysis. Following the radioisotope analysis, select samples and/or composited samples will be submitted for analysis of grain size, TOC, and percent moisture to aid data evaluation. This sampling approach allows for accurate correlation of sediment dating to specific events (e.g., the 1963 maximum in ^{137}Cs deposition). Sediment core segments 0.07-foot (2-cm) thick will be analyzed throughout the length of the core. Vertical sediment mixing is measured using ^{7}Be abundance. Beryillium-7 is naturally formed in the atmosphere by the interaction of cosmic rays with atmospheric gases and is deposited via precipitation at a relatively constant rate. Since ^{7}Be has a relatively short half-life (53 days), it is only detected in recently deposited or recently mixed sediments. A subsample of the uppermost layer of the surface sediment will be collected (1 to 2 cm).

Sediment samples for geochronology measurements will be collected at Phase 1 RI Field Program locations shown on Figure 4-6. These cores are spatially located along the Study Area. These locations may be adjusted based on the results of the bathymetric survey and historical research. At each of these locations, samples will be collected as described above and analyzed for ^{137}Cs, ^{210}Pb, grain size, TOC, and percent moisture. At each of these locations, a second sediment core will collected and archived at -20°C for potential future chemical analysis, which may be performed to correlate COPC concentrations with sediment age. In addition, at each of these sediment core locations, a surface sediment sample will be collected and submitted for analysis of ^{7}Be. Since ^{7}Be has a relatively short half-life, ^{7}Be samples will not be archived. At Phase 1 RI Field Program sediment core sample locations other than those identified in Figure 4-6, a sediment core or cores will be collected and archived at -20°C. Sufficient volume will be archived for both radioisotope analysis and chemical analyses. Locations selected for radioisotope analysis may be adjusted based on the results of the bathymetric survey.

Sedflume

Sedflume analyses will be used to determine critical shear strength of Study Area sediments. Five core locations for Sedflume analysis will be co-located with the current meter deployments described in the following section and as shown on Figure 4-7. These initial locations, distributed throughout the Study Area, were selected to be co-located with the current meter deployments in order to evaluate these data sets together. The Sedflume data will be used in the development of the sediment transport model and, in conjunction with water current information, used to assess the potential for sediment resuspension or scouring.

Current Meter Deployments

Current meters will also be deployed, in part, to assist with the sediment stability analysis. The purpose of the current meters is to document typical current speeds and excursions caused by propeller wash, storm events, tidal cycles, and runoff events. Current meter deployments are discussed in more detail in Section 4.7.

4.6 Surface Water Sampling

Purpose: Surface water monitoring will be conducted along the length of the Study Area to meet the following objectives:

1. Establish chemical conditions for Study Area surface water during wet and dry weather
2. Establish physical conditions for Study Area surface water (e.g., DO, temperature, turbidity, and conductivity)
3. Provide supporting data for the fish and benthic macroinvertebrate community surveys
4. Establish a list of COPCs for consideration in the ERA and HHRA
5. Collect data on current water column conditions to support, as necessary, the future evaluation of potential short- and long-term water quality impacts associated with remedial alternatives
6. Evaluate seasonal changes in Study Area water quality (e.g., under conditions of low flow and high flow in order to complete the CSM)
7. Provide estimates of chemical and solids loading from upland sources over wet and dry seasons.

Existing Data Review: NYCDEP has conducted numerous investigations of water quality conditions in the Study Area, and additional resources have been identified for historical research. In addition, surface water quality data were collected during the OU6 RI.

The information reviewed to date of NYCDEP monitoring begins with the 1980 monitoring program of Newtown Creek and its tributaries in support of an application for modification of requirements for secondary treatment at the Newtown Creek WWTP under *Clean Water Act* Section 301(h) (Hazen and Sawyer, 1981). In 1989 and 1990, dry and wet weather surveys and special studies were performed to characterize water quality conditions and identify sources of impairments for NYCDEP's Newtown Creek Water Quality Facility Planning Project (LMS, 1991; LMS, 1992). Water quality data were also collected in Newtown Creek and its tributaries during 1993 as part of an Air Curtain Pilot Study for NYCDEP's City-Wide Floatables Study (URS, 2003).

During investigations conducted over the period from 1985 to 1999, surface water samples were collected from Newtown and Maspeth Creeks. During the 1999 sampling event, copper and silver were detected in surface water samples at concentrations above corresponding water quality criteria for a Class SD surface water. However, similarly elevated concentrations of these metals have also been detected throughout the larger East River region (LMS, 1992), and likely represent an area background condition.

The results of surface water sampling between 1984 and 2003 were discussed in the NYCDEP draft *City-Wide Long Term CSO Control Planning Project, Newtown Creek* report, submitted to NYSDEC in June 2007. This report states that DO levels do not meet the SD classification for surface water year round. In addition, the report discusses the reduction of total and fecal coliform, which do not apply to the SD classification (no surface water contact) to target the next classification (Class I), and floatables to meet the narrative water quality standards. These constituents and the floatables are of greater issue at the headwaters of Newtown Creek and its tributaries.

Two rounds of surface water samples were collected in 2004 during the OU6 RI. Nearly all of the chemicals analyzed for were either undetected or detected at maximum concentrations that were below New York State chronic water quality criteria (NYSDEC, 1998). Select pesticides and a single VOC (tetrachloroethene) were detected in the water column at concentrations exceeding water quality criteria.

Data Gap Assessment Relative to CSM: A comprehensive study of surface water throughout the Study Area has not yet been conducted. In order to more fully understand the current physical and chemical conditions of the Study Area surface water and develop a complete CSM, additional surface water sampling is necessary.

Summary of Work to be Performed to Close Data Gaps: The data gaps will be addressed through obtaining and evaluating existing data as part of the Historical Data Review (Section 3.2.1) and by conducting additional surface water sampling and related analyses.

Multiple surface water monitoring efforts are planned during the Phase 1 RI Field Program to meet the requirements of the different sampling objectives (i.e., to provide an assessment of Study Area water quality under a range of conditions, to support the benthic macroinvertebrate community sampling effort, and to provide general characterization of the Study Area surface water). In addition, surface water sampling will be performed during the Phase 2 RI Field Program, which will also support the Phase 1 RI objectives.

Phase 1 RI surface water monitoring will be conducted monthly for one year. After one year, the need for further surface water monitoring will be discussed with USEPA. It is anticipated that monthly monitoring will capture a range of conditions including seasonal dry and wet weather conditions and relatively low and high DO conditions. Surface water monitoring events will include one or more of the following activities:

- Water column profiling
- Tidal survey water column profiling
- General surface water chemistry sampling
- Surface water chemistry sampling for ecological-related parameters (e.g., TOC, TSS, DOC, total dissolved solids [TDS], and total and dissolved nitrogen and phosphorus).

In addition, during surface water sampling events, a visual survey will be made of select shoreline seep, outfall, and pipe discharges to evaluate the relative discharges of these upland sources to the Study Area surface water.

Monthly surface water monitoring will include targeting both dry and wet weather conditions. The dry weather target sampling condition is a period following at least 72 hours with a cumulative precipitation of less than 0.1 inch (0.25 cm). Wet weather monitoring will be initiated within 24 hours of a precipitation event of greater than 0.2 inch (0.5 cm). If this target condition is impractical, a precipitation event of 0.1 inch (0.25 cm) or greater will be sampled. Precipitation and temperature will be determined at an on-site weather station. If it is not possible to establish an on-site weather station, precipitation and temperature data will be obtained at the nearest weather station with publicly available data.

The proposed surface water monitoring locations are shown on Figure 4-7. The number and location of surface water samples may be modified based on field conditions. Two types of surface water monitoring locations are identified on this figure. One set of surface water sampling locations is co-located with the benthic macroinvertebrate community survey locations. These sample locations were selected following a review of outfall locations and previous sampling locations (e.g., sampling conducted for the NYCDEP CSO study, the USEPA ESI, and the NYCDEP maintenance dredging study) to reflect the variety of habitat conditions throughout the Study Area. The second set of surface water monitoring locations on this figure is the set of general chemistry sample locations. These locations have been selected to augment the benthic macroinvertebrate community survey locations to provide a spatial distribution of surface water sample data. Some of the general chemistry surface water sample locations overlap with the benthic macroinvertebrate community survey locations to provide coincident data.

Field notes of all surface water monitoring activities will be maintained as samples are collected. During sample collection, visual evidence of impacts (e.g., hydrocarbon-like sheens) will be described along with water quality field parameters, date and time of sample collection, depth of each sample, and any observations of water appearance and odor. Field notes will include reported elevation datum in NAVD88 and horizontal datum in NAD83. The survey will be performed at a horizontal accuracy of 1 foot (30 cm) and a vertical accuracy of 0.1 foot (3 cm), location by DGPS. In addition, photographs will be taken of significant observations.

4.6.1 Water Column Profiles

A water column profile will be measured prior to other sample collection efforts at each surface water and benthic macroinvertebrate sampling station. At each station, field instrumentation will be used to assess water column stratification (temperature, salinity, DO, and turbidity profiles) and basic water quality parameters (pH, total water depth, and conductivity) at the water surface (approximately 6-inch

[15 cm] depth) and at 1-foot (30 cm) intervals until approximately 1 foot (30 cm) above the mudline. Observations during sampling will also include water visibility and odor, if observed, tide stage, and the nature of visible stormwater discharges to the Study Area.

4.6.2 Tidal Survey Water Column Profile

A tidal survey water column profile will be performed to characterize water quality variations over a tidal cycle. This survey is scheduled once during the first quarter of the Phase 1 RI Field Program. Depending on the results of this survey and the water column profiles (e.g., if significant variations in surface water quality are observed that cannot be explained by tidal influences or precipitation events), additional surveys may be performed. Water column profiles (measuring temperature, DO, pH, conductivity, salinity, turbidity, and total water depth) will be collected using field instrumentation at periodic intervals (one to two hours) throughout the tidal cycle at two to three locations within the Study Area. The tidal survey water column profiles will be spatially located along the Study Area. The exact survey locations will be selected following, and based on, the bathymetric survey, the first round of water column profiles, and the shoreline assessment, and will be spatially located along the Study Area to represent headwater conditions, middle of the Study Area conditions, and conditions near the mouth of Newtown Creek.

4.6.3 Surface Water Sample Collection

Surface water samples will be collected following the water column profile using a peristaltic pump. For monthly surface water sampling, two depths will be sampled at each station for analysis as discussed below. Two depths have been selected as it is anticipated that there may be two distinct water types present: a more saline water type at the bottom of the water column and a less saline water type at the top of the water column. When water depth is sufficient, one sample will be collected near the surface (i.e., approximately 3.3 feet [1 m] below the water surface) and one sample will be collected approximately 3.3 feet (1 m) from the mudline (as close to the bottom as possible but at a depth free of sediment), or below any stratification measured in the water column (i.e., based on temperature, salinity, DO, and turbidity profiles). If water depth is insufficient for two samples, one sample will be collected from the mid-point of the water column. Specific sampling depths may be modified in the field to reflect observed conditions. Water samples will be collected and filled directly into sample jars using USEPA's "clean hands" procedures to minimize sample cross-contamination (USEPA, 1996). Additional sampling depths may be added based on field parameters indicating differences in the water column (e.g., stratification) at other intervals, and will be described in more detail in the FSAP.

The surface water samples will be analyzed for the parameters listed in Table 4-5, as summarized below. This table also shows the standards and analytical methods for each analysis.

1. Chemical – All Samples: TCL VOCs plus TICs, TCL SVOCs plus TICs and 1,4-dioxane, PAHs and alkyl PAHs, the NOAA list of organochlorine pesticides (by GC/ECD), PCBs Aroclors, chlorinated herbicides, n-alkanes and isoprenoids including DRO and TPH ranges, TAL total metals plus tin (total and field filtered), methyl mercury, total and fecal coliform, nutrients (i.e., total and dissolved nitrogen and phosphorus), and conventional parameters including TSS or suspended sediment concentrations (SSC), TDS, salinity, conductivity, major and minor anions and cations including hardness and alkalinity, cyanide, ammonia, TOC, biological oxygen demand, DOC, and particulate organic carbon (POC).

2. Chemical – Select Samples: A minimum of 25% of the samples will be selected for analysis for TCL PCBs (by HRMS) as congeners. These samples will be selected to be spatially distributed throughout the Study Area.
3. High Volume Samples: Surface water samples may be collected using high volume sampling techniques (greater than 50 liters) and analyzed for organochlorine pesticides (by HRMS) and TCL dioxins and furans. The need for this sampling technique will be evaluated after the first three rounds of sampling and will be based on the detection limits achieved by the sampling techniques identified for surface water samples. The location of these samples will be selected based on the results of the water column profiles and the first three rounds of sampling results.
4. Benthic Samples: The surface water samples collected to support the macroinvertebrate community survey will be sampled for nutrients (i.e., total and dissolved nitrogen and phosphorus), ammonia, TSS, TDS, TOC, and DOC.

The following table summarizes the number of surface water samples.

Parameters	Portion of Field Samples to be Analyzed	Number of Field Samples	Targeted Number of QA/QC Samples for Each Analysis
Chemical - All	100 percent (15 surface water sampling locations at 2 intervals)	30 per event (360 over 12 events)	3 per event
Chemical - Select	25 percent (4 surface water sampling locations at 2 intervals)	8 per event (96 over 12 events)	1 per event
High Volume	To be determined	TBD	TBD
Benthic	100 percent (34 locations at one interval)	34 per event (68 over 2 events)	3 per event

4.6.4 Shoreline Seep, Outfall, and Pipe Survey

During each surface water sampling event, a visual survey will be performed of the shoreline for seeps (fluid emerging from the shoreline), overland flow locations, outfalls, other pipes discharging to the Study Area surface water, and floatables. The objective of this survey is to identify significant contributors of water discharges to the Study Area at the time of surface water sampling. These surveys will include, but are not limited to, the following: flowing water out of pipes or overland sheet flow (nonpoint source stormwater discharges), intertidal shoreline seeps, estimates of rate of discharge, and visual signs of impacts (hydrocarbon-like sheens, color, solids, etc.). Opportunistic sampling of select seeps, outfalls, overland flows, and discharge pipes and/or sediments in the areas of those potentially significant surface water contributions or in other areas where sediment is visually impacted will be conducted during the Phase 1 RI Field Program. Locations for the collection of these samples will be identified based on the results of the survey and will be focused on pipes (particularly pipes where permits have not been identified) or overland flows with significant discharge volumes and showing visual signs of contamination (e.g., discoloration or sheens) and sediments when visual impacts are observed. The procedures for identification and selection of these opportunistic samples will be provided in the FSAP. More extensive sampling of water discharges is planned for the Phase 2 RI Field Program.

4.7 Current Meter Deployments

Purpose: The purpose of the current meter deployments is to document typical current speeds of surface water in the Study Area and excursions caused by propeller wash, storm events, tidal cycles, and runoff events (if any).

Existing Data Review: Current meters were deployed during the OU6 RI in the area of the Laurel Hill upland facility.

Data Gap Assessment Relative to CSM: Additional distribution of data for understanding the currents in the Study Area represents a data gap for completing the CSM.

Summary of Work to be Performed to Close Data Gaps: The data gaps will be addressed through deploying current meters. Five current meters will be deployed: at the mouth of Newtown Creek, in Newtown Creek immediately downstream from the junction with Dutch Kills, at the mouth of Maspeth Creek, at the mouth of East Branch, and at the mouth of English Kills to help assess the hydrodynamics in each of these areas (Figure 4-7). An acoustic velocimeter will be moored on the bottom such that the entire water column profile is measured at each station. Water stage, conductivity, and turbidity will also be measured at each mooring. Each current meter deployment will last for at least three months and up to one year. Each meter will be checked monthly during deployment to ensure that it is operating correctly and has not become fouled. The current meters will be set up to record the instantaneous current speeds as frequently as possible (e.g., at 5 to 10 minute intervals between measurements). After each check of the meters, the current data will be reviewed and, based on the variability of or lack of variability in the data, the deployment may be continued or the meter may be removed prior to the end of the measurement period. If the deployment is terminated after less than one year, consideration will be given to seasonal one-month deployments.

4.8 Supplemental Data

Purpose: Supplemental analyses of sediment and surface water will be performed to help identify and segregate upland sources to Study Area sediments.

Existing Data Review: Supplemental analyses of PAHs and PCBs were performed on a limited subset of samples (<10) during the OU6 RI in the vicinity of the Laurel Hill uplands.

Data Gap Assessment Relative to CSM: Understanding potential sources to the Study Area is a data gap relative to the CSM.

Summary of Work to be Performed to Close Data Gaps: Depending on the potential upland source, a variety of constituents may be identified for potential supplemental analyses. Potential supplemental analyses may include, but are not limited to, triterpanes and steranes. As mentioned in Section 4.5, sufficient sediment will be collected from all locations and core intervals to archive samples for future supplemental analyses. These samples will be frozen at -20°C and will be held frozen for up to one year after collection. At that time, the utility of continued storage will be evaluated. Surface water samples for supplemental analyses may also be collected.

Once the Phase 1 RI data are collected and analyzed, these data can be used to better focus the locations and sample intervals selected for supplemental analyses. This will also allow for refinement of the CSM and identification of additional potential sources of significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area.

4.9 Groundwater Sampling

Purpose: The purpose of the groundwater evaluation is to identify significant contaminant loadings to the Study Area from groundwater and, where necessary, determine whether sources of contaminants discovered in the Study Area have impacted groundwater (it is noted that Respondents' upland sites are addressed separately under Orders with NYSDEC and substantive hydrogeologic and groundwater data generated from these sites will be evaluated as part of the Historical Data Review). As described in AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b and discussed in Section 3.2.4 and shown on Figure 3-4, a weight-of-evidence approach will be used to identify significant contaminant loadings to the Study Area. The purpose of identifying sources of significant contaminant loadings is not to fully characterize or delineate significant contaminant sources in the uplands located outside the Study Area, rather it is to identify where significant contaminant loadings to the Study Area are occurring. Should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Section 3.2.4 and shown in Figure 3-4. It is not within the jurisdiction of this RI to investigate contaminant or plume extents outside the Study Area. A quantitative estimate of significant contaminant loading to the Study Area, however, is within the purview of this investigation, subject to the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b. Knowledge of significant contaminant loadings to the Study Area is important to successful remediation because control of significant contaminant loadings is necessary to prevent re-contamination following remediation.

Potential sources of significant contaminant loadings include pipes, seeps, nonpoint source stormwater, and groundwater. The Phase 2 RI Field Program has been designed to identify these potential sources of significant contaminant loadings to the Study Area. However, preliminary sampling of certain potential significant contaminant loadings has been included in the Phase 1 RI Field Program. These Phase 1 RI activities include opportunistic in-creek sampling of select seeps, outfalls, overland flows, discharge pipes, and/or sediments in the areas of those potentially significant surface water contributions or in other areas where sediment is visually impacted (Section 4.6.4 Shoreline Seep, Outfall, and Pipe Survey). The Phase 1 RI Field Program also includes sampling of groundwater using in-creek techniques and/or land-based monitoring wells as part of a weight-of-evidence approach to identify sources of significant loadings of COPCs, and to the extent of the available information, sources of such loadings, to the Study Area (should an upland site ultimately require the installation of upland wells to fully characterize the upland contaminant loadings, this characterization will be the subject of the process outlined in Work Plan Section 3.2.4 and AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b).

It is emphasized that in-creek groundwater sampling will be conducted where technically feasible and warranted by Study Area conditions. It is very likely that the groundwater flow in the uplands surrounding the Study Area will be non-uniform due to the extensive upland development including the presence of bulkheads of various construction, condition, and integrity; substantial in-filling behind these bulkheads with a wide range of fill materials; and the presence of numerous pipes and other infrastructure which may create preferential flow paths within the groundwater system. Additionally, tidal fluctuations in surface water levels in the Study Area influence the discharge of groundwater to Newtown Creek and its tributaries and result in periods during the day when the Study Area surface water elevation may be higher than adjacent groundwater elevation (up to half of each day during high tides). During periods of the day when the surface water elevation is above the groundwater elevation, a reverse hydraulic gradient may occur. With the return of the low tide cycle, the gradient reverses and groundwater discharges to the Study Area. There are also portions of the Study Area where groundwater withdrawals from existing environmental remediation systems create zones that reverse the hydraulic gradient away from the Study Area and prevent groundwater from discharging to the Study Area. These natural and induced hydraulic conditions will be considered during the evaluation of potential sources of significant contaminant loadings to the Study Area.

It is anticipated that the Phase 1 RI Interim Data Report will serve as the basis for identifying upland sites that may be sources of significant contaminant loadings to the Study Area. These identified sites will follow the process outlined in Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b, and illustrated on Figure 3-4, which is a weight-of-evidence approach that will be based on information gathered during the Historical Data Review and Phase 1 of the RI. Should an upland site ultimately require the installation of upland wells to fully characterize the significant contaminant loadings, this characterization will be the subject of the process outlined in AOC Section IX, Paragraph 54.e and AOC Section XII, Paragraph 58.b and in Work Plan Section 3.2.4. It is not within the jurisdiction of this RI to investigate contaminants or plume extents outside the Study Area. An estimate of significant contaminant loadings to the Study Area, however, is within the purview of this investigation, subject to the process outlined in Work Plan Section 3.2.4 and AOC Section XI, Paragraph 54.e and AOC Section XII, Paragraph 58.b. The Phase 1 RI Work Plan Addendum will detail the procedures to be followed to collect this groundwater sample. The information obtained from any Phase 1 RI groundwater sampling will be used as part of the weight of evidence considered for the associated site and will be considered when identifying data gaps to be addressed during the Phase 2 RI.

Existing Data Review: There is a substantial body of relevant information available from various governmental agency databases and files regarding the flow of groundwater from, and contaminant concentrations in groundwater at, previously investigated sites surrounding the Study Area. It is anticipated that hundreds of wells (monitoring wells and groundwater recovery wells) are present on these sites as part of environmental investigations and remedies and that these wells will provide relevant hydrogeologic data and information on contaminant loadings to the Study Area from groundwater. These sites include:

- Approximately 25 sites in the NYSDEC or USEPA environmental databases (NYSDEC Brownfield Cleanup Program, NYSDEC Environmental Restoration Program, New York State Superfund Program, and NYSDEC VCP) and other sites subject to environmental enforcement or investigation located within close proximity to the Study Area (i.e., 2,500 feet). These sites are identified in Section 2.2.1; and
- Approximately 54 open and 605 closed NYSDEC spill sites located within close proximity to the Study Area (i.e., 2,500 feet). These sites are identified in Section 2.2.1 and listed in Appendix B.

Based on information reviewed to date, it is anticipated that relevant information concerning sources of significant contaminant loadings of COPCs from most of these sites to the Study Area will be available in regulatory agency files.

In addition to information for the above referenced sites, information from other regulatory programs may also identify sites within the Newtown Creek drainage area that have the potential to be sources of significant contaminant loadings to the Study Area. These sites include:

- 22 sites where *RCRA* Large Quantity Generators have operated, and
- 11 SPDES-permitted sites.

In addition to information on permitted sites and sites subject to environmental enforcement or investigation, other relevant information is available for the uplands surrounding the Study Area. This information includes, but is not limited to:

- Graphical materials such as aerial photographs, Sanborn maps, industrial atlases, water well maps, hydrographic figures, and the like;
- Information publicly available on the history and development of the Study Area and surrounding area;
- Information from the USGS including hydrogeologic data and its groundwater flow computer model of the Brooklyn/Queens area;
- Information from public agencies like the MTA, who conduct subway dewatering activities in Brooklyn and Queens; and
- Information from the Army Corps of Engineers historical hydraulic models of the New York Harbor and NYCDEP hydrologic/hydraulic models of the Bowery Bay and Newtown Creek WWTP service areas.

Data Gap Assessment Relative to CSM: Understanding potential significant contaminant loadings to the Study Area from groundwater is a data gap relative to the CSM. Existing historical data on sites adjacent to the Study Area will need to be compiled and evaluated to identify specific data gaps where the collection of groundwater data will confirm or refute contaminant loadings to the Study Area from groundwater. The process to collect and review the existing historical data is described in Section 3.2.1.

The types of data that are anticipated to be obtained from the Historical Data Review include information on hydrogeology (boring logs, well construction information, pumping test information, water level information, hydraulic parameter data, groundwater flow direction and rate data, and groundwater modeling data), remedial activities (contaminants released and media impacted, contaminants and media remediated), ongoing remedial activities (specifically groundwater/fluid recovery operations [types of recovery, rates of recovery, contaminants associated with recovery, areas associated with recovery]), and chemicals or contaminants used or released (identification of chemicals used, identification of contaminants released, impacted media, permit excursions, analytical data).

Summary of Work to be Performed to Close Data Gaps: The following activities will be conducted during the Phase 1 RI to identify potential significant contaminant loadings to the Study Area from groundwater.

The Historical Data Review task will be conducted to obtain and evaluate the significant available information to identify potential significant contaminant loadings to the Study Area. To accomplish this objective, a dual component approach to identify sites targeted for the Historical Data Review will be executed. In the first component, sampling data and similar information will be obtained relating to sites such as (but not limited to) those undergoing environmental restoration, sites at which *RCRA* Large Quantity Generators have operated, SPDES-permitted sites, Brownfields sites, sites that have or are undergoing remedial activities under the New York State VCP, environmental remediation sites with institutional or engineering controls in place, and sites at which leaks and/or spills are known to have impacted groundwater. Sources of these data include, but are not limited to:

- Information from the Respondents' activities on their own sites, including hydrogeologic information and remedial activities.
- Information from NYSDEC files on investigations conducted of sites under various State programs (e.g., *RCRA*, State Superfund, VCP, and SPDES). NYSDEC has already provided current database and GIS information that identifies NYSDEC-managed sites adjacent to the Study Area, but site files are outstanding.
- Information obtained from review of NYCDEP files of pretreatment permits and excursions from the permits.
- Information from USEPA files on investigations conducted under various federal programs.
- Information obtained from USEPA 104(e) requests, when it becomes available.

It is anticipated that the Respondents may need USEPA assistance to obtain information contained in NYSDEC files and USEPA 104(e) requests in a timely manner.

The second component of the Historical Data Review task will include obtaining and evaluating historical sources that will further assist in identifying potential significant contaminant loadings to the Study Area from groundwater. These sources may include, but are not limited to:

- Graphical materials such as, aerial photographs, Sanborn maps, industrial atlases, water well maps, hydrographic figures, and the like;
- Information publicly available on the history and development of the Study Area and surrounding uplands;
- Information from the USGS including hydrogeologic data and its groundwater flow computer model of the Brooklyn/Queens area, if available;
- Information from agencies like the MTA, who conduct subway dewatering activities in Brooklyn and Queens; and
- Information from the Army Corps of Engineers historical hydraulic models of the New York Harbor and NYCDEP hydrologic/hydraulic models of the Bowery Bay and Newtown Creek WWTP service areas.

Additional details on the Historical Data Review, including a description of the Data Collection Plan, are provided in Section 3.2.1.

As initial tasks in the Phase 1 RI field mobilization (see Sections 4.2 and 4.3), in-field survey and assessment activities will be conducted to support the identification of potential significant contaminant loadings to the Study Area. These activities will include the: bathymetric, side-scan sonar, and magnetic surveys; aerial photography survey; and shoreline assessment. These surveys and assessment are intended to provide valuable information needed to understand the configuration of the Study Area bottom geometry, the presence and condition of bulkheads that have the potential to impact groundwater flow, the presence of seeps and locations of significant overland flow to the Study Area, the presence and absence of vegetation, and, if present, the occurrence of stressed vegetation.

Following the evaluation of the information collected during the survey and assessment activities, a Phase 1 RI Interim Data Report will be prepared and submitted to USEPA. This report will summarize the results of the surveys performed and will include the Historical Data Review information obtained up to that point in time. This Phase 1 RI Interim Data Report*,* anticipated to be submitted prior to the midpoint of the Phase 1 RI Field Program, will serve as the basis of discussions between the Respondents and USEPA concerning whether the data collected to date identifies locations that have the potential to be sources of significant contaminant loadings to the Study Area from groundwater. These locations will be identified for Phase 1 RI groundwater sampling, as appropriate, using in-creek techniques and/or land-based monitoring wells.

Once it is determined that groundwater sampling is needed, a memorandum will be prepared as a Phase 1 RI Work Plan Addendum including the supporting FSAP Addendum and will be submitted to USEPA for review and approval. The Phase 1 RI Work Plan Addendum will present the locations and procedures for the collection of groundwater samples and the constituents for analysis. These groundwater samples will be collected using in-creek techniques and/or land-based monitoring wells. It is anticipated that these samples will be collected during the second half of the Phase 1 RI Field Program.

In the limited circumstances where further investigation beyond in-creek groundwater sampling is deemed necessary to confirm potential sources of contamination identified in Study Area sediments or groundwater, the Respondents or USEPA may propose to install a groundwater monitoring well or use an alternative sampling methodology (including piezometers) on an upland property. If such property is owned by or under the control of a Respondent, that Respondent will install the groundwater monitoring well pursuant to plans approved by USEPA and NYSDEC. If the upland property suspected to be a source of significant groundwater contamination or flow to the Study Area is not owned by or under the control of a Respondent, the Respondents will identify the current facility owner to USEPA and/or NYSDEC for further action. If, after reasonable efforts by USEPA and/or NYSDEC, the facility owner refuses to install the requested upland groundwater well, the Respondents may agree on a voluntary basis and under a separate agreement to do so if access is obtained under reasonable terms and conditions.

The results of such groundwater sampling will be incorporated into the Phase I RI Data Summary Report. The information in this data summary report (including data gaps identified and additional historical information obtained following the preparation of the Interim Data Summary Report, as summarized in the Data Applicability Report) will be used to identify whether other locations have the potential to be sources of significant contaminant loadings to the Study Area from groundwater. These locations will be identified as data gaps and will be addressed in the Phase 2 RI Work Plan.

4.10 Habitat Survey and Biological Evaluation

Purpose: The purpose of the ecological habitat survey and biological evaluation is to provide the data needed to define remedial approaches and appropriate management activities for risk reduction of impacted sediments and surface water that will be protective of ecological resources.

Existing Data Review: As part of the most recent investigations of sediments in Newtown Creek and its tributaries, a SLERA was conducted for the OU6 RI (Anchor, 2007a). Previous studies of the Study Area conducted by the NYCDEP have included surveys of phytoplankton, benthic macroinvertebrates, and fish communities within the Study Area (NYCDEP, 2007a). However, only a summary of these data has been reviewed, and the original reports were not available for review. Additional documents reviewed include the *New York City Cross Harbor Freight Movement Project Draft Environmental Impact Statement* (EIS) (NYC Economic Development Corporation, 2004), the *Greenpoint-Williamsburg Rezoning Final EIS* (NYC Planning Commission, 2005), and the *Comprehensive Solid Waste Management Plan Final EIS* (NYC Department of Sanitation, 2005), and the USEPA *ESI* (Weston Solutions, 2009).

Data Gap Assessment Relative to CSM: Based on the SLERA conducted for the OU6 RI, a BERA will be needed. To refine the CSM and develop the BERA Problem Formulation, the survey of fish and wildlife resources needs to be expanded to the entire Study Area, and a SLERA needs to be performed which will incorporate existing sediment and water quality data for the entire Study Area.

Summary of Work to be Performed to Close Data Gaps: As described in Section 3, in order to collect data to allow development of a SLERA and a BERA Problem Formulation, several tasks have been built into Phase 1 RI data collection. These tasks include a habitat survey, benthic community survey, and fish community survey. Additional data needs to address ecological risk will be identified as part of the BERA Problem Formulation document and a BERA Field Sampling Program will be designed to address data needs. The following sections address data collection during the Phase 1 RI Field Program only.

4.10.1 Habitat Survey

The habitat survey is designed to describe the fish and wildlife resources identified within the Study Area at or near the shoreline. The specific tasks associated with this survey are identified on Table 4-6. Much of the information required for this description of resources may be based upon existing knowledge of the Study Area and a search of NYSDEC records or other sources. The description of resources will include the following information, to the extent available from existing sources or Study Area observations:

1. Description of cover types, typical vegetative species, and rare or protected plants
2. Identification and extent of intertidal mudflats, sediment mounds, shoreline type, and wetland habitat types
3. Identification of typical fish and wildlife species to be expected for each cover/wetland type, as well as endangered, threatened, rare species, or species of special concern
4. Observations of birds (including breeding birds) using resources from the Study Area
5. Observations of stress (e.g., presence of seeps, dead or dying vegetation)
6. Records of fish kills or other wildlife mortality associated with the Study Area
7. Records of existing fish or wildlife consumption advisories
8. A qualitative assessment of the general ability of the media within the Study Area to support fish and wildlife
9. The resource value of the Study Area to humans (e.g., for fishing, recreation, economic activity).

The habitat survey will document the physical and biological characteristics of the Study Area shoreline and intertidal habitats. This information will be used to compile a description of the resources within the Study Area relative to aquatic organisms and aquatic-dependent wildlife receptor groups. The survey also will support, in part, the identification of constituent sources (e.g., outfalls, seeps) and attempt to identify access points for people who may be fishing in the Study Area from the shoreline. The survey will serve as the basis to identify and describe the following:

1. Upland habitat type
2. Vegetation type, including emergent vegetation, invasive species, and stressed vegetation

3. Aquatic and riparian habitat type (e.g., intertidal, bulkhead, riprap)
4. Surface cover type
5. Outfalls, floatables, seeps, and sheens identified during the shoreline survey.

Water quality and the presence of biological resources will also be evaluated through a review of existing information and field verification (Table 4-6 presents a summary of the proposed activities). Since many biological processes are impacted by the physical characteristics of the environment, it will be important to collect physicochemical water quality data (e.g., temperature, conductivity, DO, turbidity) in order to characterize conditions within the Study Area. These water quality characteristics may help to identify which fish and wildlife species would be expected to be present within the Study Area. Biological surveys will also be conducted in the spring and late summer to identify and evaluate the benthic macroinvertebrate and fish communities present in the Study Area.

Existing information and relevant maps will be obtained from the NYSDEC, NYCDEP, the National Wetland Inventory of the USFWS, and other data sources as appropriate. High resolution, aerial photographs, including low-angle oblique aerial photographs, of the entirety of the Study Area at low tidal elevations will be reviewed and used to identify potential bird and mammal habitats at or near the shoreline.

The data collected through the review of maps and photographs will be verified using a boat-based shoreline survey of the Study Area in conjunction with shoreline assessment described in Section 4.3.2. The shoreline survey will be conducted by a qualified environmental professional and will be designed to identify wetland habitats and the various habitats, flora, and fauna that are present or are reasonably anticipated to be present.

Resources identified through these activities will be indicated on a base map of the Study Area. A map will be generated that identifies fish and wildlife resources at or near the shoreline of the Study Area, including habitats supporting threatened and endangered species; New York State-regulated wetlands; wild, scenic and recreational rivers; and significant coastal fish and wildlife habitats. A generalized cover map will be generated to identify and describe significant terrestrial or aquatic habitats.

If there is evidence that wetlands are present that may be jurisdictional and/or have significant value and important functionality and which might be impacted by future remedial activities then, in accordance with *E.O. 11990*, and USEPA's 1985 *Statement of Policy on Floodplains/Wetlands Assessments for CERCLA Actions*, a wetland assessment will be conducted, using Federal (USACE and/or USFWS) wetland definitions, as part of the BERA. The wetland assessment will include the following:

- A wetland delineation
- An assessment of wetland values and functions
- A brief discussion of the impacts of any preferred remedial alternative as compared to the other options
- The effects of contaminants on wetland resources
- Measures to minimize potential adverse impacts that cannot be avoided

- Replacement of wetland losses (mitigation)
- A post-mitigation monitoring plan, if needed.

4.10.2 Benthic Community Survey

To provide a direct assessment of the nature, abundance, and integrity of the benthic community for consideration in the BERA Problem Formulation, benthic macroinvertebrate community surveys will be conducted during periods of low and high DO in the Study Area surface water. Sampling locations have been selected to represent a variety of conditions present in the Study Area at the mouth of Newtown Creek, in the tributaries, and in the navigation channel. Table 4-7 presents the rationale for sample location selection.

Two rounds of benthic survey samples will be collected: one in the late summer to reflect low DO levels, and one in the spring to reflect higher DO levels. Samples will be collected using sediment sampling equipment at the selected locations and submitted to a laboratory for identification and enumeration of benthic invertebrates present in the sample.

During the period of high DO, sediment samples will be collected for chemical analysis. During the period of low DO, sediment samples will be collected for general chemical parameters that are key determinants of benthic community structure (i.e., grain size, TOC, ammonia, and sulfides). In addition, samples will be evaluated for iron and manganese, which are highly dependent on redox conditions in the sediment. During the low DO event, sediment samples collected for other chemical analytes will be archived for potential later analysis. Samples will be archived (by freezing) for potential future COPC chemical analysis that may be performed if benthic community metrics (abundance, species richness, and species diversity) show notable differences between the two macroinvertebrate community surveys that cannot be accounted for by seasonal effects.

The benthic community data will be evaluated for species composition and richness, abundance, and appropriate diversity and faunal similarity indices. If sample size allows, significant differences between locations and between sampling events will be determined through statistical analyses, as appropriate for the data, otherwise comparisons will be qualitative. The goal of the analyses will be to (1) describe the nature and spatial and temporal variability in benthic invertebrate community in the Study Area, and (2) to use the data to guide the BERA Problem Formulation.

The initial data analysis will include simple testing of differences between benthic community metrics observed in samples collected during seasonal low and high DO periods. Samples with benthic metrics (abundance, species richness, and diversity/similarity indices) that are notably different between seasonal low and high DO periods and which appear to be outliers to the seasonal trends observed in the correlation analysis will be considered for additional analysis of sediment COPECs in the archived samples.

Proposed sample locations are shown on Figures 4-4 and 4-8. The sample locations shown on this figure are approximate and may be modified based on field conditions.

During the two surface sediment sampling rounds associated with the benthic macroinvertebrate community survey, surface water profiling and sampling (Section 4.6) will be conducted at each sample location.

4.10.3 Fish Community Survey

Fish (including shellfish) community surveys will be conducted in order to identify resident and migratory fish as well as shellfish in the Study Area (Table 4-6) for consideration in the BERA Problem Formulation. The fish community will be sampled in the late summer to reflect low DO levels and in the spring to reflect higher DO levels and spring migration. Sampling will be conducted within the same timeframe as the benthic macroinvertebrate community surveys. Sampling zones for fish sampling will be established broadly corresponding to the distinct reaches of the Study Area. Figure 4-8 presents preliminary sampling zones proposed for this survey; these locations may be modified in the field in order to capture these particular habitats. Preference will be given to the use of sampling methods with low mortality rates. Sampling methods may include otter trawls to sample bottom-oriented species and purse nets, seines, traps, and gill nets to capture open water species. Sampling methods will be designed to be similar to those used by HydroQual in 2001 (NYCDEP, 2007a).

Fish will be processed in the field. Processing will include identifying each individual to species, weighing each species in mass, and recording any external abnormalities. Some fish may be taken back to the lab for species verification. The resulting data will be compiled and analyzed to (1) identify the fish and shellfish fauna present in the Study Area, and (2) provide preliminary estimates of catch per unit effort, diversity, abundance, and dominance within each sampling zone. It should be noted that there may be few or no fish present at times in portions of the Study Area. The absence of fish reasonably attributed to regional considerations will be noted.

4.10.4 Reference and Background Site Identification and Evaluation

The selection of appropriate reference sites will be conducted as part of the BERA Problem Formulation. The selection and evaluation process will be discussed in a separate document, the Reference Site and Background Location Selection Memorandum. Figure 4-9 presents several preliminary candidate sites to be evaluated for suitability as reference locations as part of this process and the rationale for these preliminary selections. It is noted that there may not be a single location with all of the required attributes for a reference site and, therefore, more than one location may be selected. Additional locations may be proposed to satisfy the criteria for background and reference locations. Background and reference locations will be further discussed in the Reference Site and Background Location Selection Memorandum, which will discuss the identification and weighting of decision criteria to select reference and background locations.

Background data from suitable reference locations is essential for the risk assessments, but appropriate chemical background data that represent Study Area conditions considering the urban nature, historical loading, and ongoing discharges are also key data inputs for the RI.

Per USEPA *Guidance for Comparing Background and Chemical Concentrations in Soil at CERCLA Sites* (USEPA, 2001c; USEPA, 2002a) background and reference locations are described as follows.

- Background: Substances or locations that are not influenced by the releases from a site and are usually described as naturally occurring or anthropogenic: (1) naturally occurring substances are present in the environment in forms that have not been influenced by human activity; (2) anthropogenic substances are natural and human-made substances present in the environment as a result of human activities (not specifically related to the *CERCLA* site in question). Several other USEPA guidance documents (USEPA, 1989; USEPA, 1995a; USEPA, 1995b; USEPA, 2002a), as well as the *Implementation Guide for Assessing and Managing*

Contaminated Sediment at Navy Facilities (SPAWAR and Battelle, 2003), include this same definition for background.

- Reference location: The location where background samples are collected for comparison with samples collected on site. The reference location should have the same physical, chemical, geological, and biological characteristics as the site being investigated, but have not been affected by activities on the site.

For most biological analysis (toxicity tests, community analyses, etc.) the definition of a suitable reference location, sometimes termed reference condition or reference envelope, is essential to the methodology. The term “background” is normally not used for biological analyses and, therefore, “background” as a concept is primarily associated with COPCs and other stressors.

Table 4-1
Sample Location Rationale

Location	Rationale
Air	
In-creek	- Spatially along length of Study Area. - Near potential future residential development at mouth of Newtown Creek, near current public access points, near potential future public access points, and on English Kills where PCBs have been detected in sediments.
Banks	- Spatially along length of Study Area. - Adjacent to all in-creek sample locations.
Distance from Study Area	- Within commercially zoned areas upwind and downwind (based on prevailing wind direction) of Study Area.
Sediment – Non-Ecological Resource Characterization[1]	
Surface Sediment	- Spatially along length of Study Area at approximately 500-foot spacing, with larger spacing in locations of previous sampling, i.e., OU6 sampling, and smaller spacing at headwaters of tributaries where sediment loading is occurring and observed in the form of areas of sediment accumulation. - At all sediment core locations. - Subsurface sediment cores were added to surface sediment sample locations adjacent to Respondent properties. - Within proposed NYC dredging areas at the mouth of Newtown Creek, within Whale Creek, and at locations of sediment accumulation. - Along transects oriented perpendicular to banks with three sample locations, one in dredged channel near center of channel and two outside of dredged channel along each bank; approximate sample spacing is 100 feet along transect. In relatively narrow portions of tributaries, transect orientation varies from perpendicular to the banks and/or the number of samples along a tributary is reduced. - Collocated with benthic macroinvertebrate community survey samples. - Select analytes (dioxin-furans, pesticides (by HRMS), PCB congeners, methyl mercury) at 25% of surface sediment sample locations spatially distributed along the Study Area with some samples within dredged channel and some samples outside of dredged channel. - Radioisotope analyses near headwaters of tributaries where higher sediment loading is occurring and spatially along length of Study Area. - Geotechnical analyses of 25% of samples spatially along length of Study Area. - Supplemental samples for understanding sources of significant contaminant loadings; collected and archived from all locations.

Table 4-1 (continued)
Sample Location Rationale

Location	Rationale
Subsurface Sediment	- Spatially along length of Study Area at approximately 1,000-foot spacing, with larger spacing in locations of previous sampling, i.e., OU6 sampling, and smaller spacing at headwaters of tributaries where sediment loading is occurring and observed in the form of areas of sediment accumulation. - Adjacent to Respondent properties. - Within proposed NYC dredging areas at the mouth of Newtown Creek, within Whale Creek, and at locations of sediment accumulation. - Along transects oriented perpendicular to banks with three sample locations, one in dredged channel near center of channel and two outside of dredged channel along each bank; approximate sample spacing is 100 feet along transect. In relatively narrow portions of tributaries, transect orientation varies from perpendicular to the banks and/or the number of samples along tributary reduced. - Select analytes (dioxin-furans, pesticides [by HRMS], PCB congeners, methyl mercury) at 25% of surface sediment sample locations spatially distributed along the Study Area with some samples within dredged channel and some samples outside of dredged channel. - Radioisotope analyses near headwaters of tributaries where higher sediment loading is occurring and spatially along of length of Study Area. - Geotechnical analyses of 10% of samples spatially along length of Study Area. - Supplemental samples for understanding sources of significant contaminant loadings; collected and archived from all locations.
Sedflume	
Sedflume	- Spatially along Newtown Creek. - At mouth of each tributary. - Collocated with current meters.
Current Meter	
Current Meter	- Spatially along Newtown Creek. - At mouth of each tributary. - Collocated with Sedflume samples.

Table 4-1 (continued)
Sample Location Rationale

Location	Rationale
Surface Water	
Water Column Profiles	- Spatially along Study Area at 2,000-foot spacing, with closer spacing, approximately 1,000 feet, at headwaters of tributaries where freshwater discharges to the Study Area.
Tidal Survey	- Spatially along Study Area. - To be determined following bathymetric survey, and initial water column profiles.
Surface Water	- Spatially along Study Area at approximately 2,000-foot spacing. - At head and mouth of each tributary, except Whale Creek where located at midpoint of Whale Creek. - Center of dredged channel.

Notes:
Groundwater samples are not included in this table; sampling rationales and locations will be determined as described in Section 4.9 of this Work Plan.
HRMS = High Resolution Mass Spectrometer
NYC = New York City
OU6 = Laurel Hill Operable Unit 6
PCBs = Polychlorinated biphenyls
[1] See Tables 4-6 and 4-7 for descriptions of tasks related to and rationale for the ecological resource characterization.

Table 4-2
Sampling Rationale

Parameters	Media	Data Use Objective
Chemical		
VOCs/TICs, SVOCs/TICs, PAHs, PCBs; metals, pesticides, herbicides, dioxins and furans, methyl mercury, cyanide	Sediment and surface water	Characterize nature and distribution of constituents Assess potential toxicity of sediments and surface water to human health Conduct SLERA Provide supplemental data for assessing current and historical constituent sources
N-alkanes, isoprenoids, triterpane, sterane biomarkers	Sediment	Provide supplemental data for assessing hydrocarbon constituent sources
Nutrients (nitrogen, phosphorous), ammonia, sulfide	Surface water	Assess potential toxicity of CSOs and other discharges to ecological receptors
Radioisotopes	Sediment	Establish geochronology of sediment stratigraphy to estimate deposition rates, to support evaluation of remedial alternatives and to support supplemental data analysis
Surface water quality analyses including temperature, pH, turbidity, DO, TSS, SSC, TDS, salinity/conductivity, major and minor anions and cations, hardness, alkalinity, TOC, BOD, DOC, POC	Surface water	Assess impact of urban runoff and industrial, CSO, and storm sewer discharges on aquatic habitats Characterize chemical factors modifying toxicity of metal and organic contaminants Develop water chemistry data to support assessment of Study Area hydrology and tidal flow dynamics
Sediment characteristics including TOC, acid volatile sulfides, soot carbon	Sediment	Characterize chemical factors modifying toxicity of metal and organic contaminants

Table 4-2 (continued)
Sampling Rationale

Parameters	Media	Data Use Objective
Biological		
Total and fecal coliforms	Surface water	Assess impact of CSO and other discharges on potential recreational use and consumption of fish/shellfish
Habitat, benthic macroinvertebrate and fish community surveys	Sediment, surface water, fish, shellfish, benthic macroinvertebrates	Assess current state of biological community in support of the SLERA and development of the BERA Work Plan
Physical		
Bathymetric and side scan surveys	NA	Describe existing Study Area conditions, subsurface debris, and aquatic habitat
Aerial photography, shoreline assessment	NA	Describe physical area along shoreline and near the Study Area
Ambient air monitoring	Air	Assess baseline concentrations of specific airborne chemicals, measure the level of ambient concentrations that would be experienced within the breathing zone on or along the Study Area, and estimate the portion of the measured concentrations that are potentially attributable to the Study Area
Additional surface water monitoring including temperature, conductivity, depth, turbidity, and current velocity from fixed and boat-based surveys	Surface water	Support assessment of Study Area hydrology, tidal flow dynamics and sediment stability
Sedflume, geotechnical parameters including Atterberg limits, specific gravity, shear stress, percent solids	Sediment	Evaluate sediment depositional history and stability to support evaluation of remedial alternatives

Notes:

Groundwater samples are not included in this table; sample locations and parameters for analysis will be determined as described in Section 4.9 of this Work Plan.

BERA = Baseline Ecological Risk Assessment
BOD = Biochemical Oxygen Demand
CSO = Combined Sewer Overflow
DO = Dissolved Oxygen
DOC = Dissolved Organic Carbon
NA = Not Applicable
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
POC = Particulate Organic Carbon
SLERA = Screening Level Ecological Risk Assessment
SSC = Suspended Sediment Concentration
SVOC = Semivolatile Organic Compound
TDS = Total Dissolved Solid
TIC = Tentatively Identified Compound
TOC = Total Organic Carbon
TSS = Total Suspended Solid
VOC = Volatile Organic Compound

Table 4-3
Target Compound List for Ambient Air Samples

Parameters	Estimated Quantitation Limits
Volatile Organic Compounds in Air by EPA Method TO-15*	**μg/m^3**
1,1,1-Trichloroethane	0.10
1,1,2,2-Tetrachloroethane	0.10
1,1,2-Trichloroethane	0.10
1,1-Dichloroethane	0.10
1,1-Dichloroethene	0.10
1,2,4-Trichlorobenzene	0.10
1,2,4-Trimethylbenzene	0.50
1,2-Dibromoethane	0.10
1,2-Dichlorobenzene	0.10
1,2-Dichloroethane	0.10
1,2-Dichloropropane	0.10
1,3,5-Trimethylbenzene	0.50
1,3-Butadiene	0.10
1,3-Dichlorobenzene	0.10
1,4-Dichlorobenzene	0.10
2-Chloroprene	0.50
Benzene	0.10
Benzyl Chloride	0.10
Bromodichloromethane	0.10
Bromoform	0.50
Bromomethane	0.10
Carbon Tetrachloride	0.10
Chlorobenzene	0.10
Chloroethane	0.10
Chloroform	0.10
Chloromethane	0.10
cis-1,2-Dichloroethene	0.10
cis-1,3-Dichloropropene	0.50
Dichlorodifluoromethane	0.50
Ethylbenzene	0.50
Freon 114	0.50
Hexachloro-1,3-Butadiene	0.10
m,p-Xylene	0.50
Methyl tert-Butyl Ether	0.10
Methylene Chloride	0.50
o-Xylene	0.50
Styrene	0.50
Tetrachloroethene	0.10
Toluene	0.50
trans-1,2-Dichloroethene	0.10
trans-1,3-dichloropropene	0.50
Trichloroethene	0.10
Trichlorofluoromethane	0.10
Trichlorotrifluoroethane	0.10
Vinyl Chloride	0.10
Polychlorinated biphenyls in Air by EPA Method TO-10A	**μg/m^3**
Aroclor-1016	0.25
Aroclor-1221	0.25
Aroclor-1232	0.25
Aroclor-1242	0.25
Aroclor-1248	0.25
Aroclor-1254	0.25
Aroclor-1260	0.25
Aroclor-1262	0.25
Aroclor-1268	0.25

Notes:
*Analyte list derived from New York State Air Guide-1 (see Table III, see http://www.dec.ny.gov/chemical/23799.html)
Detection limits are all estimates and may not be achievable by all laboratories
μg/m^3 = micrograms per cubic meter

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
TCL Volatiles by EPA Method 8260[a]	**µg/kg**
1,1,1-Trichloroethane	5
1,1,2,2-Tetrachloroethane	5
1,1,2-Trichloro-1,2,2-trifluoroethane	5
1,1,2-Trichloroethane	5
1,1,-Dichloroethylene	5
1,1-Dichloroethane	5
1,2,3-Trichlorobenzene	5
1,2,4-Trichlorobenzene	5
1,2-Dibromoethane	5
1,2-Dibromo-3-chloropropane	5
1,2-Dichlorobenzene	5
1,2-Dichloroethane	5
1,2-Dichloropropane	5
1,3-Dichlorobenzene	5
1,4-Dichlorobenzene	5
2-Butanone	10
2-Hexanone	10
4-Methyl-2-pentanone	10
Acetone	10
Benzene	5
Bromochloromethane	5
Bromodichloromethane	5
Bromoform	5
Bromomethane	5
Carbon disulfide	5
Carbon tetrachloride	5
Chlorobenzene	5
Chloroethane	5
Chloroform	5
Chloromethane	5
cis-1,2-Dichloroethylene	5
cis-1,3-Dichloropropene	5
Cyclohexane	5
Dibromochloromethane	5
Dichlorodifluoromethane	5
Ethylbenzene	5
Isopropylbenzene	5
Methyl acetate	5
Methyl tert-Butyl Ether	5
Methylcyclohexane	5
Methylene chloride	5
Styrene	5
Tetrachloroethene	5
Toluene	5
trans,1-2-Dichloroethylene	5
trans-1,3-Dichloropropene	5
Trichloroethene	5
Trichlorofluoromethane	5
Vinyl acetate	5
Vinyl chloride	5
Xylenes (total)	5
Tentatively Identified Compounds	NA
TCL Semivolatiles by EPA Method 8270	**µg/kg**
1,4-Dioxane	330
1,1'-Biphenyl	170
1,2,4,5-Tetrachlorobenzene	170
2,3,4,6-Tetrachlorophenol	170
2,4,5-Trichorophenol	170
2,4,6-Trichlorophenol	170
2,4-Dichlorophenol	170
2,4-Dimethylphenol	170
2,4-Dinitrophenol	170
2,4-Dinitrotoluene	170

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
TCL Semivolatiles by EPA Method 8270 (continued)	**µg/kg**
2,6-Dinitrotoluene	170
2-Chloronaphthalene	170
2-Chlorophenol	170
2-Methylnaphthalene	170
2-Methylphenol	170
2-Nitroaniline	330
2-Nitrophenol	170
3,3'-Dichlorobenzidine	170
3-Nitroaniline	330
4,6-Dinitro-2-methylphenol	330
4-Bromophenyl-phenyl ether	170
4-Chloro-3-methylphenol	170
4-Chloroaniline	170
4-Chlorophenyl-phenyl ether	170
4-Methylphenol	170
4-Nitroaniline	330
4-Nitrophenol	330
Acenaphthene	170
Acenaphthylene	170
Acetophenone	170
Anthracene	170
Atrazine	170
Benzaldehyde	170
Benzo (g,h,i) perylene	170
Benzo(a) pyrene	170
Benzo(a)anthracene	170
Benzo(b) fluoroanthene	170
Benzo(k) fluoroanthene	170
bis(2-Chloroethoxy)methane	170
bis(2-Chloroethyl)ether	170
bis(2-Chloroisopropyl)ether [2,2'-Oxybis(1-chloropropane)]	170
bis(2-Ethylhexyl)phthalate	170
Butylbenzylphthalate	170
Caprolactam	170
Chrysene	170
Dibenz (a,h) anthracene	170
Dibenzofuran	170
Diethylphthalate	170
Dimethylphthalate	170
di-n-Butylphthalate	170
Di-n-octylphthalate	170
Fluoranthene	170
Fluorene	170
Hexachlorobenzene	170
Hexachlorobutadiene	170
Hexachlorocyclopentadiene	170
Hexachloroethane	170
Indeno (1,2,3-cd) pyrene	170
Isophorone	170
Naphthalene	170
Nitrobenzene	170
n-Nitroso-di-n-dipropylamine	170
n-Nitrosodiphenylamine	170
Pentachlorophenol	330
Phenanthrene	170
Phenol	170
Pyrene	170
Tentatively Identified Compounds	NA

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
Organochlorine Pesticides by EPA Method 8081A / NOAA 130	**µg/kg**
alpha-BHC	0.5
beta-BHC	0.5
delta-BHC	0.5
gamma-BHC (Lindane)	0.5
Heptachlor	0.5
Aldrin	0.5
Heptachlor epoxide	0.5
Endosulfan I	0.5
Dieldrin	0.5
4,4'-DDE	0.5
2,4'-DDE	0.5
Endrin	0.5
Endosulfan II	0.5
4,4'-DDD	0.5
2,4'-DDD	0.5
Endosulfan sulfate	0.5
4,4'-DDT	0.5
2,4'-DDT	0.5
Methoxychlor	0.5
Endrin ketone	0.5
Endrin aldehyde	0.5
alpha-Chlordane	0.5
gamma-Chlordane	0.5
Oxychlordane	0.5
cis-Nonachlor	0.5
trans-Nonachlor	0.5
Toxaphene	50
Hexachlorobenzene	0.5
Mirex	0.5
Chlorinated Herbicides by EPA Method 8151A	**µg/kg**
2,4,5-T	20
2,4,5-TP (Silvex)	20
2,4-D	50
2,4-DB	50
Dalapon	50
Dicamba	50
Dichlorprop	50
Dinoseb	50
MCPA	500
MCPP	500
TCL PCBs by EPA Method 8082 / NOAA 130	**µg/kg**
Aroclor-1016	10
Aroclor-1221	20
Aroclor-1232	10
Aroclor-1242	10
Aroclor-1248	10
Aroclor-1254	10
Aroclor-1260	10
Aroclor-1262	10
Aroclor-1268	10
PCB Congeners by EPA Method 1668A [b,c]	**ng/kg**
PCB-1 to PCB-209 + homolog sums	5 to 20

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
TAL Metals by EPA Method 6020/6010	**mg/kg**
Aluminum	2
Antimony	0.05
Arsenic	0.1
Barium	0.1
Beryllium	0.02
Cadmium	0.02
Calcium	10
Chromium	0.2
Cobalt	0.05
Copper	0.2
Iron	5
Lead	0.1
Magnesium	5
Manganese	0.05
Mercury by EPA 1631	0.02
Nickel	0.2
Potassium	10
Silver	0.02
Selenium	1
Sodium	20
Thallium	0.02
Tin	0.5
Vanadium	0.2
Zinc	0.5
TCL Dioxins and Furans by EPA 1613B[b]	**ng/kg**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	1
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.2
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.2
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.2
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.2
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.2
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.2
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.2
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.2
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.2
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.2
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.2
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.2
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.2
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.2
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.2
Total Heptachlorodibenzofuran (HpCDF)	0.2
Total Heptachlorodibenzo-p-dioxin (HpCDD)	0.2
Total Hexachlorodibenzofuran (HxCDF)	0.2
Total Hexachlorodibenzo-p-dioxin (HxCDD)	0.2
Total Pentachlorodibenzofuran (PeCDF)	0.2
Total Pentachlorodibenzo-p-dioxin (PeCDD)	0.2
Total Tetrachlorodibenzofuran (TCDF)	0.2
Total Tetrachlorodibenzo-p-dioxin (TCDD)	0.2
General Chemistry	**mg/kg**
Total Organic Carbon (TOC) by EPA 9060 modified/ Lloyd Kahn	100
Soot Carbon by method of Gustafson et al., 1997	100
Grain Size by ASTM D442/D4464	NA
Percent Solids	NA
Ammonia by USGS Method I6522-90	0.2
Sulfide by EPA Method 9030B	0.5
Cyanide by EPA 9012B	0.2
Total Nitrogen by EPA Method 440	0.5
Total Phosphorous by modified USGS Method I-6600-88	10
Density by ASTM Method D854	NA
pH by EPA Method 9045D	NA

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
Radionuclides by HASL-300 [e]	**pCi/g**
^{7}Be	0.3
^{137}Cs	0.05
^{210}Pb	0.1
PAHs and alkyl PAHs by EPA Method 8270 - SIM / NOAA 130	**µg/kg**
1-Methylnapthalene	5
1-Methylphenanthrene	5
2,3,5-Trimethylnaphthalene	5
2,6-Dimethylnaphthalene	5
2-Methylnaphthalene	5
Acenaphthene	5
Acenaphthylene	5
Anthracene	5
Fluorene	5
Naphthalene	5
Phenanthrene	5
Benzo(a)anthracene	5
Benzo(a)pyrene	5
Benzo(b)fluoranthene	5
Benzo(e)pyrene	5
Benzo(g,h,i)perylene	5
Benzo(k)fluoranthene	5
Chrysene	5
Dibenzo(a,h)anthracene	5
Dibenzothiophene	5
Fluoranthene	5
Indeno[1,2,3-c,d]-pyrene	5
Perylene	5
Pyrene	5
C1-Benzanthracene/chrysenes	5
C1-Dibenzothiophenes	5
C1-Fluorenes	5
C1-Naphthalenes	5
C1-Phenanthrene/anthracenes	5
C1-Pyrene/fluoranthenes	5
C2-Benzanthracene/chrysenes	5
C2-Dibenzothiophenes	5
C2-Fluorenes	5
C2-Naphthalenes	5
C2-Phenanthrene/anthracenes	5
C3-Benzanthracene/chrysenes	5
C3-Dibenzothiophenes	5
C3-Fluorenes	5
C3-Naphthalenes	5
C3-Phenanthrene/anthracenes	5
C4-Benzanthracene/chrysenes	5
C4-Dibenzothiophenes	5
C4-Naphthalenes	5
C4-Phenanthrenes/anthracenes	5
Benzonaphtothiophene	5
Benzothiophene	5
C1-Benzo(b)thiophene	5
C2-Benzo(b)thiophene	5
C3-Benzo(b)thiophene	5
C4-Benzo(b)thiophene	5
Retene	5

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
PAHs and alkyl PAHs by EPA Method 8270 - SIM/NOAA 130 (continued)	**µg/kg**
cis/trans-Decalin	5
C1-Decalin	5
C2-Decalin	5
C3-Decalin	5
C4-Decalin	5
Methyl mercury by EPA Method 1630 modified[b]	**µg/kg**
Methyl mercury	0.01
n-Alkanes and Isoprenoids by EPA 8015 modified	**µg/kg**
n-Nonane (nC_9)	100
n-Decane (nC_{10})	100
n-Undecane (nC_{11})	100
n-Dodecane (nC_{12})	100
n-Tridecane (nC_{13})	100
2,6,10 Trimethyldodecane (1380)	100
n-Tetradecane (nC_{14})	100
2,6,10 Trimethyltridecane (1470)	100
n-Pentadecane (nC_{15})	100
n-Hexadecane (nC_{16})	100
Norpristane (1650)	100
n-Heptadecane (nC_{17})	100
Pristane (pr)	100
n-Octadecane (nC_{18})	100
Phytane (Ph)	100
n-Nonadecane (nC_{19})	100
n-Eicosane (nC_{20})	100
n-Heneicosane (nC_{21})	100
n-Docosane (nC_{22})	100
n-Tricosane (nC_{23})	100
n-Tetracosane (nC_{24})	100
n-Pentacosane (nC_{25})	100
n-Hexacosane (nC_{26})	100
n-Heptacosane (nC_{27})	100
n-Octacosane (nC_{28})	100
n-Nonacosane (nC_{29})	100
n-Triacontane (nC_{30})	100
n-Hentriacontane (nC_{31})	100
n-Dotriacontane (nC_{32})	100
n-Tritriacontane (nC_{33})	100
n-Tetratriacontane (nC_{34})	100
n-Pentatriacontane (nC_{35})	100
n-Hexatriacontane (nC_{36})	100
n-Heptatriacontane (nC_{37})	100
n-Octatriacontane (nC_{38})	100
n-Nonatriacontane (nC_{39})	100
n-Tetracontane (nC_{40})	100
DRO (C_{10}-C_{28})	100
TPH/TEM (C_9-C_{40})	100

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
Triterpane and Sterane Biomarkers by EPA 8270 modified[d]	**µg/kg**
C23 Tricyclic Terpane (T4)	2
C24 Tricyclic Terpane (T5)	2
C25 Tricyclic Terpane (T6)	2
C24 Tetracyclic Terpane (T6a)	2
C26 Tricyclic Terpane- 22S (T6b)	2
C26 Tricyclic Terpane -22R (T6c)	2
C28 Tricyclic Terpane -22S (T7)	2
C28 Tricyclic Terpane -22R (T8)	2
C29 Tricyclic Terpane -22S (T9)	2
C29 Tricyclic Terpane -22R (T10)	2
18a(H)-22,29,30-Trisnorneohopane -TS (T11)	2
17a(H)-22,29,30-Trisnorhopane -TM (T12)	2
17a(H),21b(H)- and 17b(H),21a(H)-28,30-Bisnorhopane (T14a)	2
17a(H),21b(H)-25-Norhopane (T14b)	2
30-Norhopane (T15)	2
18a(H)-30-Norneohopane -C29Ts (T16)	2
17a(H)-Diahopane (X)	2
30-Normoretane (T17)	2
18a(H) & 18b(H)-Oleananes (T18)	2
Hopane (T19)	2
Moretane (T20)	2
30-Homohopane -22S (T21)	2
30-Homohopane -22R (T22)	2
30,31-Bishomohopane -22S (T26)	2
30,31-Bishomohopane -22R (T27)	2
30,31-Trishomohopane -22S (T30)	2
30,31-Trishomohopane -22R (T31)	2
Tetrakishomohopane -22S (T32)	2
Tetrakishomohopane -22R (T33)	2
Pentakishomohopane -22S (T34)	2
Pentakishomohopane -22S (T35)	2
13b(H),17a(H)-20S-Diacholestane (S4)	2
13b(H),17a(H)-20R-Diacholestane (S5)	2
13b(H),17a(H)-20S-Methyldiacholestane (S8)	2
14a(H),17a(H)-20S-Cholestane (S12)	2
14a(H),17a(H)-20R-Cholestane (S17)	2
13b(H),17a(H)-20R--Ethyldiacholestane (S18)	2
13a(H),17b(H)-20S-Ethyldiacholestane (S19)	2
14a(H),17a(H)-20S-Methylcholestane (S20)	2
14a(H),17a(H)-20R-Methylcholestane (S24)	2
14a(H),17a(H)-20S-Ethylcholestane (S25)	2
14a(H),17a(H)-20R-Ethylcholestane (S28)	2
14b(H),17b(H)-20R-Cholestane (S14)	2
14b(H),17b(H)-20S-Cholestane (S15)	2
14b(H),17b(H)-20R-Methylcholestane (S22)	2
14b(H),17b(H)-20R-Ethylcholestane (S26)	2
14b(H),17b(H)-20S-Ethylcholestane (S27)	2
C26,20R- +C27,20S-triaromatic steroid	2
C28,20S-triaromatic steroid	2
C27,20R-triaromatic steroid	2
C28,20R-triaromatic steroid	2

Table 4-4
Target Compound List for Sediment Samples

Parameters	Estimated Quantitation Limits
Pesticides by NYSDEC Method HRMS-2 or EPA Method 1699[b]	**µg/kg**
alpha-BHC	0.02
beta-BHC	0.02
delta-BHC	0.02
gamma-BHC (Lindane)	0.02
Heptachlor	0.02
Aldrin	0.02
Heptachlor epoxide	0.02
Endosulfan I	0.02
Dieldrin	0.02
4,4'-DDE	0.02
2,4'-DDE	0.02
Endrin	0.02
Endosulfan II	0.02
4,4'-DDD	0.02
2,4'-DDD	0.02
Endosulfan sulfate	0.02
4,4'-DDT	0.02
2,4'-DDT	0.02
Methoxychlor	0.02
Endrin ketone	0.02
Endrin aldehyde	0.02
alpha-Chlordane	0.02
gamma-Chlordane	0.02
Oxychlordane	0.02
cis-Nonachlor	0.02
trans-Nonachlor	0.02
Toxaphene	0.2
Hexachlorobenzene	0.02
Mirex	0.02
Geotechnical parameters[f]	
Atterberg Limits	NA
Specific Gravity	~~NA~~
Shear Stress	NA

Notes:
Detection limits are all estimates and may not be achievable by all laboratories
mg/kg = milligrams/kilogram
µg/kg = micrograms/kilogram
ng/kg = nanograms/kilogram
pCi/g = picocurie/gram
NA = not applicable

[a] All of the surface sediment samples and 25% of subsurface sediment samples will be analyzed
[b] 25% of surface sediment samples and 25% of subsurface sediment samples will be analyzed
[c] The individual and co-eluting PCB congeners reported will be identified with the analytical laboratory selected
[d] Supplemental analyses will be performed on archived samples
[e] Radionuclide analyses will be performed only on selected cores and associated surface sediments (^{7}Be will be performed on surface sediments only)
[f] 25% of surface sediment samples and 10% of subsurface sediment samples will be analyzed

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
TCL Volatiles by EPA Method 8260	**µg/L**
1,1,1-Trichloroethane	5
1,1,2,2-Tetrachloroethane	5
1,1,2-Trichloro-1,2,2-trifluoroethane	5
1,1,2-Trichloroethane	5
1,1,-Dichloroethylene	5
1,1-Dichloroethane	5
1,2,3-Trichlorobenzene	5
1,2,4-Trichlorobenzene	5
1,2-Dibromoethane	5
1,2-Dibromo-3-chloropropane	5
1,2-Dichlorobenzene	5
1,2-Dichloroethane	5
1,2-Dichloropropane	5
1,3-Dichlorobenzene	5
1,4-Dichlorobenzene	5
2-Butanone	10
2-Hexanone	10
4-Methyl-2-pentanone	10
Acetone	10
Benzene	5
Bromochloromethane	5
Bromodichloromethane	5
Bromoform	5
Bromomethane	5
Carbon disulfide	5
Carbon tetrachloride	5
Chlorobenzene	5
Chloroethane	5
Chloroform	5
Chloromethane	5
cis-1,2-Dichloroethylene	5
cis-1,3-Dichloropropene	5
Cyclohexane	5
Dibromochloromethane	5
Dichlorodifluoromethane	5
Ethylbenzene	5
Isopropylbenzene	5
Methyl acetate	5
Methyl tert-Butyl Ether	5
Methylcyclohexane	5
Methylene chloride	5
Styrene	5
Tetrachloroethene	5
Toluene	5
trans,1-2-Dichloroethylene	5
trans-1,3-Dichloropropene	5
Trichloroethene	5
Trichlorofluoromethane	5
Vinyl acetate	5
Vinyl chloride	5
Xylenes (total)	5
Tentatively Identified Compounds	NA

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
TCL Semivolatiles by EPA Method 8270	**µg/L**
1,1'-Biphenyl	5
1,2,4,5-Tetrachlorobenzene	5
1,4-Dioxane by modified EPA Method 8270 SIM	10
2,3,4,6-Tetrachlorophenol	5
2,4,5-Trichorophenol	5
2,4,6-Trichlorophenol	5
2,4-Dichlorophenol	5
2,4-Dimethylphenol	5
2,4-Dinitrophenol	5
2,4-Dinitrotoluene	5
2,6-Dinitrotoluene	5
2-Chloronaphthalene	5
2-Chlorophenol	5
2-Methylnaphthalene by EPA Method 8270 SIM	0.02
2-Methylphenol	5
2-Nitroaniline	10
2-Nitrophenol	5
3,3'-Dichlorobenzidine	5
3-Nitroaniline	10
4,6-Dinitro-2-methylphenol	10
4-Bromophenyl-phenyl ether	5
4-Chloro-3-methylphenol	5
4-Chloroaniline	5
4-Chlorophenyl-phenyl ether	5
4-Methylphenol	5
4-Nitroaniline	10
4-Nitrophenol	10
Acenaphthene by EPA Method 8270 SIM	0.02
Acenaphthylene by EPA Method 8270 SIM	0.02
Acetophenone	5
Anthracene by EPA Method 8270 SIM	5
Atrazine	5
Benzaldehyde	5
Benzo (g,h,i) perylene by EPA Method 8270 SIM	0.02
Benzo(a) pyrene by EPA Method 8270 SIM	0.02
Benzo(a)anthracene by EPA Method 8270 SIM	0.02
Benzo(b) fluoroanthene by EPA Method 8270 SIM	0.02
Benzo(k) fluoroanthene by EPA Method 8270 SIM	0.02
bis(2-Chloroethoxy)methane	5
bis(2-Chloroethyl)ether	5
bis(2-Chloroisopropyl)ether [2,2'-Oxybis(1-chloropropane)]	5
bis(2-Ethylhexyl)phthalate	5
Butylbenzylphthalate	5
Caprolactam	5
Chrysene by EPA Method 8270 SIM	0.02
Dibenz (a,h) anthracene by EPA Method 8270 SIM	0.02
Dibenzofuran	5
Diethylphthalate	5
Dimethylphthalate	5
di-n-Butylphthalate	5
Di-n-octylphthalate	5
Fluoranthene by EPA Method 8270 SIM	0.02
Fluorene by EPA Method 8270 SIM	0.02
Hexachlorobenzene	5
Hexachlorobutadiene	5

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
TCL Semivolatiles by EPA Method 8270 (continued)	**µg/L**
Hexachlorocyclopentadiene	5
Hexachloroethane	5
Indeno (1,2,3-cd) pyrene by EPA Method 8270 SIM	0.02
Isophorone	5
Naphthalene by EPA Method 8270 SIM	0.02
Nitrobenzene	5
n-Nitroso-di-n-dipropylamine	5
n-Nitrosodiphenylamine	5
Pentachlorophenol	5
Phenanthrene by EPA Method 8270 SIM	0.02
Phenol	5
Pyrene by EPA Method 8270 SIM	0.02
Tentatively Identified Compounds	NA
Chlorinated Pesticides by EPA Method 8081A	**µg/L**
alpha-BHC	0.005
beta-BHC	0.005
delta-BHC	0.005
gamma-BHC (Lindane)	0.005
Heptachlor	0.005
Aldrin	0.005
Heptachlor epoxide	0.005
Endosulfan I	0.005
Dieldrin	0.005
4,4'-DDE	0.005
2,4'-DDE	0.005
Endrin	0.005
Endosulfan II	0.005
4,4'-DDD	0.005
2,4'-DDD	0.005
Endosulfan sulfate	0.005
4,4'-DDT	0.005
2,4'-DDT	0.005
Methoxychlor	0.005
Endrin ketone	0.005
Endrin aldehyde	0.005
alpha-Chlordane	0.005
gamma-Chlordane	0.005
Oxychlordane	0.005
cis-Nonachlor	0.005
trans-Nonachlor	0.005
Toxaphene	0.25
Hexachlorobenzene	0.005
Mirex	0.005
Chlorinated Herbicides by EPA Method 8151A	**µg/L**
2,4,5-T	0.4
2,4,5-TP (Silvex)	0.4
2,4-D	0.4
2,4-DB	0.4
Dalapon	0.4
Dicamba	0.4
Dichlorprop	0.4
Dinoseb	0.4
MCPA	100
MCPP	100

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
TCL PCBs by EPA Method 8082 / NOAA 130	**µg/L**
Aroclor-1016	0.01
Aroclor-1221	0.02
Aroclor-1232	0.01
Aroclor-1242	0.01
Aroclor-1248	0.01
Aroclor-1254	0.01
Aroclor-1260	0.01
Aroclor-1262	0.01
Aroclor-1268	0.01
PCB Congeners[a] by EPA Method 1668A	**pg/L**
PCB-1 to PCB-209 + homolog sums	10 to 50
TAL Metals by EPA Methods 6010/6020/1640	**µg/L**
Aluminum	50
Antimony	1
Arsenic	0.5
Barium	1
Beryllium	0.02
Cadmium	0.02
Calcium	50
Chromium	0.2
Cobalt	0.02
Copper	0.1
Iron	20
Lead	0.02
Magnesium	20
Manganese	1
Mercury by EPA Method 1631	0.001
Nickel	0.2
Potassium	2000
Silver	0.02
Selenium by EPA Method 7742	1
Sodium	100
Thallium	0.02
Tin	2
Vandium	4
Zinc	0.5
TCL Dioxins and Furans[b] by EPA 1613B	**pg/L**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	100
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	100
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	50
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	50
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	50
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	50
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	50
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	50
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	50
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	50
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	50
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	50
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	50
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	50
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	50
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	10

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	10
Total Heptachlorodibenzofuran (HpCDF)	50
Total Heptachlorodibenzo-p-dioxin (HpCDD)	50
Total Hexachlorodibenzofuran (HxCDF)	50
Total Hexachlorodibenzo-p-dioxin (HxCDD)	50
Total Pentachlorodibenzofuran (PeCDF)	50
Total Pentachlorodibenzo-p-dioxin (PeCDD)	50
Total Tetrachlorodibenzofuran (TCDF)	50
Total Tetrachlorodibenzo-p-dioxin (TCDD)	50
General Chemistry	**mg/L**
Total Organic Carbon (TOC) by SM5310C	0.5
Dissolved Organic Carbon (DOC) by SM 5310C	0.5
Particulate Organic Carbon (POC) by EPA Method 440	0.5
Total Suspended Solids (TSS) by EPA Method 160.2	1
Suspended Sediment Concentrations by ASTM 3977	1
Total Dissolved Solids (TDS) by EPA Method 160.1	1
Alkalinity by SM 2320B	2
Ammonia by EPA Method 350.1	0.05
Nitrate/Nitrite by EPA Method 353.2	0.05
Total Nitrogen (total and dissolved) by USGS Method I-4650-03	0.015
Total Phosphorus (total and dissolved) by USGS Method I-4650-03	0.015
Biochemical Oxygen Demand (BOD-5) by SM 5210B	2
Biochemical Oxygen Demand (BOD-30) by SM 5210B modified	2
Sulfate by EPA Method 300.0	0.2
Chloride by EPA Method 300.0	0.2
Bromide by EPA Method 300.0	0.1
Cyanide by EPA Method 335.2	0.01
Total and fecal coliform bacteria by SM 9222	NA
PAHs and alkyl PAHs by EPA Method 8270 - SIM/NOAA 130	**µg/L**
1-Methylnapthalene	0.01
1-Methylphenanthrene	0.01
2,3,5-Trimethylnaphthalene	0.01
2,6-Dimethylnaphthalene	0.01
2-Methylnaphthalene	0.01
Acenaphthene	0.01
Acenaphthylene	0.01
Anthracene	0.01
Fluorene	0.01
Naphthalene	0.01
Phenanthrene	0.01
Benzo[a]anthracene	0.01
Benzo[a]pyrene	0.01
Benzo[b]fluoranthene	0.01
Benzo[e]pyrene	0.01
Benzo[g,h,i]perylene	0.01
Benzo[k]fluoranthene	0.01
Chrysene	0.01
Dibenzo[a,h]anthracene	0.01
Dibenzothiophene	0.01
Fluoranthene	0.01
Indeno[1,2,3-c,d]-pyrene	0.01
Perylene	0.01
Pyrene	0.01
C1-Benzanthracene/chrysenes	0.01
C1-Dibenzothiophenes	0.01
C1-Fluorenes	0.01
C1-Naphthalenes	0.01
C1-Phenanthrene/anthracenes	0.01
C1-Pyrene/fluoranthenes	0.01

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
PAHs and alkyl PAHs by EPA Method 8270- SIM/NOAA 130 (continued)	**µg/L**
C2-Benzanthracene/chrysenes	0.01
C2-Dibenzothiophenes	0.01
C2-Fluorenes	0.01
C2-Naphthalenes	0.01
C2-Phenanthrene/anthracenes	0.01
C3-Benzanthracene/chrysenes	0.01
C3-Dibenzothiophenes	0.01
C3-Fluorenes	0.01
C3-Naphthalenes	0.01
C3-Phenanthrene/anthracenes	0.01
C4-Benzanthracene/chrysenes	0.01
C4-Dibenzothiophenes	0.01
C4-Naphthalenes	0.01
C4-Phenanthrenes/anthracenes	0.01
Benzonaphtothiophene	0.01
Benzothiophene	0.01
C1-Benzo(b)thiophene	0.01
C2-Benzo(b)thiophene	0.01
C3-Benzo(b)thiophene	0.01
C4-Benzo(b)thiophene	0.01
Retene	0.01
cis/trans-Decalin	0.01
C1-Decalin	0.01
C2-Decalin	0.01
C3-Decalin	0.01
C4-Decalin	0.01
Methyl mercury by EPA Method 1630 modified	**ng/L**
Methyl mercury	0.02
n-Alkanes and Isoprenoids by EPA 8015 modified	**µg/L**
n-Nonane (nC_9)	1
n-Decane (nC_{10})	1
n-Undecane (nC_{11})	1
n-Dodecane (nC_{12})	1
n-Tridecane (nC_{13})	1
2,6,10 Trimethyldodecane (1380)	1
n-Tetradecane (nC_{14})	1
2,6,10 Trimethyltridecane (1470)	1
n-Pentadecane (nC_{15})	1
n-Hexadecane (nC_{16})	1
Norpristane (1650)	1
n-Heptadecane (nC_{17})	1
Pristane (pr)	1
n-Octadecane (nC_{18})	1
Phytane (Ph)	1
n-Nonadecane (nC_{19})	1
n-Eicosane (nC_{20})	1
n-Heneicosane (nC_{21})	1
n-Docosane (nC_{22})	1
n-Tricosane (nC_{23})	1
n-Tetracosane (nC_{24})	1

Table 4-5
Target Compound List for Surface Water Samples

Parameters	Estimated Quantitation Limits
n-Alkanes and Isoprenoids by EPA 8015 modified (continued)	**µg/L**
n-Pentacosane (nC_{25})	1
n-Hexacosane (nC_{26})	1
n-Heptacosane (nC_{27})	1
n-Octacosane (nC_{28})	1
n-Nonacosane (nC_{29})	1
n-Triacontane (nC_{30})	1
n-Hentriacontane (nC_{31})	1
n-Dotriacontane (nC_{32})	1
n-Tritriacontane (nC_{33})	1
n-Tetratriacontane (nC_{34})	1
n-Pentatriacontane (nC_{35})	1
n-Hexatriacontane (nC_{36})	1
n-Heptatriacontane (nC_{37})	1
n-Octatriacontane (nC_{38})	1
n-Nonatriacontane (nC_{39})	1
n-Tetracontane (nC_{40})	1
DRO (C_{10}-C_{28})	1
TPH/TEM (C_9-C_{40})	1
Pesticides[b] by NYSDEC Method HRMS-2 or EPA 1699	**ng/L**
alpha-BHC	0.1
beta-BHC	0.1
delta-BHC	0.1
gamma-BHC (Lindane)	0.1
Heptachlor	0.1
Aldrin	0.1
Heptachlor epoxide	0.1
Endosulfan I	0.1
Dieldrin	0.1
4,4'-DDE	0.1
2,4'-DDE	0.1
Endrin	0.1
Endosulfan II	0.1
4,4'-DDD	0.1
2,4'-DDD	0.1
Endosulfan sulfate	0.1
4,4'-DDT	0.1
2,4'-DDT	0.1
Methoxychlor	0.1
Endrin ketone	0.1
Endrin aldehyde	0.1
alpha-Chlordane	0.1
gamma-Chlordane	0.1
Oxychlordane	0.1
cis-Nonachlor	0.1
trans-Nonachlor	0.1
Toxaphene	10
Hexachlorobenzene	0.1
Mirex	0.1

Notes:
Detection limits are all estimates and may not be achievable by all laboratories
mg/L = milligrams/liter
µg/L = micrograms/liter
pg/L = picograms/liter
ng/L = nanograms/liter
NA = not applicable
[a] 25% of surface water samples will be analyzed. The individual and co-eluting PCB congeners reported will be identified with the analytical laboratory selected
[b] Select samples may be analyzed by high volume sampling techniques (greater than 50 liters) using this method
[c] Supplemental analyses may be performed on selected samples

Table 4-6
Phase 1 RI Data Collection – Tasks Related to Habitat Survey and Biological Evaluation

Task	Description
1. Habitat and Resource Survey	Review high resolution aerial images and existing habitat maps for potential bird and mammal habitat near the Study Area. Verify the data collected through the review of maps and photographs with a boat-based survey of the shoreline. The survey will identify existing habitats, flora, fauna, outfalls, seeps, and recreational access points. The data from the survey will be used to generate a map showing wildlife resources and a cover type map of habitats for the area near the Study Area.
2. Field Water Quality Survey [1]	Water column profiles will be measured prior to collection of macroinvertebrate community samples to assess water column stratification (temperature and conductivity profiles). Measurements will be taken using field instrumentation at the surface (approximately 6 inches depth) and at 1-foot intervals until approximately 1 foot above the mudline. Water column profile measurements will include temperature, DO, salinity, conductivity, turbidity, and pH.
3. Water Column General Chemistry [1]	Directly following the Field Water Quality Survey, surface water samples will be collected from one depth at each station in order to characterize basic water chemistry above the sediment. This sample will be collected at approximately 3.3 ft (1 m) above the mudline (as close to the bottom as possible but at a depth free of sediment), or below any stratification measured in the water column. Samples will be analyzed for TSS, TOC, total nitrogen, total phosphorus, ammonia, TDS, DOC, dissolved nitrogen, and dissolved phosphorus.
4. Benthic Macroinvertebrate Community Survey [2]	The benthic macroinvertebrate community will be assessed during two sampling events designed to capture a range of DO conditions. Sampling will be conducted in late summer (low DO) and spring (high DO). During the high DO benthic sampling event, sediment samples will be collected for chemical analysis. During the low DO benthic sampling event, sediment samples will be collected for general chemical parameters that are key determinants of benthic community structure (i.e., grain size, TOC, ammonia, and sulfides). In addition, samples will be evaluated for iron and manganese, which are highly dependent on redox conditions in the sediment. Sediment samples for other chemical analytes will be archived for potential later analysis. Sediment type will be described qualitatively. Individuals will be identified to the lowest practicable taxon at the laboratory.
5. Fish Community Survey [2]	The fish community within the Study Area will be assessed during two sampling events designed to capture a range of DO conditions and a migration event. Sampling will be conducted in the late summer to reflect low DO levels and in the spring to reflect higher DO levels and spring migration. Sampling will be conducted within the same time frame as the benthic survey work. Sampling gear will include otter trawls to sample bottom oriented species and purse nets, seines, traps, and gill nets to capture pelagic species. Individuals will be identified to species in the field and external abnormalities will be noted. Each species within a sampling zone will be measured in wet weight.

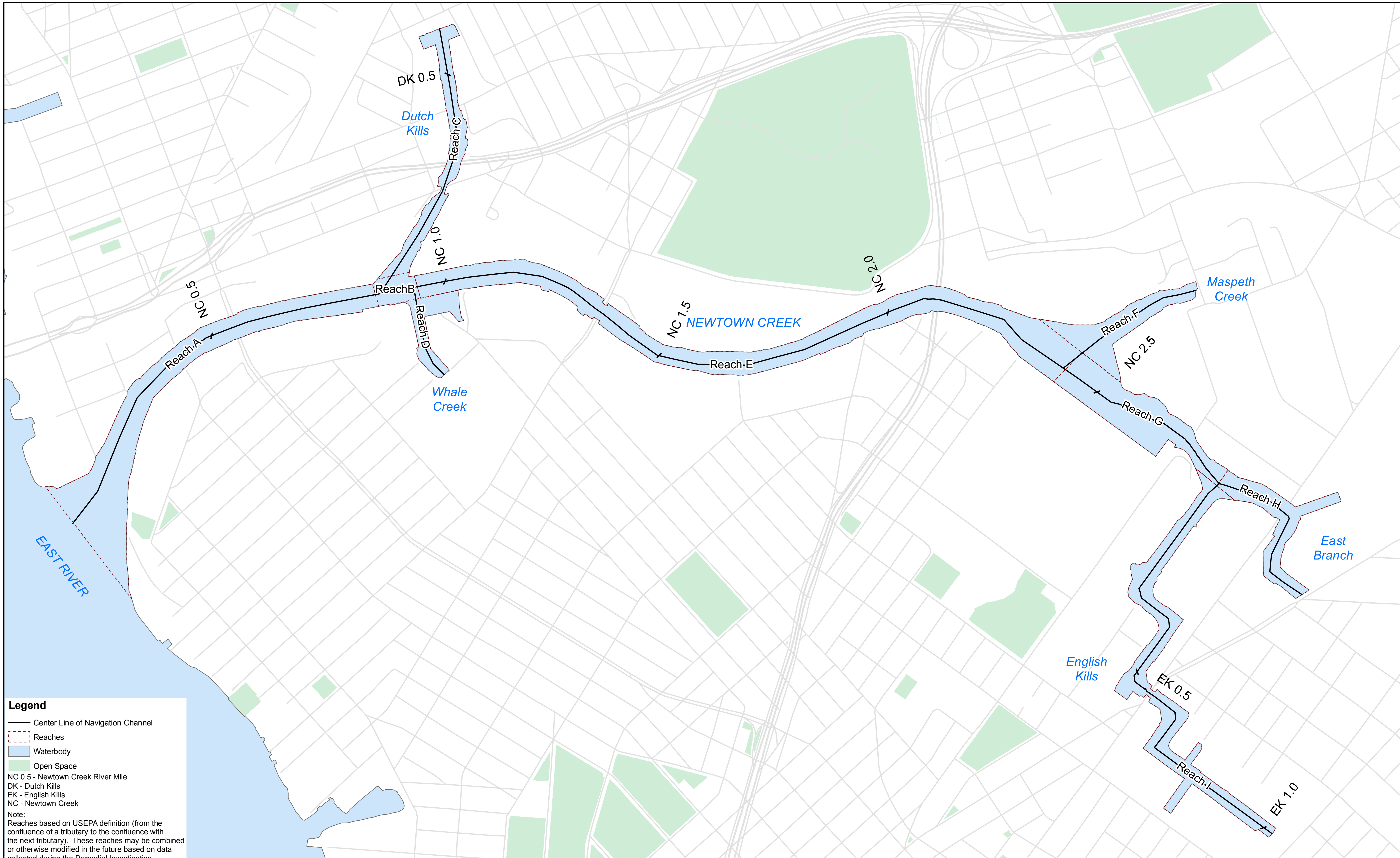
Notes:
1 – Water quality data collected as part of other Remedial Investigation tasks may also be considered in the Ecological Risk Assessment.
2 – Methods may be modified following review of HydroQual reports (if available) described in New York City Department of Environmental Protection report (NYCDEP, 2007a).
DO = Dissolved Oxygen DOC = Dissolved Organic Carbon TDS = Total Dissolved Solids TOC = Total Organic Carbon TSS = Total Suspended Solids

Table 4-7
Rationale for Benthic Macroinvertebrate Community Survey Locations

General Location	Rationale
Navigation channel within Newtown Creek	Characterize macroinvertebrate community within portions of the Study Area that may be impacted by shipping traffic (i.e., navigation channel and turning basin).
Outside navigation channel within Newtown Creek	Characterize macroinvertebrate community along the shoreline of the Study Area. Some locations may be in the vicinity of outfalls. Water depth is expected to be shallower than in the navigation channel.
Dutch Kills, Maspeth Creek, East Branch, and English Kills	Characterize macroinvertebrate community within tributaries of Newtown Creek. Some locations may be in the vicinity of outfalls. DO levels are anticipated to be lower in the tributaries than in the Newtown Creek channel. Samples will be collected inside and outside the navigation channel in order to assess the impact of shipping traffic within English Kills and the East Branch.
Mouth of Newtown Creek	Characterize macroinvertebrate community near the mouth of Newtown Creek.

Notes:

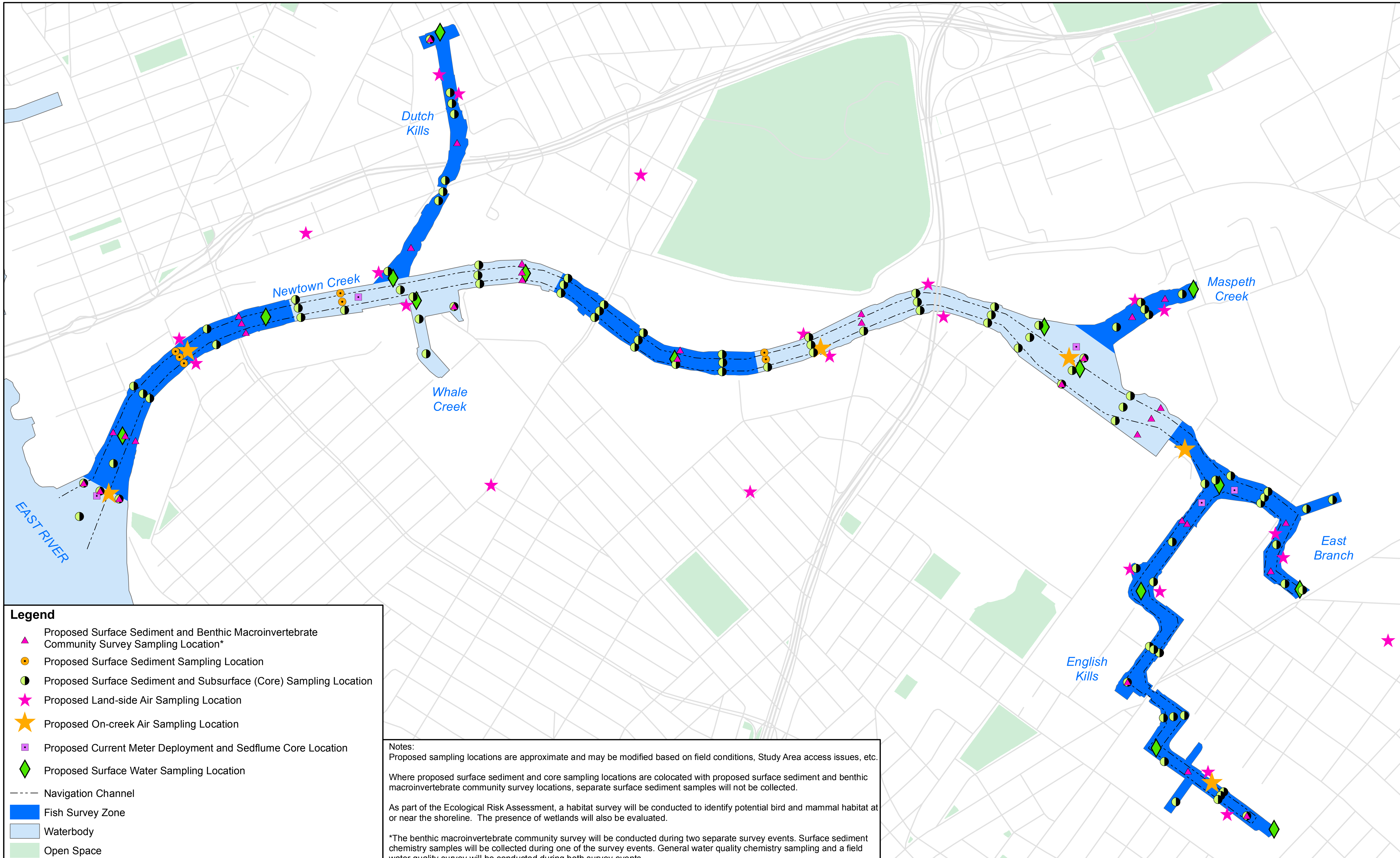
Field water quality survey and water column general chemistry sampling will be conducted at each benthic macroinvertebrate community survey station prior to collection of sediment.
DO = Dissolved Oxygen



AECOM

Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-1
River Miles and Reaches
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Notes:
Proposed sampling locations are approximate and may be modified based on field conditions, Study Area access issues, etc.

Where proposed surface sediment and core sampling locations are colocated with proposed surface sediment and benthic macroinvertebrate community survey locations, separate surface sediment samples will not be collected.

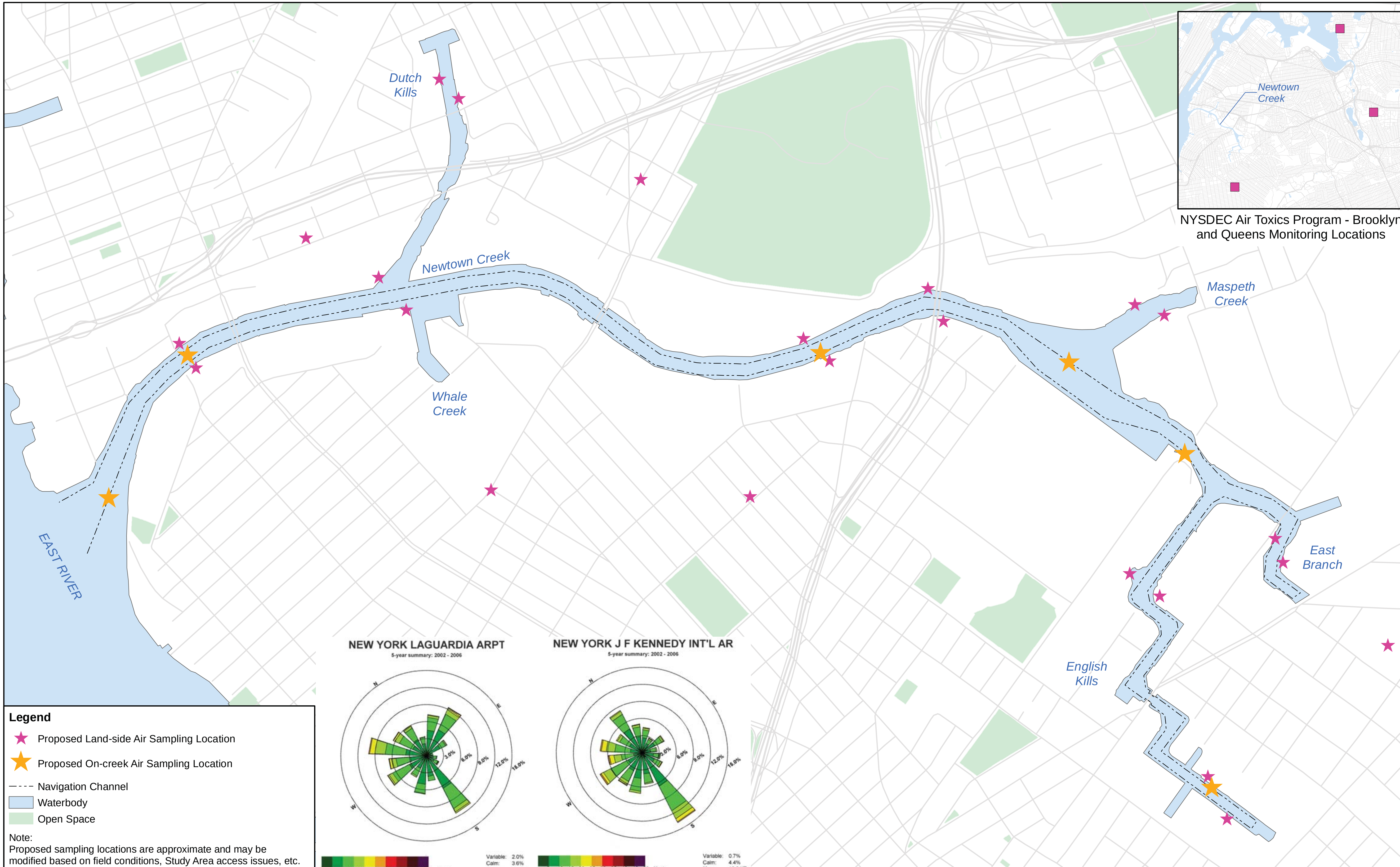
As part of the Ecological Risk Assessment, a habitat survey will be conducted to identify potential bird and mammal habitat at or near the shoreline. The presence of wetlands will also be evaluated.

*The benthic macroinvertebrate community survey will be conducted during two separate survey events. Surface sediment chemistry samples will be collected during one of the survey events. General water quality chemistry sampling and a field water quality survey will be conducted during both survey events.

AECOM

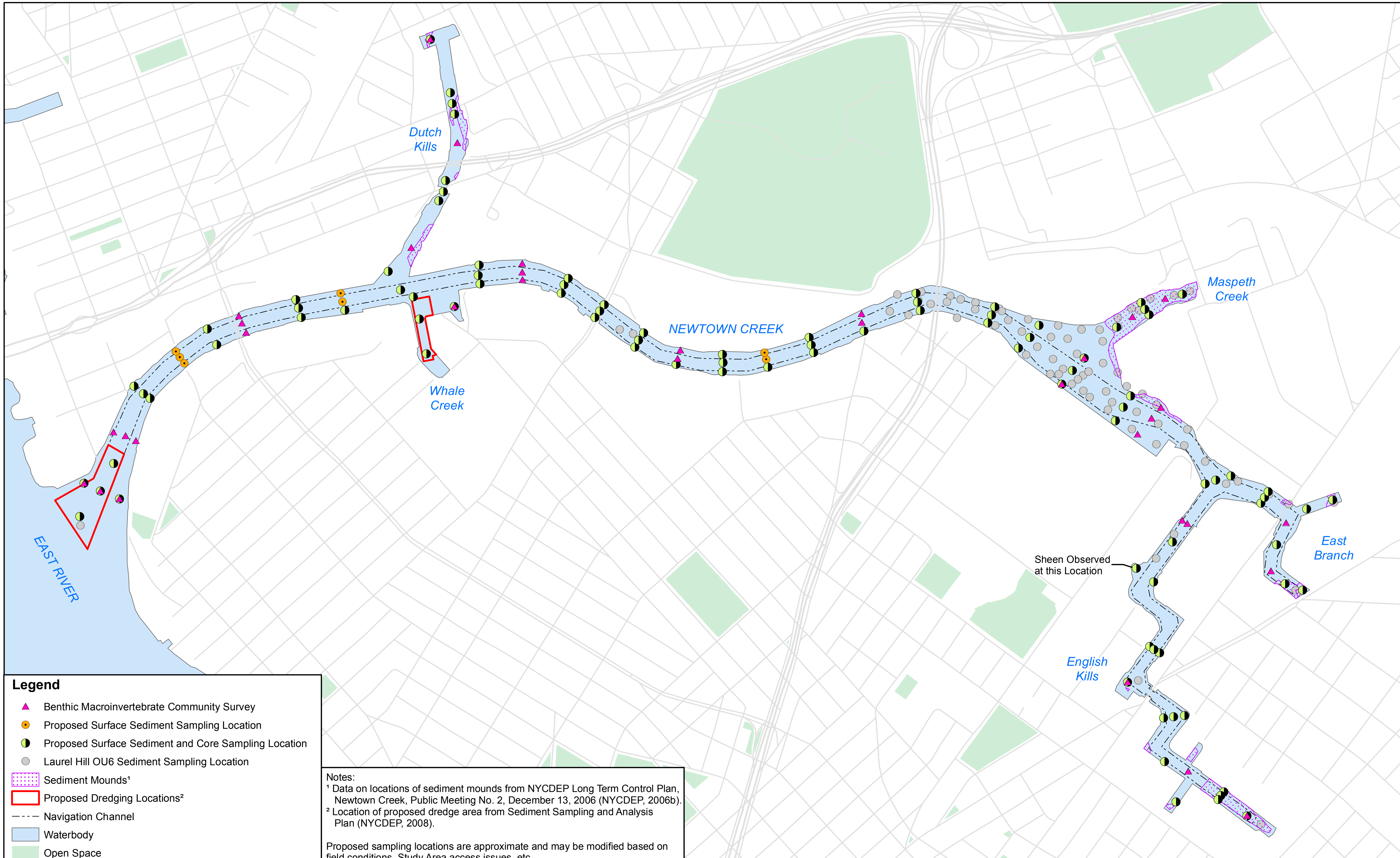
Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-2
Summary of Proposed Sampling Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-3
Proposed Air Sampling Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



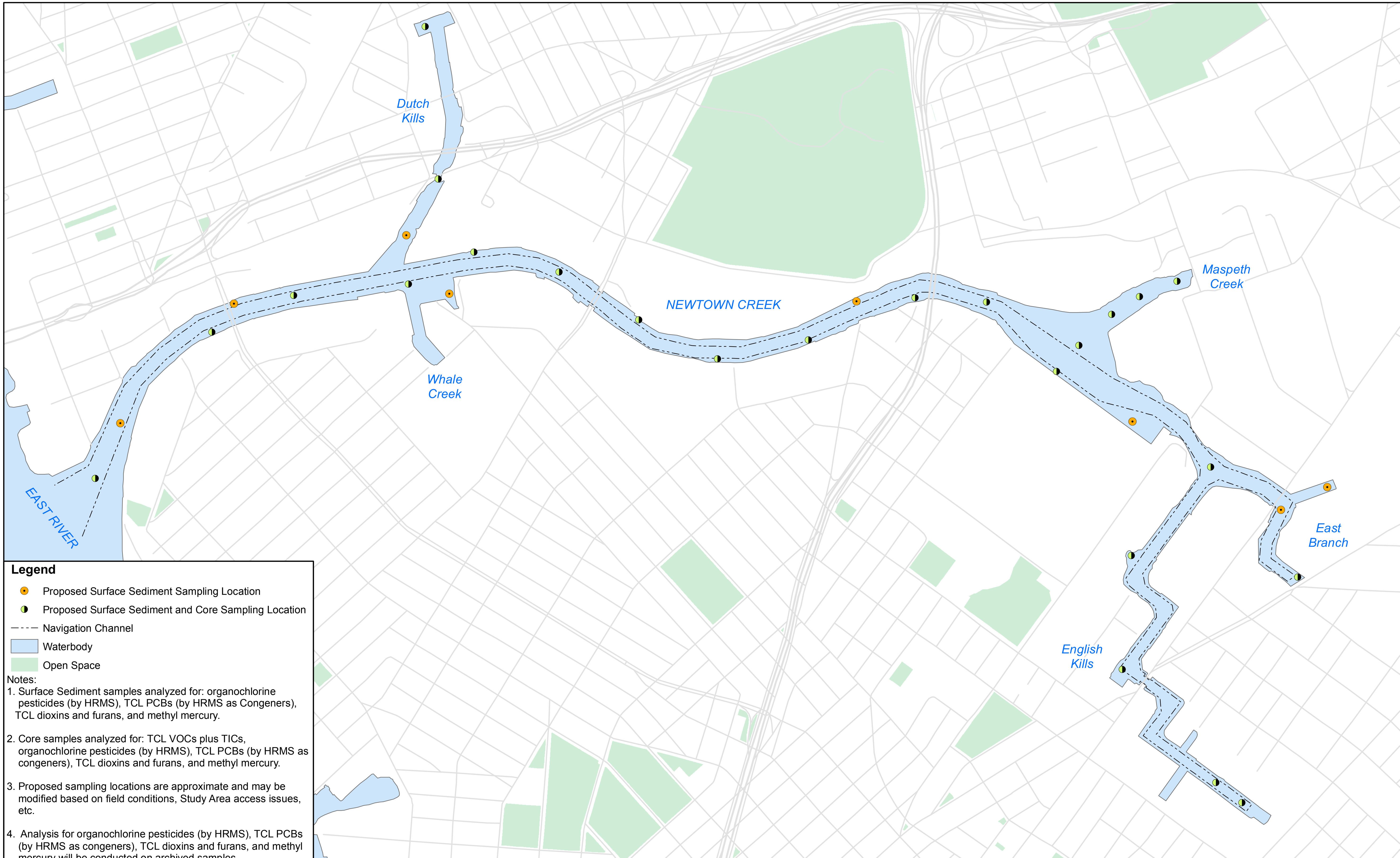
Notes:
[1] Data on locations of sediment mounds from NYCDEP Long Term Control Plan, Newtown Creek, Public Meeting No. 2, December 13, 2006 (NYCDEP, 2006b).
[2] Location of proposed dredge area from Sediment Sampling and Analysis Plan (NYCDEP, 2008).

Proposed sampling locations are approximate and may be modified based on field conditions, Study Area access issues, etc.

AECOM

Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-4
Proposed Sediment Sampling Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Notes:

1. Surface Sediment samples analyzed for: organochlorine pesticides (by HRMS), TCL PCBs (by HRMS as Congeners), TCL dioxins and furans, and methyl mercury.

2. Core samples analyzed for: TCL VOCs plus TICs, organochlorine pesticides (by HRMS), TCL PCBs (by HRMS as congeners), TCL dioxins and furans, and methyl mercury.

3. Proposed sampling locations are approximate and may be modified based on field conditions, Study Area access issues, etc.

4. Analysis for organochlorine pesticides (by HRMS), TCL PCBs (by HRMS as congeners), TCL dioxins and furans, and methyl mercury will be conducted on archived samples.

AECOM

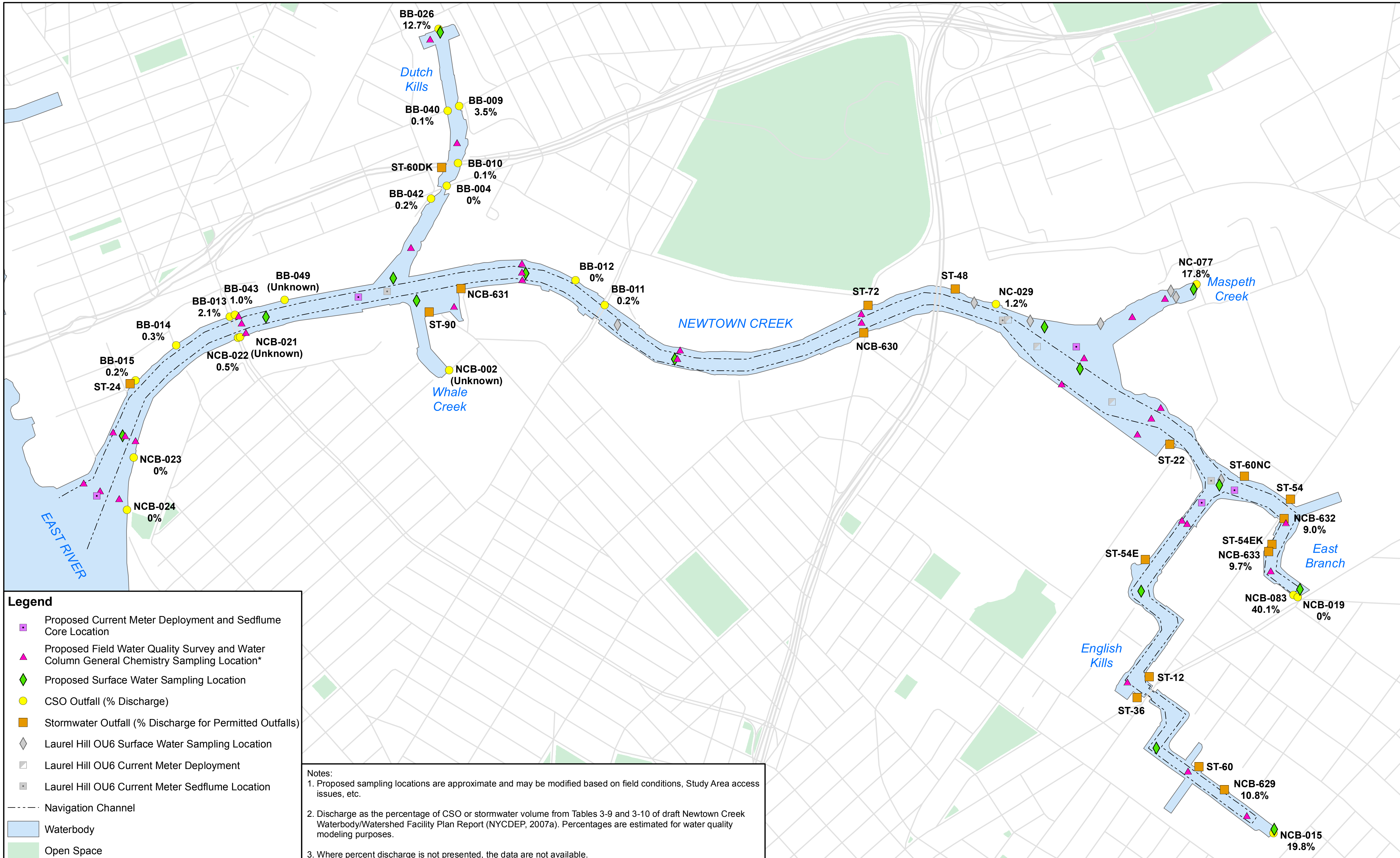
Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-5
Proposed Dioxin-Furan, Pesticides (by HRMS), PCB Congener, Methyl Mercury, and VOC Sampling Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

AECOM

Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-6
Proposed Radioisotope Sampling Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Legend

- Proposed Current Meter Deployment and Sedflume Core Location
- Proposed Field Water Quality Survey and Water Column General Chemistry Sampling Location*
- Proposed Surface Water Sampling Location
- CSO Outfall (% Discharge)
- Stormwater Outfall (% Discharge for Permitted Outfalls)
- Laurel Hill OU6 Surface Water Sampling Location
- Laurel Hill OU6 Current Meter Deployment
- Laurel Hill OU6 Current Meter Sedflume Location
- Navigation Channel
- Waterbody
- Open Space

Notes:
1. Proposed sampling locations are approximate and may be modified based on field conditions, Study Area access issues, etc.

2. Discharge as the percentage of CSO or stormwater volume from Tables 3-9 and 3-10 of draft Newtown Creek Waterbody/Watershed Facility Plan Report (NYCDEP, 2007a). Percentages are estimated for water quality modeling purposes.

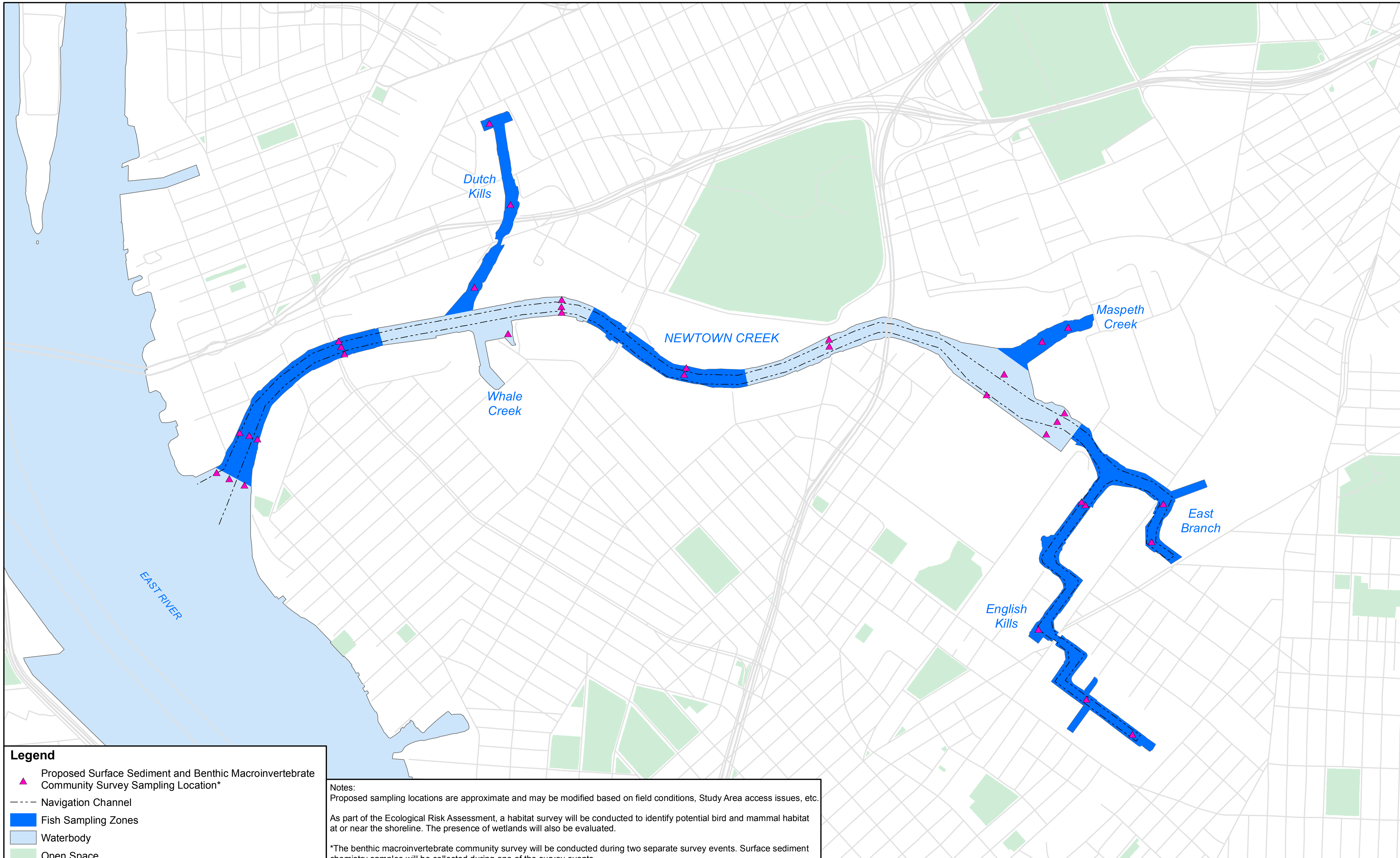
3. Where percent discharge is not presented, the data are not available.

AECOM

0 1,000 Feet

Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-7
Proposed Surface Water Sampling, Current Meter Deployment, and Sedflume Core Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Notes:
Proposed sampling locations are approximate and may be modified based on field conditions, Study Area access issues, etc.

As part of the Ecological Risk Assessment, a habitat survey will be conducted to identify potential bird and mammal habitat at or near the shoreline. The presence of wetlands will also be evaluated.

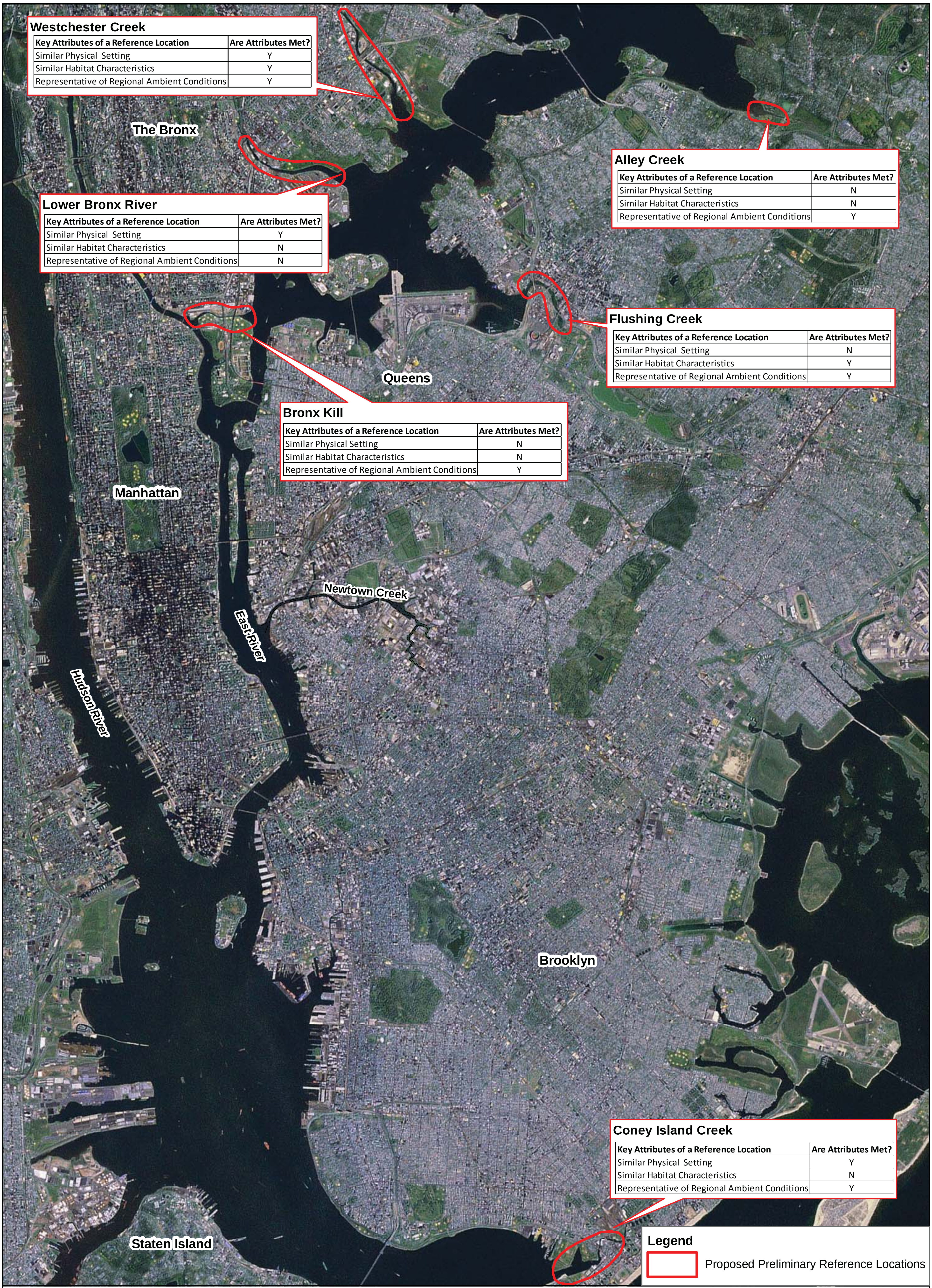
*The benthic macroinvertebrate community survey will be conducted during two separate survey events. Surface sediment chemistry samples will be collected during one of the survey events.

AECOM

0 1,270 Feet

Source:
ESRI 9.3 Streetmap Data Layer.

Figure 4-8
Proposed Ecological Sampling Areas/Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek



Notes:
1) The locations shown on this figure are conceptual in nature, and may not represent applicable or relevant reference areas. Additional or other locations may be proposed to satisfy the criteria for background and reference locations. Background and reference locations will be further discussed in the Reference Site and Background Location Selection Memorandum, which will discuss the identification and weighting of decision criteria to select reference and background locations.
2) Physical properties include sediment environment and characteristics, shoreline development, water flow characteristics, and disturbance regime.
3) Habitat characteristics include tidal regime, frequency of mudflats, vegetation, pools, and eddies.
4) A location is representative of regional ambient conditions if it is within the New York City urban setting, it not a recognized contaminated site of concern, and is within the Hudson-Raritan Estuary subunit.

AECOM

0 7,500 Feet

Source:
ESRI 9.3 I3 Imagery Prime World 2D.

Figure 4-9
Preliminary Candidates for Reference Locations
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

5.0 Feasibility Study Approach

This section of the Work Plan describes the FS approach for the Study Area which will be updated in the FS Work Plan. The FS Work Plan will describe the scope of work that will be undertaken to complete an FS for the Study Area. The objective of the FS is to develop and evaluate remedial alternatives and assess whether they will meet the proposed remedial action goals and RAOs for the Study Area. The FS approach includes the steps outlined in the *National Contingency Plan* as described in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988). It also considers the guidance provided by the *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a) and *DER-10*, including *Technical and Administrative Guidance Memorandum (TAGM) #HWR-90-4030 Selection of Remedial Actions At Hazardous Waste Sites* (NYSDEC, 1990) and is consistent with *6 NYCRR Part 375*.

5.1 RI Summary

Inputs to the FS approach include the results of the RI which are used to develop the remedial action goals and RAOs for the Study Area. RAOs will be developed to take into account relative risks of COPCs and other stressors, as well as ensure that cleanup objectives for sediment are clearly tied to overall risk management goals. As appropriate, RAOs will specify the COPC, exposure route(s) and receptor(s), and an acceptable COPC level or range of levels that may be numerical or narrative, recognizing that protectiveness may be achieved by reducing exposure as well as by reducing COPC levels. In addition, because the RAOs for protecting environmental receptors typically seek to restore a resource in the site-specific setting, ecologically-based RAOs will be expressed in terms of the environmental media of interest and the attainable target cleanup condition, whenever possible. To achieve these goals, the RAOs may be presented as narrative objectives and not specific numerical standards. In accordance with USEPA (2005a), the RAOs may differ for different parts of the Study Area depending on the exposure pathways and receptors. These RAOs will be presented in the FS Work Plan that will be prepared following the RI, ERA, and HHRA.

The RI, ERA, and HHRA are the primary information-gathering and evaluation tasks to understand existing conditions within and immediately adjacent to the Study Area, while the FS is concerned primarily with identifying reasonable future actions that could be implemented to complete a remedial action consistent with USEPA *CERCLA* guidance and contaminated sediment remediation guidance and considers ARARs and TBCs (including those ARARs and TBCs that may be technically impracticable to achieve and for which waivers may be required). Consequently, the FS relies heavily on the data collection and the existing conditions description provided by the RI. However, additional information may be required specifically for the FS, so that various proposed actions can be evaluated for their potential to succeed (i.e., feasibility) in remediating the Study Area. Additional data needs will be defined and incorporated into a FS Field Program Work Plan. Because of the complexity of the potential remedial action for the Study Area, it is anticipated that an adaptive management strategy will be required, as discussed in Section 3.2.10.1.

5.2 Feasibility Study Process

The FS activities will include the following general steps and considerations.

- Describing the baseline and/or current situation and summarizing and synthesizing the results of the RI, the HHRA and ERA, the CSM, and related documents.
- Establishing RAOs and preliminary remedial goals that permit a range of remedial alternatives to be developed.
- Developing general response actions that may be taken to meet the RAOs.
- Comparing sediment COC results with remedial action levels (RALs) to identify volumes or areas to which general response actions (GRAs) may be applied.
- Identifying and screening GRAs, remedial technology types, and specific process options best suited to Study Area conditions.
- Assembling the technology types and process options into remedial alternatives and then completing the screening and final assembly of remedial alternatives.
- Identifying candidate technologies for a treatability study program and implementing and evaluating treatability studies and pilot studies, as necessary, through an FS Field Program.
- Completing a detailed evaluation and comparative analysis of retained remedial alternatives using USEPA's seven evaluation criteria.

5.3 Development and Screening of Alternatives

A representative range of applicable technologies and responses will be assembled into a set of potential remedial alternatives. The following five-step process will be used to develop the remedial alternatives. ARARs/TBCs (including those ARARs and TBCs that may be technically impracticable to achieve and for which waivers may be required) are considered in each step of this process.

1. RAOs will be established, specifying the COCs, media of interest, and exposure pathways.
2. GRAs that could be used to meet the RAOs will be identified. GRAs are overall approaches such as natural recovery, removal, containment, or treatment.
3. Media COC results will be compared to RALs.
4. Applicable remedial technologies for each medium will be identified and screened. The screening process will eliminate technologies that cannot be implemented for technical reasons and identify the technologies that may be suited to Study Area conditions.
5. A set of appropriate remedial alternatives will be formed by combining selected representative technologies and responses.

Remedial alternatives will be screened and analyzed in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA, 1988). The remedial alternatives evaluation will include the guidance provided by the *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a) and *DER-10*, including *Technical and Administrative Guidance Memorandum (TAGM) #HWR-90-4030 Selection of Remedial Actions At Hazardous Waste Sites* (NYSDEC, 1990) and *6 NYCRR Part 375*. Specifically the first step of the screening process will be conducted for the purpose of reducing the number of alternatives that are carried into the detailed analysis stage.

In the preliminary screening stage of the FS, remedial alternatives will be evaluated using the three criteria of effectiveness, implementability (technical and administrative), and cost. Effectiveness refers to the ability of a remedial action to protect human health and the environment. The short-term impacts during remedial construction and implementation are considered at this stage, as well as the long-term effectiveness of the remedial action after it is completed. The expected duration of the effectiveness is estimated for each alternative. Implementability refers to the realistic capability to actually implement an alternative. Technical implementability of a remedial alternative involves the ability to construct and operate the alternative, and to rely on the alternative to meet the performance requirements and consistently achieve the RAOs. At this stage of the FS, the performance of technologies will be reviewed. Administrative implementability refers to the ability to obtain the required permits and stakeholder approvals for the action, regulatory compliance, and the availability and capacity for off-site services such as treatment, storage, and disposal. Cost refers to the relative estimated cost of all aspects (i.e., design, capital costs, and operation and maintenance costs) to implement each alternative. In addition to these three criteria, the preliminary screening stage of the FS will include evaluation of alternatives that include opportunities for reducing the environmental footprint of remedial design and construction activities and include consideration of the sustainability of the alternative.

5.4 Treatability Study Investigations and Pilot Tests

During the performance of the FS, additional data may be necessary to evaluate the extent and effectiveness of potential technologies so that the FS can be used to develop and evaluate alternatives for remediation of the Study Area. Among other information, these data needs may include the performance of treatability studies to assess the applicability of specific technologies under conditions present in the Study Area and/or conducting pilot studies to determine the effectiveness of full-scale technologies in the Study Area. If treatability studies and/or pilot tests are required, they will be conducted generally following the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988) and the *Guidance for Conducting Treatability Studies under CERCLA* (USEPA, 1992b). Work plans, including supporting plans, will be prepared for any treatability studies or pilot tests performed. The results of these studies will be incorporated into the FS Report.

5.5 Detailed Analysis of Alternatives

The purpose of the detailed analysis of alternatives is to provide a systematic evaluation of the alternatives considering all of the relevant factors to facilitate sound decision making in the selection of the final Study Area remedy. The following factors will be considered in this analysis:

- Overall protection of public health and the environment
- Compliance with ARARs/TBCs (including consideration of those ARARs and TBCs that may be technically impracticable to achieve and for which waivers may be required)
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term impacts and effectiveness
- Implementability
- Cost-effectiveness.

In addition to these seven criteria evaluated in the FS, USEPA will evaluate two additional modifying criteria in the proposed plan: State acceptance and community acceptance.

As part of the analysis, estimates will be made of the short-term and long-term risks to human health and the environment that may be introduced by implementing each of the remedial alternatives. An assessment of the impacts of any future proposed remedial action on the floodplain (see Figure 2-1), and any identified wetlands, endangered species, coastal resources (consistent with the New York State Costal Management Program and New York City's Local Waterfront Revitalization Program), cultural resources, and essential fish habitat will also be conducted. Potential remedies will be evaluated according to the USEPA "Clean and Green" Policy (USEPA, 2008; USEPA, 2009c; USEPA, 2009d).

A comparative analysis of the alternatives will be prepared once the evaluation of each of the individual alternatives is complete. The comparative analysis will discuss the advantages and disadvantages of the alternatives in relation to one another so that the important issues for final remedial action are clearly identified.

Upon completion of the individual and comparative evaluations, a proposed remedial action will be described using the best alternative developed. It is anticipated that an adaptive management strategy to implement the recommended remedial action will be required. The proposed plan will consist of a narrative description of the combined alternatives and will be included in the FS Report.

5.6 Feasibility Study Schedule and Reporting

The progress of the FS will be included in progress reports to USEPA. The schedule for the FS will be prepared and submitted to USEPA in the FS Work Plan, which will be prepared at the completion of the RI and risk assessments.

The following documents will be prepared in support of the FS process.

- ARARs/TBCs Memorandum – This memorandum will identify the promulgated standards, requirements, criteria, and limitations that must be met during implementation of the remedy and nonpromulgated criteria, advisories, guidance, and proposed standards that must be considered during implementation of the remedy. It will also identify those ARARs and TBCs that may be technically impracticable to achieve and for which waivers may be required.
- Preliminary Alternatives Memorandum – This memorandum will provide an initial consideration of technologies appropriate for the remedial action (Section 5.3).
- FS Field Program Work Plan – If additional data are required to evaluate the extent and effectiveness of potential technologies, an FS Field Program Work Plan will be developed.
- Refined Alternatives Memorandum – This memorandum will document the development of alternatives to address the RAOs and will identify the alternatives that will be evaluated in the detailed analysis of alternatives (Section 5.5).

An FS report will be completed, generally following the guidance on FS presentations that is provided in the *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA, 1988). The following outline of the FS report will be used as a guide:

1. Introduction and Background
2. Identification and Screening of Technologies
3. Development and Screening of Alternatives
4. Detailed Analysis of Alternatives
5. Proposed Remedial Plan for the Study Area.

6.0 Analysis and Reporting

During implementation of the field activities, the Respondents will provide the USEPA with monthly progress reports concerning the RI/FS program at the frequency specified in the AOC. These progress reports will cover the reporting period (previous month) the work planned for the next two months, and include the following information:

- Description of work conducted during reporting period
- Description of planned work for the next two months
- Meetings conducted during reporting period
- Description of subcontracted work
- Approved modifications to work plans and schedules
- Reports of sampling and tests applicable to the RI/FS work
- Validated data received or generated regarding the RI/FS program, including QA/QC information, percentage completion, and issues encountered or anticipated that may affect the future schedule (as well as efforts made to mitigate delays) (see Section 7.0 for a discussion of the electronic data deliverable)
- Changes in key personnel
- Information regarding activities undertaken in support of the CIP.

To the extent possible these progress reports and other deliverables will be made to USEPA electronically. Any written material also will be transmitted to USEPA by the US Postal Service, courier service, or via hand-delivery.

A SharePoint or similar site will also be created to share validated data with the USEPA as it becomes available. This site will also be used to post the periodic reports discussed above, as well as other Study Area information, as necessary.

The results of the Phase 1 RI Field Program will be compiled and presented in a Phase 1 RI Data Summary Report. This report will include tables, maps, any deviations/corrective actions from the Work Plan, and analyses required to identify and scope subsequent phases of field work.

After completion of all of the phases of the RI Field Program, a comprehensive RI Report will be prepared to present and evaluate the efficacy of the data for meeting the stated RI objectives, and will also identify the scope of subsequent FS activities. During performance of the ERA, a BERA Problem Formulation (including the SLERA outcome) and a BERA Report will be prepared. An HHRA will also be prepared following the RI. Data gaps, if any, would be identified and discussed with USEPA and would be addressed in an FS Field Program Work Plan which would be focused on filling data gaps required to complete the FS. The FS Report will be produced at the conclusion of the FS. In addition to the major deliverables discussed above, there are 13 key decision points and 15 major deliverables that are scheduled to be prepared as bases of discussion between USEPA and the Respondents as part of this RI/FS program. A detailed discussion of the project deliverables is provided in Section 3.

7.0 Data Management Approach

Significant quantities of data will be obtained from historical sources and collected during the RI/FS, which will need to be managed and presented in reports. This section briefly describes how these data will be managed and presented. The DMP will provide a detailed description of the data management strategy and procedures for data collected during the RI/FS.

7.1 Data Management

Data management procedures are established to effectively process the data generated during the RI such that the relevant data descriptions (e.g., sample numbers, methods, and procedures) are readily accessible and accurately maintained. The major steps of data creation, handling, and management are:

- EarthSoft EQuIS 5 database setup
- Documenting locations of field activities
- Sample collection
- Field measurements
- Laboratory analytical data management
- Data validation and appropriate updates to the database
- USEPA Region 2 Comprehensive Electronic Data Deliverable (http://www.epa.gov/region02/superfund/medd.htm) submittals.

Data will be collected and recorded in a variety of ways during this project. These include standard field forms (e.g., field data sheets, chain-of-custody forms, and sediment coring logs), electronically-recorded field measurements (e.g., data from current meters), and laboratory-generated data. Information about locations, field measurements, samples, laboratory tests, and results will be maintained in an EarthSoft EQuIS 5 project database. Access will be restricted to project personnel, and the ability to view and/or add or change data will be granted to only those individuals identified and trained to perform those tasks. Original data documents and interchange files will be archived in the appropriate hardcopy or computerized project filing system, according to the project-specific storage and retention policies.

To the extent practical, data will be obtained and archived electronically. When electronic data collection is not practical, data will be collected on field forms and archived in the project files. The non-electronic data (and reports that are evaluated including reports received for the Historical Data Review) will also be scanned for electronic archiving. Data collected during the RI/FS, including validated data, will be made available to USEPA on a SharePoint or similar electronic site. The DMP will include additional details on data management.

Data validation will be performed on all data generated by analytical laboratories. Laboratories will be required to provide full (Contract Laboratory Program [CLP] – type) data packages for all samples. These data packages will include all raw data required to reproduce the reported values. All data packages will be reviewed and qualifiers will be added to the associated data to indicate data usability.

For all parameters, full validation (Stage 4) will be performed on the initial sample delivery group (SDG) for each analyte group of each medium (sediment, surface water, air, groundwater; biota sample validation to be determined in the BERA Work Plan) from each laboratory and at a rate of one in ten SDGs thereafter. Subsequently, all other SDGs will receive Stage 2 validation. Stage 2 validation is based on information summarized by the laboratory on its QC forms but includes no, or minimal, raw data review. At a minimum, Stage 2 validation will include the following data elements:

- Agreement of analyses conducted with chain-of-custody requests
- Holding times and sample preservation
- Initial and continuing calibrations and analytical sequence
- Mass spectrometer tuning (gas chromatography-mass spectrometry [GC/MS] analyses only)
- Internal standard recovery (GC/MS analyses only)
- Results of laboratory, equipment, field, and trip blanks
- Surrogate recoveries
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results
- Interference check sample (ICS) results
- Inductively Coupled Plasma (ICP) serial dilution results
- Chemical yield (tracers and carriers) (radiochemical analyses only)
- Percent solids
- Quantitation limits, sample results, and units.

If significant issues (e.g., those impacting achievement of the DQOs) are identified during full validation, the Stage 2 validation will be expanded to include these issues. Systematic or random errors that would not be detected during a Stage 2 review include misidentification of compounds, quantitation errors, transcription errors, or calculation errors. Stage 2 validation would provide a review of key laboratory QC elements which would identify potential laboratory issues requiring further investigation through full validation. If the Stage 2 validation effort indicates a high frequency of measurement performance issues, additional validation work may be conducted.

All validation will be performed in accordance with USEPA Region 2 data validation protocols. These validation protocols will be modified as needed to reflect the specific analytical procedures used in this RI/FS or will provide the basis for preparation of a validation standard operating procedure (SOP) for analytical procedures which do not have standard validation protocol. The USEPA Region 2 validation SOPs will be used in conjunction with the project specific decision limits developed during the DQO process and defined in Uniform Federal Policy (UFP) QAPP Worksheets #12, #15, #19, #23, and #28 to establish criteria for validation actions and qualification. The most stringent criteria will be used, unless professional judgment dictates otherwise. All instances of professional judgment will be documented and included in the validation reports.

The following qualifiers will be applied to the data to identify data limitations identified during validation:

U: Non-detect. The analyte was analyzed for but not detected above the specified quantitation limit or estimated detection limit in the case of HRMS methods.

UJ: Estimated non-detect. The analyte was analyzed for but not detected above the specified quantitation limit and the reported quantitation limit is considered estimated.

J: Estimated value. The analyte was detected but the reported value represents an approximate concentration in the sample. Results above the method detection limit (MDL) but below the quantitation limit (QL) will also be reported with a J qualifier.

JN: The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

R: Rejected. Due to significant quality control problems the result is considered invalid and provides no information on the presence of the analyte. Rejected data may not be used for any Study Area decisions.

Data usability will be assessed with respect to the DQOs and the limits specified in the QAPP.

7.2 USEPA Data Review and Acceptance

Besides the data generated during the RI, it is anticipated that a substantial amount of data will be obtained from historical sources. These data will include environmental, ecological, and hydrogeologic data based on physical records (e.g., dredging or survey data); government records; historical land use data; NYSDEC files; and Respondent records. This historical research data will be used for a variety of purposes in the RI/FS to supplement the data generated during the RI/FS, e.g., historical research data will be used to identify sources of significant loadings of COPCs to the Study Area. Analytical data collected from historical sources will be evaluated for quality, including a QA/QC review if appropriate, related to its use in the RI/FS. This quality review, including how the quality of the data relates to its use, will be submitted to the USEPA in reports in which the data are used. These reports are subject to USEPA's review and approval.

7.3 Data Presentation

Data generated during the RI will be arranged and presented in the Phase 1 RI Interim Data Report, Phase 1 RI Data Summary Report, other interim data reports as needed, BERA Report, and the RI Report in a clear and logical format using tables, graphs, and figures. Analytical data will be presented on computer-generated summary tables. Various data summaries will include analytical results sorted by sample location. Graphical displays will present the Study Area, Federal channel boundaries, and sample locations. Generally, graphical displays will be prepared using GIS software directly reading from the project database.

8.0 Project Management Plan

This section describes the project management organization and responsibilities for the RI/FS. An organizational chart is provided in Figure 8-1.

8.1 Project Organization and Responsibility

An organizational framework and management control system capable of executing the work of the RI/FS will incorporate an integrated structure where each member understands his or her function and his or her relationship to the overall project. Lines of communication will be maintained among project personnel and the RI and FS Managers. Communication will also be maintained regularly between the Project Manager, the RI and FS Managers, the Respondents, and the USEPA.

While each individual involved in the RI/FS and in the generation of data is implicitly part of the overall project and QA program, certain individuals have specifically designated responsibilities. The Respondents will act as the lead for the RI/FS. Investigation support will be provided to the Respondents by AECOM. Within AECOM, individuals with specifically designated responsibilities are the Project Manager, the RI Manager, the FS Manager, the Project On-site Safety Officer, the QA Coordinator, the Data Validator(s), and the Environmental Technician(s). Specific laboratory responsibilities will be designated upon final selection of analytical laboratories for this project.

8.1.1 Project Manager

The Project Manger has the overall responsibility for the implementation and completion of each of the tasks identified in this Work Plan. The Project Manager will manage the technical and administrative aspects of the project and function as AECOM's principal contact with the Respondents and with USEPA. The AECOM Project Manager is Randy Kabrick.

8.1.2 Remedial Investigation Manager

The RI Manager is responsible for scoping and implementing the RI. He is also responsible for preparing the RI reports. AECOM's RI Manager is Doug Simmons.

8.1.3 Feasibility Study Manager

The FS Manager will have responsibility for the preparation of the FS, and will also participate in the RI scoping process to ensure that the collected data will be useful in the screening and implementation of remedial alternatives. AECOM's FS Manager is Anne Fitzpatrick.

8.1.4 Support Staff and Environmental Technicians

The key project personnel identified above will be supported by additional personnel during various stages of the RI/FS. Field implementation of this investigation will be conducted by experienced chemists, engineers, and/or environmental technicians. Their responsibilities will include the documentation of proper sample collection protocols, sample collection, equipment decontamination, and chain of custody documentation. Each sampling team will be under the supervision of a team leader. In addition to the responsibilities above, team leader responsibilities include the initialization and accurate verification of field notebooks, chain of custody records, sample labels, and other field related documentation.

8.1.5 Project Health and Safety

The implementation of health and safety at this project location will be the shared responsibility of the AECOM Project Manager, AECOM RI Manager, AECOM Safety Manager, the AECOM Project On-site Safety Officer (POSO), other AECOM personnel implementing the Work Plan, and AECOM Contractors.

8.1.5.1 Safety Manager

The AECOM Safety Manager (Philip Platcow) is the individual responsible for the preparation, interpretation, and modification of the project-specific HASP. The Safety Manager advises the Project Manager, RI Manager, and POSO on matters relating to health and safety, recommends appropriate personal protective equipment (PPE) and safety equipment, and maintains regular contact with the Project Manager, RI Manager, and POSO to evaluate Study Area conditions and new information which might require modifications to the HASP.

8.1.5.2 Project On-Site Safety Officer

The POSO will be appointed by the Project Manager. The POSO will be present in the Study Area or at the field facility during all activities covered by the HASP. The POSO is responsible for enforcing the requirements of this HASP once work begins and for ensuring that all personnel, including subcontractors, adhere to the HASP. Any personnel have the authority to STOP WORK if they see a potential or actual hazard that may threaten the safety of people or the environment. Upon stopping work, the POSO shall be verbally notified, who will in turn verbally notify the RI Manager, Safety Manager, and Project QA Coordinator. Given the potential significance of such communications, this should occur as quickly as possible.

8.1.6 Quality Assurance Coordinator

The Project QA Coordinator will review project plans and revisions to the plans to maintain proper QA throughout the investigation. In addition, the Project QA Coordinator will be responsible for performance and system audits, data processing quality control, data quality review, monitoring the effectiveness of corrective actions, and coordinating the QA/QC efforts between AECOM and subcontractors, including analytical laboratories.

8.1.7 Project Chemist

The Project Chemist will serve as the analytical laboratory coordinator and be the primary point of contact with the laboratories. The Project Chemist will be responsible for laboratory procurement and monitoring of progress.

8.1.8 Chemistry Technical Resource

The Chemistry Technical Resource will be responsible for working with other project team members to identify the most appropriate sampling and analysis methods to achieve the RI/FS data usability objectives.

8.1.9 Data Validators

The Data Validators will be responsible for validating analytical data received from the laboratory according to approved plans and data validation guidelines. Validation reports generated by the Data Validators will be submitted to the Project QA Coordinator for review.

8.1.10 Laboratory Project Manager

The Laboratory Project Manager acts as the primary point of contact at the analytical laboratory for the AECOM Project Chemist to communicate and resolve sampling, receipt, analysis, and storage issues. There will be multiple laboratories analyzing samples during the RI/FS; each laboratory will have a Laboratory Project Manager. The Laboratory Project Managers are identified in the QAPP.

8.1.11 Laboratory Quality Assurance Officer

The Laboratory QA Officer (QAO) will be responsible for laboratory QA/QC activities associated with the project. The specific duties of the Laboratory QAO include determining whether analyses are conducted within the appropriate holding times and that laboratory custody procedures are followed. Moreover, the Laboratory QAO monitors daily precision and accuracy records, maintains detailed copies of all procedures, reschedules analyses based upon unacceptable data accuracy or precision, and identifies and implements corrective actions necessary to maintain QA standards. The Laboratory QAO or a designee will conduct initial validations and assessments of analytical data results and report the findings directly to the Project QA Coordinator. The Laboratory QAO will be identified by each laboratory.

8.1.12 Laboratory Sample Custodian

The Laboratory Sample Custodian's responsibilities include verifying proper sample entry and sample handling procedures by laboratory personnel. The Laboratory Sample Custodians will be identified by each laboratory for this project.

8.1.13 Risk Assessment Managers

The risk assessment managers are responsible for activities related to the human health and ecological risk assessments. They will assist the RI Manager in design of the RI to collect data to support these risk assessments. They will also prepare the human health and ecological risk assessment related documents (e.g., work plans, PAR-HHRA, HHRA, SLERA, and BERA).

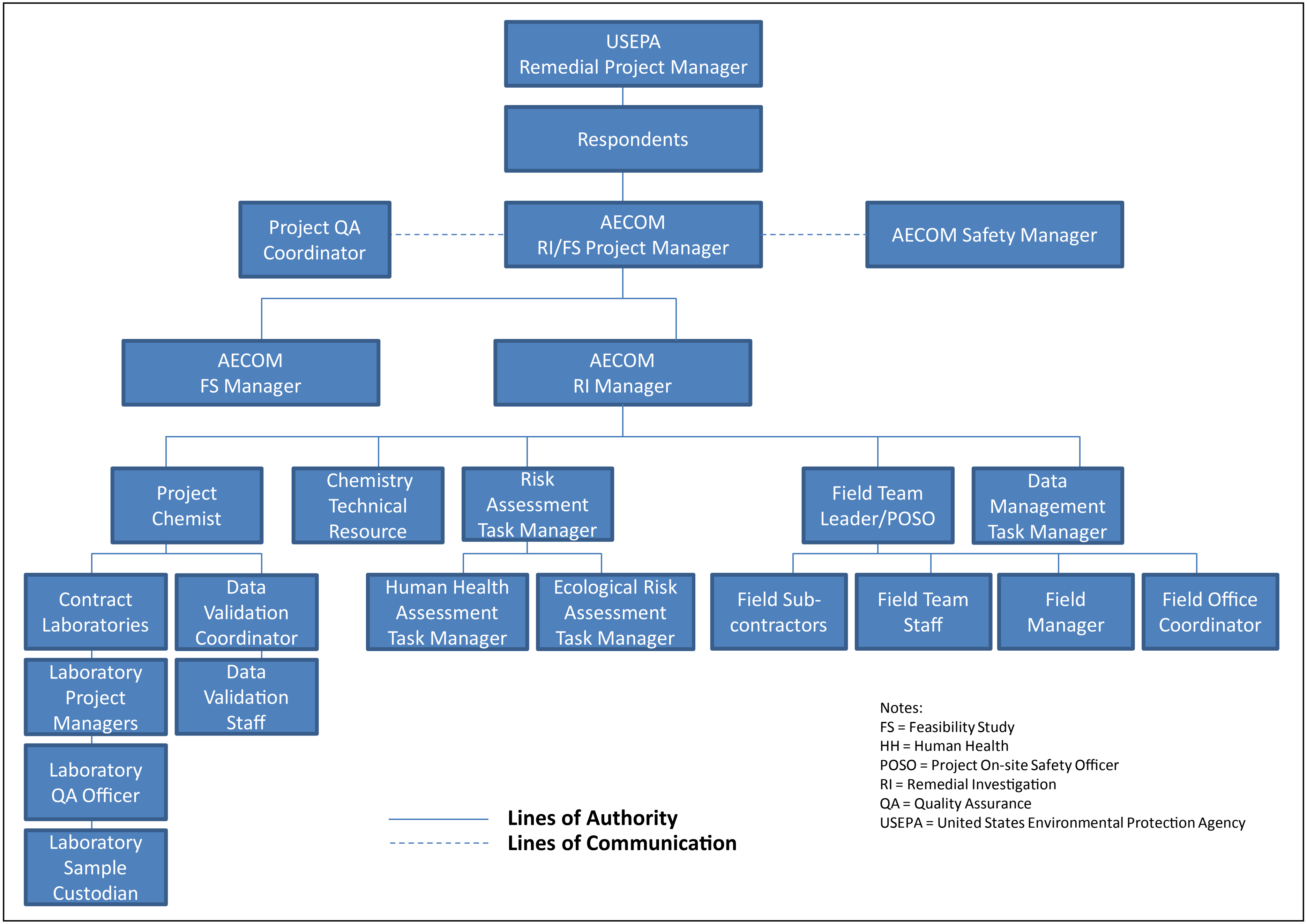


Figure 8-1
Project Organization Chart
Remedial Investigation/Feasibility Study Work Plan, Newtown Creek

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Appendix A

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Document
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Appendix B

Remediation Sites and Sites that Store Chemicals or Release Chemicals to the Environment

Table B-1
New York State Remediation Sites Within Newtown Creek Drainage Area

Site Name	Program	Site Class	Type	Outfall	Drainage ID
2 Ingraham Street	Brownfield Cleanup Program	A	Combined	NC-015	DA-NC-015
Frito Lay	Brownfield Cleanup Program	A	Direct Drainage	NA	DA-ST-36
Quanta Resources a/k/a Review Ave. Development II	Brownfield Cleanup Program	A	Direct Drainage		
Review Avenue Development I	Brownfield Cleanup Program	A	Direct Drainage		
Maspeth Project	Environmental Restoration Program	A	Separate	ST-60NC, ST-54	DA-ST-60NC/54
Technical Metal Finishers	State Superfund Program	C	Combined	NC-015	DA-NC-015
Former NuHart Plastic Manufacturing	State Superfund Program	2	Combined	NCB-023	DA-NCB-023
Roehr Chemicals, Inc.	State Superfund Program	4	Combined	BB-011	DA-BB-011
K - Greenpoint MGP - Energy Center	State Superfund Program	2	Direct Drainage	NA	
ACME Steel/Brass Foundry	State Superfund Program	2	Direct Drainage	NA	
Phelps Dodge Refining Corporation	State Superfund Program	2	Direct Drainage	NA	
Quanta Resources	State Superfund Program	2	Direct Drainage		
K - Equity Works	State Superfund Program	2	Separate	ST-22	DA-ST-22
B.C.F. Oil Refining, Inc.	State Superfund Program	2	Separate	ST-22	DA-ST-22
Former W.L.K. Corp.	State Superfund Program	2	Separate	ST-60NC, ST-54	DA-ST-60NC/54
Popular Hand Laundry	Voluntary Cleanup Program	A	Combined	NC-015	DA-NC-015
Atlantic Ave. and Utica Avenue (Crown Heights)	Voluntary Cleanup Program	C	Combined	NC-015	DA-NC-015
Cornish Knit Goods/Cornish Mini-Malls	Voluntary Cleanup Program	A	Combined	NC-015	DA-NC-015
192 Ralph Avenue	Voluntary Cleanup Program	A	Combined	NC-015	DA-NC-015
Maspeth Substation	Voluntary Cleanup Program	A	Combined	NC-077	DA-NC-077
Greenpoint	Voluntary Cleanup Program	C	Direct Drainage	NA	

Site Classification:

1 - Contamination constitutes a significant threat to public health and the environment; and the significant threat to public health and the environment is causing, or presents an imminent danger of causing, either irreversible or irreparable damage to the environment.

2 - The disposal of hazardous waste has been confirmed and the presence of such hazardous waste or its components or breakdown products represent a significant threat to the environment or to health or hazardous waste disposal has not been confirmed, but the site has been listed on the Federal National Priorities List (NPL).

3 - Contamination does not presently constitute a significant threat to public health or the environment as for (1) or (2).

4 - Has been properly closed but that requires continued site management, consisting of operation maintenance, and monitoring.

5 - Has been properly closed in a setting where a consequential amount of hazardous waste or its constituents remain, but do not require continued operation, maintenance and/or monitoring. No further action required.

A - The classification assigned to a non-registry site in any remedial program where work is underway and not yet complete.

C - The classification used for sites where New York State Department of Environmental Conservation has determined that remediation has been satisfactorily completed under a remedial program.

Drainage Type, Outfall and ID Notes:

NA - not applicable

Combined - combined sewer

Separate - separate storm sewer

Table B-2
USEPA RCRA Sites Within Newtown Creek Drainage Area

Facility Name	LOCATION	RCRA1	RCRA1_INT	Type	Outfall	Drainage ID
BARKER BROS - RIDGEWOOD	1666 SUMMERFIELD STREET	NYD001291921	LQG	Combined	NC-083	DA-NC-083
NYCT-FRESH POND DEPOT	66-99 FRESH POND ROAD	NYD980642193	LQG	Combined	NC-077	DA-NC-077
CONFORT & COMPANY INC	47-47 AUSTELL PLACE	NY0000990861	LQG	Combined	BB-026	DA-BB-026
CON EDISON - MASPETH SUBSTATION	57-77 RUST ST	NYR000089441	LQG	Combined	NC-077	DA-NC-077
NYCDOT BIN 2240410	BORDEN AVE OVER DUTCH KILLS	NYR000037754	LQG	Combined	NC-077	DA-NC-077
TBTA QUEENS MIDTOWN TUNNEL	10-55 51ST AVE	NYD982796427	LQG	Combined	BB-013	DA-BB-013
UNITED ENVELOPE	45-11 33RD STREET	NYR000100743	LQG	Combined	BB-026	DA-BB-026
ATLAS PARK	COOPER AVENUE	NYR000118422	LQG	Combined	NC-083	DA-NC-083
NYCT-KISCO LOT	INTERSECTION OF VAN DAM ST. &	NYR000116624	LQG	Combined	BB-026	DA-BB-026
NYCT CROSSTOWN ANNEX FACILITY	65 COMMERCIAL STREET	NYD980642326	LQG	Combined	NCB-023	DA-NCB-023
NYCDEP - TROUTMAN ST VENTURI FLOW CHAMB	NE COR OF TROUTMAN ST & IRVING	NYR000134684	LQG	Combined	NC-015	DA-NC-015
CLEVELAND HIGH SCHOOL	2127 HIMROD ST	NYR000158220	LQG	Combined	NC-077	DA-NC-077
REMCO MAINTENANCE LLC	47-30 35TH ST	NYR000144055	LQG	Combined	BB-026	DA-BB-026
THE PRINT HOUSE	538 JOHNSON AVE	NYR000143248	LQG	Combined	NC-015	DA-NC-015
CON EDISON - NEWTOWN SUBSTATION	33-17 47TH AVENUE	NYR000146043	LQG	Combined	BB-026	DA-BB-026
NYC DEPT OF ED - PUBLIC SCHOOL 480K	400 IRVING AVE	NYR000166926	LQG	Combined	NC-015	DA-NC-015
EAST NEW YORK CENTRAL MAINTENANCE FACILITY (MTA-NYCT)	1700 BUSHWICK AVE.	NYD981140023	LQG	Other	Unknown	
ENEQUIST CHEMICAL CO INC	100 VARICK AVE.	NYD002028827	LQG	Separate	NCB-629, ST-60	DA-ST-60/629
NYCDEP BWT - NEWTOWN CREEK WPCP	301 GREENPOINT AVENUE	NYD980779730	LQG	Separate	ST-90, NCB633	DA-NCB-633/90
PHELPS DODGE CORP	42-02 56TH RD	NYD001293489	LQG	Separate	ST-48, ST-72	DA-ST-48/72
NYSDOT BIN 1075910	I-278 OVER WB LAUREL HILL RD	NYR000166629	LQG	Separate	ST-48, ST-72	DA-ST-48/72
RHODA URETSKY TRUST	99 SCOTT AVE	NYR000169698	LQG	Separate	NCB-629, ST-60	DA-ST-60/629

Notes:
Combined - combined sewer
Separate - separate storm sewer
Other - drainage type other than combined or separate storm sewer
LQG - large quantity generators
USEPA - United States Environmental Protection Agency
RCRA - Resource Conservation and Recovery Act

Table B-3
SPDES Facilities Within Newtown Creek Drainage Area

ID	Facility Name	City	Owner	Type	Outfall	Drainage ID
2630400210	QUEENS DISTRICT 5/5A GARAGE	MASPETH	NYC DEPT OF SANITATION	Combined	NC-029	DA-NC-029
2610100105	MOTIVA ENTERPRISES LLC	BROOKLYN	MOTIVA ENTERPRISES LLC	Combined	NCB-021	DA-NCB-021
2610100025	NYC-DEP NEWTOWN CREEK WPCP	BROOKLYN	NYC DEPT OF ENVIRONMENTAL PROTECTION	Direct Drainage	NC-002	DA-BB-002
2610100075	B C F OIL - 360 MASPETH AVE	BROOKLYN	B C F OIL REFINING INC	Separate	ST-22	DA-ST-22
2610400013	WASTE MANAGEMENT OF NY-123 VARICK AVE	BROOKLYN	WASTE MANAGEMENT OF NEW YORK LLC	Separate	NCB-629, ST-60	DA-ST-60/629
2630400320	GETTY TERMINALS CORP #58220	LONG ISLAND CITY	GETTY PETROLEUM MARKETING INC	Separate	ST-90, NCB633	DA-NCB-633/90
2610100055	BP PRODUCTS N AMERICA BROOKLYN TERMINAL	BROOKLYN	BP PRODUCTS NORTH AMERICA INC	Separate	ST-90, NCB633	DA-NCB-633/90
2610100163	DITMAS TERMINAL - 364 MASPETH AVE	BROOKLYN	MALU PROPERTIES INC	Separate	ST-22	DA-ST-22
2610400226	BAYSIDE FUEL OIL DEPOT-1100 GRAND ST	BROOKLYN	BAYSIDE FUEL OIL DEPOT CORP	Separate	ST-56	DA-ST-56
2610100093	METRO TERM-498 KINGSLAND AVE	BROOKLYN	METRO TERMINALS CORP	Separate	ST-90, NCB633	DA-NCB-633/90
2610100107	EXXONMOBIL GREENPOINT REMEDIATION PROJECT	BROOKLYN	EXXONMOBIL OIL CORP	Separate	ST-90, NCB633	DA-NCB-633/90

Notes:
Combined - combined sewer
Separate - separate storm sewer
SPDES - State Pollutant Discharge Elimination System

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
1093 HERKIMER ST.	1093 HERKIMER ST	BROOKLYN	9311226	12/18/1993	9/17/2001	Combined	NC-015	DA-NC-015
WHICOFF MEDICAL CENTER	374 STOCKHOLM ST	BROOKLYN	9815010	3/18/1999	10/18/2005	Combined	NC-015	DA-NC-015
SERVICE BOX	1386 JEFFERSON AVE	BROOKLYN	9903341	6/23/1999	7/26/1999	Combined	NC-015	DA-NC-015
RESIDENCE	72-16 67TH ST	GLENDALE	107227	10/12/2001	10/31/2001	Combined	NC-083	DA-NC-083
UNNAMED	VAN BUREN ST & BUSHWICK A	BROOKLYN	9812069	12/28/1998	2/20/2003	Combined	NC-015	DA-NC-015
MORGAN OIL CORP	200 MORGAN AVENUE	BROOKLYN	8808176	1/10/1989	8/7/1995	Combined	NC-015	DA-NC-015
MORGAN OIL	200 MORGAN AVENUE	BROOKLYN	9209135	11/6/1992	NULL	Combined	NC-015	DA-NC-015
LEE RESIDENCE	41-34 39TH ST	SUNNYSIDE	12719	3/1/2001	11/25/2002	Combined	BB-026	DA-BB-026
1157 BROADWAY/BKLYN	1157 BROADWAY	BROOKLYN	9010251	12/20/1990	11/16/1994	Combined	NC-015	DA-NC-015
78-03 76TH ST	78-03 76TH ST	GLENDALE	11420	1/22/2001	6/20/2003	Combined	NC-083	DA-NC-083
SERVICE BOX #21517	1386 JEFFERSON AVE	BROOKLYN	9903698	6/30/1999	5/18/2000	Combined	NC-015	DA-NC-015
70-03 66TH ST	70-03 66TH ST	GLENDALE	9412020	12/8/1994	12/8/1994	Combined	NC-083	DA-NC-083
GULF SERVICE CTR	1802 ATLANTIC AVENUE	BROOKLYN	9805371	7/30/1998	3/16/2004	Combined	NC-015	DA-NC-015
MOBIL S/S #17-H1X	35-15 GREENPOINT AVENUE	QUEENS	9205479	8/12/1992	8/12/1992	Combined	BB-009	DA-BB-009
MOBIL S/S #17-H1X	35-15 GREENPOINT AVENUE	QUEENS	9909525	11/5/1999	12/2/1999	Combined	BB-009	DA-BB-009
KNICKERBOCKER & JOHNSON	KNICKERBOCKER AVE #68284	BROOKLYN	9501020	4/24/1995	4/25/1995	Combined	NC-015	DA-NC-015
FRESHPOND DEPOT	6699 FRESH POND ROAD	FRESH POND	312489	2/10/2004	3/22/2004	Combined	NC-077	DA-NC-077
MORGAN OIL CORP.	200 MORGAN AVENUE	BROOKLYN	9211657	12/23/1992	11/19/2003	Combined	NC-015	DA-NC-015
MOBIL S/S #17-H1X	35-15 GREENPOINT AVENUE	LONG ISLAND CITY	402293	6/1/2004	6/29/2005	Combined	BB-009	DA-BB-009
RED WALLET COMPANY	48-14 33RD STREET	LONG ISLAND CITY	9802261	5/20/1998	1/15/2008	Combined	BB-009	DA-BB-009
183 RALPH AVE	183 RALPH AVE	BROOKLYN	8909471	12/31/1989	5/6/2008	Combined	NC-015	DA-NC-015
MANHOLE #7814	225 STARR ST	BROOKLYN	104472	7/25/2001	8/27/2001	Combined	NC-015	DA-NC-015
WYCKOFF HTS MEDICAL CTR	374 STOCKHOLM ST	BROOKLYN	9507998	9/28/1995	9/29/1995	Combined	NC-015	DA-NC-015
SERVICE BOX #2517	1386 JEFFERSON AVE	BROOKLYN	9815123	3/22/1999	3/31/1999	Combined	NC-015	DA-NC-015
UNNAMED	60-28 56TH RD	MASPETH	200845	4/22/2002	5/23/2002	Combined	NC-077	DA-NC-077
GASETERIA	30-05 QUEENS BLVD	LONG ISLAND CITY	9510715	10/10/1995	10/29/2003	Combined	BB-026	DA-BB-026
ST MARY'S HOSPITAL	170 BUFFALO AVENUE	BROOKLYN	8910778	4/1/1987	8/26/1993	Combined	NC-015	DA-NC-015
50-47 45TH STREET	50-47 45TH STREET	WOODSIDE	9503590	6/23/1995	6/23/1995	Combined	BB-009	DA-BB-009
THYPIN STEEL	49-49 30TH STREET	LONG ISLAND CITY	9808784	10/15/1998	12/8/1998	Combined	BB-009	DA-BB-009
UNNAMED	71-05 68TH ST	GLENDALE	109927	1/14/2002	9/22/2003	Combined	NC-083	DA-NC-083
242 COVERT ST	242 COVERT ST	BROOKLYN	9211326	1/2/1993	1/2/1993	Combined	NC-015	DA-NC-015
UNNAMED	894 GATES AVE	BROOKLYN	9802992	6/7/1998	6/8/1998	Combined	NC-015	DA-NC-015
ST. MARY'S HOSPITAL	170 BUFFALO AVENUE	BROOKLYN	9408184	9/20/1994	9/21/1994	Combined	NC-015	DA-NC-015
52-60 65 PLACE	52-60 65TH PL	QUEENS	302624	6/11/2003	2/3/2006	Combined	NC-077	DA-NC-077
EXXONMOBIL	42-02 QUEENS BLVD	LONG ISLAND CITY	6097	8/22/2000	7/2/2003	Combined	BB-026	DA-BB-026
63-15 TRAFFIC AVENUE	63-15 TRAFFIC AVENUE	GLENDALE	9506872	9/6/1995	6/28/1996	Combined	NC-077	DA-NC-077
EXXON-MOBIL	42-02 QUEENS BLVD	LONG ISLAND CITY	4702	7/19/2000	7/2/2003	Combined	BB-026	DA-BB-026
54TH ST / VERNON BLVD	54TH ST / VERNON BLVD	QUEENS	9103109	6/17/1991	NULL	Combined	BB-014	DA-BB-014
VACANT LOT	59-45 55TH DR	MASPETH	102279	5/30/2001	3/30/2004	Combined	NC-077	DA-NC-077
6132 WOODBINE ST	6132 WOODBINE ST	RIDGEWOOD	9516733	3/27/1996	3/27/1996	Combined	NC-077	DA-NC-077
FORMER GAS STATION	1564 MYRTLE ST	BROOKLYN	12558	2/17/2001	4/4/2001	Combined	NC-015	DA-NC-015
UNNAMED	1140 SENECA AVE	RIDGEWOOD	303498	6/6/2003	8/28/2003	Combined	NC-083	DA-NC-083
UNNAMED	1023 LAFAYETTE AVE	BROOKLYN	9807531	9/20/1998	12/30/2002	Combined	NC-015	DA-NC-015
VAULT #VS2364,1109,852	10 CLAY ST	BROOKLYN	206016	9/10/2002	11/7/2002	Combined	NCB-023	DA-NCB-023
1205 MANHATTAN AVE/BKLYN	1205 MANHATTAN AVENUE	BROOKLYN	8909903	1/16/1990	1/16/1990	Combined	NCB-022	DA-NCB-022
58-50 57TH RD	58-50 57TH RD	MASPETH	9501536	5/5/1995	6/14/1995	Combined	NC-077	DA-NC-077
MOBIL S/S #17-GBH	42-02 QUEENS BLVD	QUEENS	8900605	4/19/1989	NULL	Combined	BB-026	DA-BB-026
1267 FLUSHING AVE/C F & W	1267 FLUSHING AVENUE	BROOKLYN	9110833	8/23/1991	11/7/2001	Combined	NC-015	DA-NC-015
274 WYKOFF AVENUE	274 WYKOFF AVENUE	BROOKLYN	9312194	1/16/1994	1/17/1994	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
UNNAMED	1552 BERGEN STREET	BROOKLYN	9801284	4/19/1998	6/25/1998	Combined	NC-015	DA-NC-015
UNK	663 GRANDVIEW AVE.	RIDGEWOOD	9411661	12/1/1994	10/3/1997	Combined	NC-077	DA-NC-077
BUCKEYE PIPELINE	30-25 GREENPOINT AVE	LONG ISLAND CITY	8605941	12/18/1986	12/18/1986	Combined	BB-011	DA-BB-011
MASPETH SIGN SHOP DOT -DDC	58-50 57TH ROAD	MASPETH	9200928	4/23/1992	6/14/1995	Combined	NC-077	DA-NC-077
736 HALSEY	736 HALSEY ST	BROOKLYN	111790	3/14/2002	NULL	Combined	NC-015	DA-NC-015
1711 FULTON STREET	1711 FULTON STREET	BROOKLYN	9413071	12/30/1994	12/30/1994	Combined	NC-015	DA-NC-015
SHELL STATION	50-24 QUEENS BLVD	QUEENS	9805297	7/28/1998	NULL	Combined	BB-009	DA-BB-009
JEFFERSON AVE.	JEFFERSON AVE	BROOKLYN	8709381	2/3/1988	2/3/1988	Combined	NC-015	DA-NC-015
54-08 VERNON BLVD/QUEENS	54008 VERNON BLVD	NEW YORK CITY	8903862	7/17/1989	NULL	Combined	BB-014	DA-BB-014
47-05 METROPOLITAN AVE	47-05 METROPOLITAN AVE	RIDGEWOOD	9004680	7/26/1990	7/26/1990	Combined	NC-083	DA-NC-083
BUCKEYE PIPELINE COMPANY	30-25 GREENPOINT AVE	LONG ISLAND CITY	9512145	12/27/1995	1/26/1996	Combined	BB-011	DA-BB-011
70-47 67TH STR.AT CENTRAL	70-47 67TH STREET	GLENDALE	9712085	10/1/1997	5/1/1998	Combined	NC-083	DA-NC-083
742 HALSEY ST.	742 HALSEY ST	BROOKLYN	9401949	5/10/1994	5/10/1994	Combined	NC-015	DA-NC-015
11TH ST CONDUIT	460-456 MCGUINNESS BLVD	BROOKLYN	9908111	10/4/1999	1/10/2008	Combined	NCB-021	DA-NCB-021
IFO 1772 ATLANTIC AV	IFO 1772 ATLANTIC AV	BROOKLYN	2989	6/9/2000	4/21/2003	Combined	NC-015	DA-NC-015
MANHOLE 1230	350 IRVING AVE	BROOKLYN	104122	7/17/2001	6/12/2003	Combined	NC-015	DA-NC-015
SEVICE BOX 16709	347 CHAUNCY ST	BROOKLYN	947	4/24/2000	12/28/2001	Combined	NC-015	DA-NC-015
UNNAMED	392 HIMROD ST	BROOKLYN	9247	11/10/2000	12/15/2003	Combined	NC-083	DA-NC-083
MEDICAL LOGISTICS INC	47-50 VAN DAM ST	LONG ISLAND CITY	10547	12/20/2000	6/13/2003	Combined	BB-026	DA-BB-026
TNT SKYPACK INC	47-50 VAN DAM ST	LONG ISLAND CITY	9510619	11/22/1995	12/7/1995	Combined	BB-026	DA-BB-026
UNNAMED	248 SARATOGA AVE	BROOKLYN	200021	4/1/2002	5/6/2002	Combined	NC-015	DA-NC-015
EXXON STA #37080	1866 ATLANTIC AVE	BROOKLYN	8805361	9/21/1988	3/21/2003	Combined	NC-015	DA-NC-015
EMPORIUM GAS STATION	1781 ATLANTIC AVE	BROOKLYN	9713483	3/5/1998	4/28/1998	Combined	NC-015	DA-NC-015
5052/5054 41ST STREET	5052/5054 41ST STREET	SUNNYSIDE	9908676	10/15/1999	12/7/1999	Combined	BB-009	DA-BB-009
MARK DIAGNOSTIC	1866 ATLANTIC AVE	BROOKLYN	8804562	8/23/1988	10/31/1988	Combined	NC-015	DA-NC-015
74-06 64TH PL/ARUNDAL	74-06 64TH PL/ARUNDAL	GLENDALE	9102826	6/11/1991	6/11/1991	Combined	NC-083	DA-NC-083
WELCH RES	1625 PARK PL	BROOKLYN	210558	1/20/2003	11/13/2003	Combined	NC-015	DA-NC-015
1267 FLUSHING AVENUE	1267 FLUSHING AVENUE	BROOKLYN	9308847	10/21/1993	10/21/1993	Combined	NC-015	DA-NC-015
WOLF AMOCO STATION	1740 ATLANTIC AVENUE	BROOKLYN	9402692	5/24/1994	NULL	Combined	NC-015	DA-NC-015
HOPE GARDENS -NYCHA	140 MENAHAN ST	BROOKLYN	9801065	4/24/1998	7/19/2002	Combined	NC-015	DA-NC-015
FRESH POND BUS DEPOT	6699 FRESH POND ROAD	FRESH POND	312955	2/24/2004	3/30/2004	Combined	NC-077	DA-NC-077
79 DESALES PL	79 DESALES PL	BROOKLYN	9511510	12/12/1995	2/28/2003	Combined	NC-015	DA-NC-015
15TH STREET & 8TH AVENUE	15TH STREET & 8TH AVENUE	BROOKLYN	9900548	4/15/1999	4/16/1999	Combined	NC-015	DA-NC-015
73 GROVE ST/BKLYN	73 GROVE STREET	BROOKLYN	9102458	5/27/1991	6/3/1991	Combined	NC-015	DA-NC-015
1821 NORMAN ST	1821 NORMAN ST	RIDGEWOOD	9516272	3/19/1996	11/13/1997	Combined	NC-083	DA-NC-083
BARDON MIVIC GAS STATION	61-80 GRAND AVE	MASPETH	9905462	8/5/1999	NULL	Combined	NC-077	DA-NC-077
ALLFORD RESIDENCE	31 BLEECKER ST	BROOKLYN	9801488	5/4/1998	6/1/1998	Combined	NC-015	DA-NC-015
RIGHT PRICE PRINTING	48-05 METROPOLITAN AVE	RIDGEWOOD	9903332	6/23/1999	9/13/2000	Combined	NC-083	DA-NC-083
IFO	7255 60TH LANE	GLENDALE	108219	11/13/2001	12/17/2001	Combined	NC-083	DA-NC-083
NYC POLICE DEPT 104TH PCT -DDC	64-02 CATALPA AVENUE	QUEENS	200189	4/5/2002	NULL	Combined	NC-077	DA-NC-077
BREVOORT HOUSES	329 PATCHEN AVE	BROOKLYN	9503788	6/27/1995	6/28/1995	Combined	NC-015	DA-NC-015
THRIFTY OIL COMPANY	83 VANDERVEER ST	BROOKLYN	9611933	1/3/1997	5/8/1997	Combined	NC-015	DA-NC-015
1884 FLUSHING AVENUE	1884 FLUSHING AVENUE	RIDGEWOOD	9307524	9/21/1993	3/31/1995	Combined	NC-083	DA-NC-083
1084 BUSHWICK AVE.	1084 BUSHWICK AVE	BROOKLYN	9208657	10/27/1992	10/27/1992	Combined	NC-015	DA-NC-015
MANHOLE #12016	DEKALB AVE S OF EVERGREEN	BROOKLYN	9809916	11/6/1998	11/6/2002	Combined	NC-015	DA-NC-015
LIRR	BORDEN AVENUE	LONG ISLAND CITY	8235	10/13/2000	7/8/2003	Combined	BB-013	DA-BB-013
ROY ROGERS REST	50-01 QUEENS BLVD	QUEENS	9516592	3/12/1996	9/12/2008	Combined	BB-009	DA-BB-009
166 EAGLE ST	166 EAGLE ST	BROOKLYN	9108314	11/4/1991	5/25/1995	Combined	NCB-022	DA-NCB-022
368 BAINBRIDGE STREET	368 BAINBRIDGE STREET	BROOKLYN	9416807	3/28/1995	3/28/1995	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
SMAHAJ RESIDENCE	38-05 48TH AVENUE	LONG ISLAND CITY	9600685	4/15/1996	4/15/1996	Combined	BB-026	DA-BB-026
TYPHIN STEEL	49-49 30TH STREET	LONG ISLAND CITY	9607116	9/5/1996	12/29/2005	Combined	BB-009	DA-BB-009
MANHOLE #TM529	LAWTON ST & BROADWAY	BROOKLYN	109498	12/28/2001	2/19/2001	Combined	NC-015	DA-NC-015
J MANHEIMER INC	47-22 PIERSON PL	LONG ISLAND CITY	8410	10/18/2000	2/11/2003	Combined	BB-026	DA-BB-026
49-49 30TH STREET	49-49 30TH STREET	LONG ISLAND CITY	9312128	1/14/1994	1/14/1994	Combined	BB-009	DA-BB-009
4949 30TH STREET	49-49 30TH STREET	LONG ISLAND CITY	9607319	9/10/1996	9/16/1996	Combined	BB-009	DA-BB-009
57TH STREET & 1ST AVE.	57TH ST & 1ST AVE	BROOKLYN	9109843	12/15/1991	12/19/1991	Combined	NC-015	DA-NC-015
900 WYCKOFF AVE/WELLBASCH	900 WYCKOFF AVE/WELLBASCH	BROOKLYN	9201499	5/5/1992	8/7/1992	Combined	NC-083	DA-NC-083
FORMER JOSEPH JENKINS HOME	197 RALPH AVENUE	BROOKLYN	301275	5/5/2003	NULL	Combined	NC-015	DA-NC-015
47-25 40 ST	47-25 40 ST	SUNNYSIDE	8907456	10/27/1989	6/13/1995	Combined	BB-009	DA-BB-009
LAGUARDIA COMM COLLEGE	31-10 THOMSON AVE	LONG ISLAND CITY	110443	1/31/2002	1/31/2002	Combined	BB-026	DA-BB-026
UNNAMED	1532 BERGEN ST	BROOKLYN	9904765	7/21/1999	10/21/1999	Combined	NC-015	DA-NC-015
EXXON S/S	1866 ATLANTIC AVE	BROOKLYN	9601503	4/29/1996	3/21/2003	Combined	NC-015	DA-NC-015
UNNAMED	11 LOUIS PLACE	BROOKLYN	9905790	8/13/1999	8/13/1999	Combined	NC-015	DA-NC-015
VS 1106	2-20 CLAY ST	BROOKLYN	4920	7/25/2000	10/23/2001	Combined	NCB-023	DA-NCB-023
SB 41971	35 SCHAFFER ST	BROOKLYN	8616	10/24/2000	12/17/2001	Combined	NC-015	DA-NC-015
295-A BAINBRIDGE ST	295-A BAINBRIDGE AVE	BROOKLYN	9410716	11/11/1994	11/11/1994	Combined	NC-015	DA-NC-015
ENGINE CO. 222 FDNY -DDC	32 RALPH AVENUE	BROOKLYN	9703371	6/18/1997	7/9/2002	Combined	NC-015	DA-NC-015
UNNAMED	30-27 GREENPOINT AVE	LONG ISLAND CITY	9805015	7/22/1998	7/22/1998	Combined	BB-011	DA-BB-011
FENCED IN LOT	124 NOLL ST	BROOKLYN	6531	9/1/2000	10/7/2005	Combined	NC-015	DA-NC-015
ON SIDEWALK	124 NOLL ST	BROOKLYN	9905643	8/10/1999	7/12/2004	Combined	NC-015	DA-NC-015
59-10 CATALPA AVE	59-10 CATALPA AVE	RIDGEWOOD	9212835	2/15/1993	2/15/1993	Combined	NC-083	DA-NC-083
STORE/APARTS.	65-13 MRYTLE AVE	GLENDALE	311897	1/23/2004	2/11/2004	Combined	NC-083	DA-NC-083
UNNAMED	279 LINDEN ST	BROOKLYN	107242	10/13/2001	5/6/2002	Combined	NC-015	DA-NC-015
268 CORNELIA STREET	268 CORNELIA STREET	BROOKLYN	9209636	11/18/1992	3/31/1995	Combined	NC-015	DA-NC-015
BUSH TERMINAL EDC -DDC	4104 FIRST AVENUE	BROOKLYN	9701894	5/12/1997	2/9/1998	Combined	NC-015	DA-NC-015
653 GRANDVIEW AVENUE	653 GRANDVIEW AVENUE	RIDGEWOOD	9311656	12/30/1993	12/30/1993	Combined	NC-077	DA-NC-077
72-43 60 LANE	72-43 60 LANE	GLENDALE	9510077	11/13/1995	11/13/1995	Combined	NC-083	DA-NC-083
LINDEN COURT HOUSING CO	150 LINDEN ST	BROOKLYN	9911398	12/29/1999	5/6/2003	Combined	NC-015	DA-NC-015
18-18 51ST STREET	18-18 51ST STREET	ASTORIA	9314069	3/2/1994	3/2/1994	Combined	BB-043	DA-BB-043
SERVICE BOX 15457	416 BAINBRIDGE ST	BROOKLYN	9903145	6/18/1999	5/18/2000	Combined	NC-015	DA-NC-015
LIRR	5-01 BORDEN AVE	LONG ISLAND CITY	9714505	3/30/1998	7/8/2003	Combined	BB-043	DA-BB-043
EMPIRE WAREHOUSE	1312-1324 FLUSHING AVE	BROOKLYN	9903972	7/6/1999	8/23/2000	Combined	NC-015	DA-NC-015
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9007411	10/5/1990	10/21/2003	Combined	BB-013	DA-BB-013
MANHOLE #1593	33RD ST & HUNTERS POINT A	LONG ISLAND CITY	9814570	3/5/1999	3/11/1999	Combined	BB-026	DA-BB-026
SERVICE BOX 31332	129 PATCHEN AVE	BROOKLYN	208654	11/20/2002	2/20/2003	Combined	NC-015	DA-NC-015
59-14 GATES AVENUE	59-14 GATES AVENUE	RIDGEWOOD	9403102	6/2/1994	6/2/1994	Combined	NC-077	DA-NC-077
LEMBO	59-24 MAURICE AVENUE	MASPETH	305815	9/2/2003	10/1/2003	Combined	NC-077	DA-NC-077
71 13 60TH LA	71-13 60TH LA	RIDGEWOOD	9514571	2/14/1996	3/3/2000	Combined	NC-083	DA-NC-083
LIRR	BORDEN AVENUE	LONG ISLAND CITY	1836	5/12/2000	9/9/2003	Combined	BB-013	DA-BB-013
271 BLEECKER STREET	271 BLEECKER STREET	BROOKLYN	9414634	2/6/1995	2/7/1995	Combined	NC-015	DA-NC-015
ENGINE CO. 233/LADD. CO. 176 FDNY -DDC	25 ROCKAWAY AVENUE	BROOKLYN	9709795	11/15/1997	4/1/1999	Combined	NC-015	DA-NC-015
COMMERICAL BUILIDING	47-51 33RD STREET	LONG ISLAND CITY	404387	7/23/2004	9/23/2005	Combined	BB-026	DA-BB-026
47-51 33RD STREET	47-51 33RD STREET	LONG ISLAND CITY	9304793	7/16/1993	7/16/1993	Combined	BB-026	DA-BB-026
15 WILSON AVENUE	LOT- 15 WILSON AVENUE	BROOKLYN	9404396	6/29/1994	6/30/1994	Combined	NC-015	DA-NC-015
83 PRECINCT NYPD -DDC	480 KNICKERBOCKER AVENUE	BROOKLYN	13665	2/1/2001	NULL	Combined	NC-015	DA-NC-015
329 KNICKERBOCKER AVENUE	329 KNICKERBOKER AVENUE	BROOKLYN	9307825	9/27/1993	9/27/1993	Combined	NC-015	DA-NC-015
58-10 64TH ST	58-10 64TH STREET	MASPETH	9414292	1/28/1995	1/30/1995	Combined	NC-077	DA-NC-077

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
ON THE STREET BY	124 NOLL ST	BROOKLYN	9803616	6/22/1998	4/22/2003	Combined	NC-015	DA-NC-015
46-25 METROPOLITAN AVE	46025 METROPOLITAN AVE	RIDGEWOOD	9204008	7/7/1992	NULL	Combined	NC-083	DA-NC-083
2 INGRAHAM ST	2 INGRAHAM ST	BROOKLYN	9830001	12/31/1997	NULL	Combined	NC-015	DA-NC-015
454 MCDONOUGH STREET	454 MCDONOUGH STREET	BROOKLYN	9507501	9/19/1995	9/19/1995	Combined	NC-015	DA-NC-015
33-02 48TH AVE.	33-02 48TH AVENUE	LONG ISLAND CITY	9208396	10/21/1992	12/1/1992	Combined	BB-026	DA-BB-026
EAST RIVER	53RD STREET & 1ST AVENUE	BROOKLYN	9608873	10/17/1996	10/17/1996	Combined	NC-015	DA-NC-015
UNNAMED	58-75 MAURICE AVE	MASPETH	305184	8/15/2003	10/30/2003	Combined	NC-077	DA-NC-077
275 MORGAN AVE	275 MORGAN AVE	BROOKLYN	9608964	10/18/1996	NULL	Combined	NC-015	DA-NC-015
KNICKERBOCKER AV/FLUSHING	KNICKERBOCKER AV/FLUSHING	BROOKLYN	9805323	7/29/1998	11/8/2002	Combined	NC-015	DA-NC-015
16 NORMAN ST	16 NORMAN ST	RIDGEWOOD	9106250	9/10/1991	6/7/1995	Combined	NC-083	DA-NC-083
6149 METROPOLITAN AVE	6149 METROPOLITAN AVE	MIDDLE VILLAGE	9314557	3/12/1994	3/12/1994	Combined	NC-077	DA-NC-077
7339 CENTRAL AVENUE	7339 CENTRAL AVENUE	GLENDALE	9311861	1/6/1994	1/6/1994	Combined	NC-083	DA-NC-083
WOLF PETROLEUM CORP	1532 BUSHWICK AVE	BROOKLYN	203277	6/27/2002	9/25/2003	Combined	NC-015	DA-NC-015
FIVE STAR TRANSMISSION	ON AVE A JUST OFF ROCKAWA	BROOKLYN	102789	6/13/2001	10/7/2005	Combined	NC-015	DA-NC-015
SILVER STAR AUTO	12-01 JACKSON AVENUE	LONG ISLAND CITY	9613036	2/4/1997	4/28/2003	Combined	BB-013	DA-BB-013
METROPOLITAN AV STOP/BKLY	METROPOLITAN AVE STOP	BROOKLYN	8901311	5/4/1989	12/4/1992	Combined	NC-015	DA-NC-015
146-48 TROUTMAN ST	1948 TROUTMAN ST	MASPETH	9410596	11/9/1994	10/9/2002	Combined	NC-083	DA-NC-083
STUYVESANT GARDENS -NYCHA	875 GATES AVE	BROOKLYN	9603356	6/11/1996	NULL	Combined	NC-015	DA-NC-015
1094 FLUSHING AVE	MANHOLE 7464	BROOKLYN	9900341	4/9/1999	4/15/1999	Combined	NC-015	DA-NC-015
LIRR	207 BORDEN AVENUE	LONG ISLAND CITY	9505532	8/2/1995	7/8/2003	Combined	BB-014	DA-BB-014
CORNELL BEVERAGES	105 HARRISON PLACE	BROOKLYN	9610865	12/3/1996	10/17/2008	Combined	NC-015	DA-NC-015
UNNAMED	67-53 73RD PLACE	MIDDLE VILLAGE	300500	4/11/2003	5/12/2003	Combined	NC-083	DA-NC-083
UNNAMED	279 LINDEN ST	BROOKLYN	111923	3/19/2002	2/19/2003	Combined	NC-015	DA-NC-015
33-02 48TH AVENUE	33-02 48TH AVENUE	LONG ISLAND CITY	9312676	1/28/1994	1/28/1994	Combined	BB-026	DA-BB-026
FRESH POND DEPOT - NYCT	66-99 FRESH POND ROAD	RIDGEWOOD	9003392	6/25/1990	5/11/2004	Combined	NC-077	DA-NC-077
DIMES SAVINGS BANK	46-10 QUEENS BLVD	SUNNYSIDE	9813951	2/17/1999	3/31/2003	Combined	BB-009	DA-BB-009
PROPER MANUFACTORING	36-04 SKILLMAN AVE	LONG ISLAND CITY	9901963	5/20/1999	7/1/2004	Combined	BB-026	DA-BB-026
H.S. FINISHING PRODUCT CO	1768-84 DEAN ST	BROOKLYN	9901128	4/29/1999	3/31/2003	Combined	NC-015	DA-NC-015
MANHOLE 1991	WILLOUGHBY AV & CLAIRMONT	BROOKLYN	9908143	10/5/1999	2/20/2002	Combined	NC-015	DA-NC-015
6923 CYPRESS HILLS	6923 CYPRESS HILLS	RIDGEWOOD	9513347	1/23/1996	1/23/1996	Combined	NC-077	DA-NC-077
RESIDENTS	814 QUINCY STREET	BROOKLYN	10530	12/18/2000	11/4/2005	Combined	NC-015	DA-NC-015
AMOCO	59-51 QUEENS MIDTOWN EXPR	QUEENS	7064	9/15/2000	1/11/2006	Combined	NC-077	DA-NC-077
103	103 WILSON AVE	BROOKLYN	9611402	12/16/1996	6/16/2003	Combined	NC-015	DA-NC-015
GP PETRO	1998 ATLANTIC AVENUE	BROOKLYN	9712517	2/9/1998	5/17/2006	Combined	NC-015	DA-NC-015
IFO RESIDENCE	1192 HERKIMER ST	BROOKLYN	8358	10/13/2000	11/2/2000	Combined	NC-015	DA-NC-015
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9009652	6/7/1994	10/21/2003	Combined	BB-013	DA-BB-013
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9203696	6/29/1992	NULL	Combined	BB-013	DA-BB-013
CANADA DRY	50-35 56TH ROAD	MASPETH	9809793	11/4/1998	7/25/2007	Combined	NC-077	DA-NC-077
604 HALSEY STREE	604 HALSEY STREET	BROOKLYN	9405641	7/23/1994	7/26/1994	Combined	NC-015	DA-NC-015
5-35 54TH AVENUE	5-35 54TH AVENUE	LONG ISLAND CITY	9414967	2/14/1995	2/14/1995	Combined	BB-015	DA-BB-015
46-73 METROPOLITAN AVE. /	46-73 METROPOLITAN AVE	RIDGEWOOD	8703244	7/22/1987	7/22/1987	Combined	NC-083	DA-NC-083
UNNAMED	1073 WILLOUGHBY AVE	BROOKLYN	202656	6/12/2002	8/2/2002	Combined	NC-015	DA-NC-015
UNNAMED	1856 TROUTMAN ST	RIDGEWOOD	212394	3/17/2003	4/9/2003	Combined	NC-083	DA-NC-083
UNNAMED	50-01 27TH STREET	LONG ISLAND	9904845	7/23/1999	2/6/2004	Combined	BB-040	DA-BB-040
GETTY TERMINAL	LONG ISLAND CITY	LONG ISLAND CITY	302538	6/10/2003	6/10/2003	Combined	BB-043	DA-BB-043
47-51 33RD STREET	47-51 33RD STREET	LONG ISLAND CITY	9304781	7/16/1993	7/16/1993	Combined	BB-026	DA-BB-026
COMMERCIAL PROPERTY	43-23 35TH STREET	LONG ISLAND CITY	302109	5/13/2003	7/22/2003	Combined	BB-026	DA-BB-026
280 ELDRIDGE ST	280 ELDRIDGE ST	BROOKLYN	9203867	7/2/1992	3/30/1995	Combined	NC-015	DA-NC-015
SERVICE BOX 30619	620A MONROE ST	BROOKLYN	9814841	3/14/1999	3/31/1999	Combined	NC-015	DA-NC-015

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
MYRTLE AVE GAS STATION	1193 MYRTLE AVENUE	BROOKLYN	5539	11/18/1999	12/6/2005	Combined	NC-015	DA-NC-015
APARTMENT BLDG.	940-950 GATES AVE	BROOKLYN	400812	4/23/2004	4/17/2006	Combined	NC-015	DA-NC-015
NEW GLEN AUTO	61 FRESH POND ROAD	RIDGEWOOD	9407684	9/1/1994	9/8/1994	Combined	NC-077	DA-NC-077
OCEAN HILL HOUSING	30 MOTHER GASTON BLVD	BROOKLYN	9703560	6/23/1997	6/24/1997	Combined	NC-015	DA-NC-015
RESIDENT	494 MACON ST	BROOKLYN	310355	12/6/2003	7/13/2004	Combined	NC-015	DA-NC-015
CONCRETE FLOOR	48-67 34TH ST	LONG ISLAND CITY	9910733	12/9/1999	1/31/2000	Combined	BB-009	DA-BB-009
EAST RIVER	53RD STREET & 1ST AVENUE	BROOKLYN	9710986	12/30/1997	2/6/1998	Combined	NC-015	DA-NC-015
CITY & SUBURBAN DIST	47-25 34TH ST	LONG ISLAND CITY	210020	1/3/2003	2/20/2003	Combined	BB-026	DA-BB-026
MANHOLE	48TH STREET & 5TH AVE	BROOKLYN	313413	3/7/2004	6/4/2004	Combined	NC-015	DA-NC-015
SERVICE BOX 11469	IFO 51 HARMAN ST	BROOKLYN	9814893	3/15/1999	3/31/1999	Combined	NC-015	DA-NC-015
UNNAMED	2017 WOODBINE ST	BROOKLYN	9811872	12/21/1998	1/14/1999	Combined	NC-015	DA-NC-015
MANHOLE #7464	1094-1090 FLUSHING AVE	BROOKLYN	9902783	6/10/1999	5/18/2000	Combined	NC-015	DA-NC-015
UNNAMED	74-05 64TH PLACE	GLENDALE	210646	1/23/2003	5/8/2003	Combined	NC-083	DA-NC-083
38-05 48TH AVENUE	38-05 48TH AVENUE	LONG ISLAND CITY	9508207	10/4/1995	10/4/1995	Combined	BB-026	DA-BB-026
CONSOLIDATED BUS COMPANY	2037 EASTERN PARKWAY	BROOKLYN	314209	3/29/2004	9/21/2004	Combined	NC-015	DA-NC-015
FORMER GAS STATION	2130 ATLANTIC AVE	BROOKLYN	305657	8/20/2003	1/10/2005	Combined	NC-015	DA-NC-015
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9705809	8/13/1997	NULL	Combined	BB-013	DA-BB-013
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9812663	1/13/1999	NULL	Combined	BB-013	DA-BB-013
53-40 66TH ST	53-40 66TH ST	MASPETH	9700807	4/18/1997	3/8/2004	Combined	NC-077	DA-NC-077
36-08 REVIEW AVE	36-08 REVIEW AVE	LONG ISLAND CITY	9413032	12/30/1994	12/30/1994	Combined	BB-011	DA-BB-011
SERVICE BOX #53234	442 WILSON AVE	BROOKLYN	304026	7/16/2003	8/27/2003	Combined	NC-015	DA-NC-015
5900 DECATUR STREET	5900 DECATUR STREET	GLENDALE	9315051	3/23/1994	3/23/1994	Combined	NC-083	DA-NC-083
ST RAFAEL CHURCH	48-25 37TH ST	LONG ISLAND CITY	304115	7/18/2003	4/27/2004	Combined	BB-009	DA-BB-009
58-24 MAURICE	58-24 MAURICE AV	MASPETH	202678	6/10/2002	9/1/2005	Combined	NC-077	DA-NC-077
AA TRUCK RENTING	28-90 REVIEW AVE	LONG ISLAND CITY	9600032	4/1/1996	5/8/1996	Combined	BB-010	DA-BB-010
DEPT OF SANITATION	1760 ATLANTIC AVE	BROOKLYN	2025	5/17/2000	NULL	Combined	NC-015	DA-NC-015
43-11 34TH ST	43-11 34TH ST	LONG ISLAND CITY	9811065	12/1/1998	3/3/2003	Combined	BB-026	DA-BB-026
315 HOWARD AVE	315 HOWARD AVE	BROOKLYN	9607315	9/9/1996	9/10/1996	Combined	NC-015	DA-NC-015
JAMAICA GARAGE CORP/GULF STATION	73-13 COOPER AVENUE	GLENDALE	9914355	3/6/2000	6/23/2006	Combined	NC-083	DA-NC-083
COMMERICAL BUILDING	3937 MESEROLE STREET	BROOKLYN	9703969	7/2/1997	7/2/1997	Combined	NC-015	DA-NC-015
SILVER STAR AUTO	12-01 JACKSON AVENUE	LONG ISLAND CITY	230055	11/7/2002	4/11/2003	Combined	BB-013	DA-BB-013
UNNAMED	55-26 MYRTLE AVE	RIDGEWOOD	9910277	11/24/1999	11/24/1999	Combined	NC-083	DA-NC-083
MANHOLE 2312	927 BUSHWICH AVE	BROOKLYN	9813635	2/8/1999	5/19/1999	Combined	NC-015	DA-NC-015
29 ASH ST/BKLYN/UNIVERSAL	29 ASH ST	BROOKLYN	8708297	12/24/1987	7/18/2003	Combined	NCB-022	DA-NCB-022
95 EVERGREEN AVE	95 EVERGREEN AVE	BROOKLYN	9801773	5/11/1998	11/26/2004	Combined	NC-015	DA-NC-015
RESIDENCE	343 HOWARD AVE	BROOKLYN	211300	2/11/2003	2/12/2003	Combined	NC-015	DA-NC-015
BAERENKLAU OIL CO	220 STOCKHOLM ST	BROOKLYN	8600024	4/1/1986	4/1/1986	Combined	NC-015	DA-NC-015
UNNAMED	2164A FULTON ST	BROOKLYN	9914596	3/26/2000	3/27/2000	Combined	NC-015	DA-NC-015
EXXONMOBIL	1866 ATLANTIC AVE	BROOKLYN	8706011	10/16/1987	3/17/1993	Combined	NC-015	DA-NC-015
MARANGI FACILITY	4306 54TH RD	MASPETH	9806032	7/24/1998	NULL	Combined	NC-029	DA-NC-029
GRAND STREET CAMPUS H.S	850 GRAND STREET	BROOKLYN	301522	5/12/2003	11/14/2003	Combined	NC-015	DA-NC-015
AMOCO STATION	62-52 METROPOLITAN AVE	MIDDLE VILLAGE	9814331	2/28/1999	8/15/2006	Combined	NC-077	DA-NC-077
MASPETH SIGN SHOP DOT -DDC	58-50 57TH ROAD	MASPETH	9108991	11/22/1991	6/14/1995	Combined	NC-077	DA-NC-077
735 QUINCY STREET	735 QUINCY STREET	BROOKLYN	9413501	1/10/1995	1/10/1995	Combined	NC-015	DA-NC-015
72-43 60TH LANE	72-43 60TH LANE	GLENDALE	9503993	7/2/1995	7/2/1995	Combined	NC-083	DA-NC-083
FIRST AV @ 52 ST	52ND ST @ 1ST AVE	BROOKLYN	8806280	10/26/1988	11/14/1994	Combined	NC-015	DA-NC-015
419 DECATUR	419 DECATUR ST	BROOKLYN	305841	9/2/2003	9/2/2003	Combined	NC-015	DA-NC-015
BROOKLYN NORTH 4	525 JOHNSON AVENUE	BROOKLYN	9805903	8/12/1998	10/31/2003	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
21 ST OFF 3RD AVENUE	21 ST OFF 3RD AVENUE	BROOKLYN	9312696	1/28/1994	1/28/1994	Combined	NC-015	DA-NC-015
IMPERIAL GAS STATION	1781 ATLANTIC AVE	BROOKLYN	9713059	2/23/1998	4/30/1998	Combined	NC-015	DA-NC-015
UNNAMED	598 WILSON AVE	BROOKLYN	302444	6/6/2003	6/9/2003	Combined	NC-015	DA-NC-015
FACTORY (UNKNOWN NAME)	33-20 HUNTERS POINT AVE	LONG ISLAND CITY	212574	3/20/2003	5/21/2004	Combined	BB-009	DA-BB-009
119 LINDEN STREET/BKLYN	119 LINDEN STREET	BROOKLYN	8809175	2/25/1989	2/27/1989	Combined	NC-015	DA-NC-015
FORMER GETTY S/S #564 - GETTY PROPERTIES	1103-1107 DEKALB AVE	BROOKLYN	9810224	11/13/1998	NULL	Combined	NC-015	DA-NC-015
60-55 68TH AVE	60-55 68TH AVE	RIDGEWOOD	9510666	11/25/1995	11/25/1995	Combined	NC-077	DA-NC-077
APT COMPLEX	349 SCHOLES ST	BROOKLYN	300325	3/12/2003	3/24/2004	Combined	NC-015	DA-NC-015
48-40 46TH ST	48-40 46TH ST	WOODSIDE	9507863	9/27/1995	9/27/1995	Combined	BB-009	DA-BB-009
170 BUFFALO AVENUE / BROO	170 BUFFALO AVENUE	BROOKLYN	8700864	4/28/1987	4/28/1987	Combined	NC-015	DA-NC-015
308 MAUJER ST	308 MAUJER ST	BROOKLYN	305120	8/14/2003	1/31/2006	Combined	NC-015	DA-NC-015
UNNAMED	47-40 21ST STREET	LONG ISLAND CITY	9912529	2/2/2000	7/29/2003	Combined	BB-013	DA-BB-013
738 PUTNAM AVE	738 PUTNAM AVE	BROOKLYN	9511049	12/2/1995	12/4/1995	Combined	NC-015	DA-NC-015
62ND STREET 3RD AVE.	62ND STREET 3RD AVE	BROOKLYN	9207479	8/28/1992	9/28/1992	Combined	NC-015	DA-NC-015
24 PAIDGE AVENUE	24 PAIDGE AVENUE	BROOKLYN	9413588	1/11/1995	1/12/1995	Combined	NCB-021	DA-NCB-021
LIRR	BORDEN AVE/JACKSON AVE	LONG ISLAND	9808351	10/6/1998	12/9/2005	Combined	BB-014	DA-BB-014
SERVICE BOX 16718	334 CHAUNCEY ST	BROOKLYN	9813780	2/12/1999	2/23/1999	Combined	NC-015	DA-NC-015
EMPIRE OFFICE FURNITURE	48-02 48TH AVE	WOODSIDE	8467	10/19/2000	NULL	Combined	BB-009	DA-BB-009
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9706666	9/3/1997	6/24/2004	Combined	BB-013	DA-BB-013
IN STREET IFO	60-31 68TH AV	RIDGEWOOD	9601593	5/1/1996	5/1/1996	Combined	NC-083	DA-NC-083
UNNAMED	1630 GEORGE ST	RIDGEWOOD	230050	10/18/2002	3/7/2003	Combined	NC-083	DA-NC-083
105 EVERGREEN AVENUE	105 EVERGREEN AVE	BROOKLYN	9300224	4/5/1993	7/26/1993	Combined	NC-015	DA-NC-015
UNNAMED	50-12 27TH STREET	LONG ISLAND CITY	9902654	6/7/1999	3/3/2003	Combined	BB-040	DA-BB-040
1071 MANHATTAN AVENUE	1071 MANHATTAN AVENUE	BROOKLYN	9313337	2/7/1994	4/23/2003	Combined	NCB-022	DA-NCB-022
V# 1109 & V# 852	20 CLAY ST	BROOKLYN	9913569	3/1/2000	12/21/2001	Combined	NCB-023	DA-NCB-023
ST. MARY'S HOSPITAL	170 BUFFALO AVENUE	BROOKLYN	9809074	10/20/1998	12/3/2009	Combined	NC-015	DA-NC-015
1885 ATLANTIC AVE	1885 ATLANTIC AVE	BROOKLYN	9209626	11/18/1992	7/22/1994	Combined	NC-015	DA-NC-015
73 BUFFALO AVE-HOUSE	73 BUFFALO AVE	BROOKLYN	9711923	1/24/1998	11/5/2008	Combined	NC-015	DA-NC-015
STREET	915 PUTNAM AVE	BROOKLYN	9712718	2/13/1998	2/13/1998	Combined	NC-015	DA-NC-015
1205 MANHATTAN AVE	1205 MANHATTAN AVENUE	BROOKLYN	9107152	10/3/1991	12/9/1993	Combined	NCB-022	DA-NCB-022
MANHOLE 1982	WILLOUGHBY AVE	BROOKLYN	9908688	10/18/1999	2/22/2002	Combined	NC-015	DA-NC-015
CITYGAS GAS STATION	1508 BUSHWICK AVE	BROOKLYN	9712426	2/6/1998	10/10/2006	Combined	NC-015	DA-NC-015
UNITED PARCEL SERVICE	49-10 27TH STREET	LONG ISLAND CITY	9307053	6/21/1993	3/31/1995	Combined	BB-040	DA-BB-040
JOMEIRA REALITY	47-20 30TH ST	LONG ISLAND CITY	110569	1/30/2002	3/1/2002	Combined	BB-026	DA-BB-026
UNNAMED	711 HERKIMER PL	BROOKLYN	109100	6/18/2000	12/14/2001	Combined	NC-015	DA-NC-015
UNNAMED	1079 MANHATTAN AVE	BROOKLYN	1371	5/3/2000	4/23/2003	Combined	NCB-022	DA-NCB-022
71-52 69TH PL	71-52 69TH PL	GLENDALE	9511107	12/4/1995	12/5/1995	Combined	NC-083	DA-NC-083
BULOVA CORPORATION	77 COMMERCIAL STREET	BROOKLYN	211097	2/5/2003	4/9/2003	Combined	NCB-023	DA-NCB-023
45-15 50TH AVE	45-15 50TH AVE	WOODSIDE	9601425	4/28/1996	5/30/1996	Combined	BB-009	DA-BB-009
1633 CENTRE ST.	1633 CENTRE ST.	RIDGEWOOD	9308705	10/18/1993	10/18/1993	Combined	NC-083	DA-NC-083
29 ASH ST	29 ASH ST	BROOKLYN	9709313	11/10/1997	4/3/2003	Combined	NCB-022	DA-NCB-022
UNNAMED	54-60 44TH ST	MASPETH	207896	10/29/2002	1/16/2003	Combined	NC-029	DA-NC-029
FILIPOWICZ PROPERTY	2141 GREENE	RIDGEWOOD	107770	10/30/2001	10/3/2003	Combined	NC-083	DA-NC-083
119 LINDEN STREET	119 LINDEN STREET	BROOKLYN	8909454	12/30/1989	12/8/1992	Combined	NC-015	DA-NC-015
SERVICE BOX 8680	82 JEFFERSON ST	BROOKLYN	7142	9/18/2000	10/27/2000	Combined	NC-015	DA-NC-015
16TH STREET & 5TH AVENUE	16TH STREET & 5TH AVENUE	BROOKLYN	9700864	4/20/1997	2/24/2003	Combined	NC-015	DA-NC-015
63 BUFFALO ST - BKLN	63 BUFFALO ST	BROOKLYN	8910963	2/16/1990	2/17/1990	Combined	NC-015	DA-NC-015
20 CHARLOTTE STREET	20 CHARLOTTE STREET	RIDGEWOOD	9307414	9/18/1993	2/23/1998	Combined	NC-083	DA-NC-083

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
APARTMENT HOUSE	81 CENTRAL AVE	BROOKLYN	9714197	3/16/1998	2/10/2000	Combined	NC-015	DA-NC-015
GOWANUS SUBSTATION	27TH STREET AT THIRD AVE	BROOKLYN	105928	9/4/2001	5/6/2002	Combined	NC-015	DA-NC-015
37-31 48TH ST	37031 48TH ST	WOODSIDE	9502214	5/22/1995	2/9/1996	Combined	BB-009	DA-BB-009
25 BUSHWICK AVE	25 BUSHWICK AVE	BROOKLYN	9512040	12/23/1995	7/4/1999	Combined	NC-015	DA-NC-015
MANHOLE #20987	916 HERKIMER ST	BROOKLYN	402555	6/8/2004	6/9/2004	Combined	NC-015	DA-NC-015
AMSON AUTO PETRO CORP/GULF SERVICE STATION	1802 ATLANTIC AVENUE	BROOKLYN	9709658	11/19/1997	NULL	Combined	NC-015	DA-NC-015
1ST NATIONAL SAVINGS BANK	49TH STREET & 13TH AVENUE	BROOKLYN	9513723	1/29/1996	NULL	Combined	NC-015	DA-NC-015
J & M GAS	885 GRAND STREET	BROOKLYN	8901284	5/9/1989	7/21/2008	Combined	NC-015	DA-NC-015
BEST FORM FOUNDATION	38-01 47TH AVENUE	LONG ISLAND CITY	9806634	8/28/1998	9/16/2008	Combined	BB-026	DA-BB-026
UNNAMED	75 ONDERDONK AVE.	RIDGEWOOD	9208765	10/29/1992	10/24/2002	Combined	NC-083	DA-NC-083
464 DECATUR STREET	464 DECATUR STREET	BROOKLYN	9208024	10/7/1992	10/12/1992	Combined	NC-015	DA-NC-015
UNNAMED	587 WOODWARD AVE	RIDGEWOOD	403955	7/13/2004	7/14/2004	Combined	NC-083	DA-NC-083
1276 HANCOCK STREET	1276 HANOCK STREET	BROOKLYN	9501135	4/27/1995	7/26/1995	Combined	NC-015	DA-NC-015
VERTICAL INDUSTRIAL PARK	66-26 METROPOLITAN AVENUE	MIDDLE VILLAGE	9607353	3/25/1996	1/30/1997	Combined	NC-077	DA-NC-077
MANHOLE #2130	PACIFIC ST.	BROOKLYN	311800	1/20/2004	5/28/2004	Combined	NC-015	DA-NC-015
RAILROAD CROSSING	54 ST	MASPETH	313556	3/10/2004	3/17/2004	Combined	NC-077	DA-NC-077
810 METROPOLITAN AV/MERIT	810 METROPOLITAN AVENUE	BROOKLYN	8807632	12/18/1988	12/18/1988	Combined	NC-015	DA-NC-015
HESS-MERIT STATION 32522	810 METROPOLITAN AVENUE	BROOKLYN	9502757	6/5/1995	NULL	Combined	NC-015	DA-NC-015
INFRONT OF REGION OFFICE	47-40 21ST STREET	LONG ISLAND CITY	9912452	1/31/2000	7/29/2003	Combined	BB-013	DA-BB-013
41-07 42ND ST.	41-07 42ND ST	SUNNYSIDE	9313396	2/12/1994	2/14/1994	Combined	BB-026	DA-BB-026
49-25 VAN DAM STREET	49-25 VAN DAM STREET	LONG ISLAND CITY	9206855	9/14/1992	11/16/1992	Combined	BB-009	DA-BB-009
VACANT LOT	174 STUYVESANT AVE	BROOKLYN	9904030	7/7/1999	3/3/2003	Combined	NC-015	DA-NC-015
BUSCH TERMINAL	43RD STREET & 1ST AVENUE	BROOKLYN	9510849	11/28/1995	11/28/1995	Combined	NC-015	DA-NC-015
12783 - SERVICE BOX	891 KNICKERBOCKER AVE	BROOKLYN	9902270	5/28/1999	7/19/1999	Combined	NC-015	DA-NC-015
PS296 SCHOOL	125 COVERT ST	BROOKLYN	9810352	11/16/1998	11/6/2008	Combined	NC-015	DA-NC-015
121 JEFFERSON ST/BKLYN	121 JEFFERSON ST/APT 16	BROOKLYN	8710441	4/1/1984	2/10/2003	Combined	NC-015	DA-NC-015
1084 BUSHWICK AVE	1084 BUSHWICK AVE	BROOKLYN	9113071	3/25/1992	3/25/1992	Combined	NC-015	DA-NC-015
AUTO REPAIR SHOP	178 NOLLS ST	BROOKLYN	9906527	9/1/1999	1/23/2007	Combined	NC-015	DA-NC-015
ST. MARY'S HOSPITAL	170 BUFFALO AVENUE	BROOKLYN	8805248	9/18/1988	12/20/1988	Combined	NC-015	DA-NC-015
231 HIMROD ST	231 HIMROD ST	BROOKLYN	11238	1/15/2001	12/21/2005	Combined	NC-015	DA-NC-015
16-14 GEORGE ST/PLATEING	16-14 GEORGE ST/PLATEING	RIDGEWOOD	9110837	1/17/1992	NULL	Combined	NC-083	DA-NC-083
ATLAS TERMINALS	8000 COOPER AVE	GLENDALE	306686	9/24/2003	4/21/2005	Combined	NC-083	DA-NC-083
ROCKAWAY AVE STATION -NYCT	2158 FULTON ST	BROOKLYN	11026	1/9/2001	NULL	Combined	NC-015	DA-NC-015
746 HALSEY ST	746 HALSEY ST	BROOKLYN	9412090	12/9/1994	2/10/2003	Combined	NC-015	DA-NC-015
537 JOHNSON AV	537 JOHNSON AVE	BROOKLYN	8806105	10/19/1988	10/7/1992	Combined	NC-015	DA-NC-015
BROOKLYN NORTH 08 DOS -DDC	1755 PACIFIC STREET	BROOKLYN	9703288	6/16/1997	NULL	Combined	NC-015	DA-NC-015
1205 MANHATTAN AVE	1205 MANHATTAN AVENUE	BROOKLYN	130038	11/30/2001	11/30/2001	Combined	NCB-022	DA-NCB-022
NEWTOWN CREEK	1205 MANHATTAN AVENUE	BROOKLYN	9606677	8/25/1996	8/25/1996	Combined	NCB-022	DA-NCB-022
6522 MYRTLE AVENUE	6522 MYRTLE AVENUE	GLENDALE	9501326	5/1/1995	5/1/1995	Combined	NC-083	DA-NC-083
UNNAMED	217 CHAUNCY ST	BROOKLYN	9811989	12/23/1998	12/29/1998	Combined	NC-015	DA-NC-015
640-648 LEXINGTON AVE	640-648 LEXINGTON AVE	BROOKLYN	10024	12/5/2000	4/7/2003	Combined	NC-015	DA-NC-015
28-20 BORDEN AVE	28-20 BORDEN AVE	LONG ISLAND CITY	9702480	5/23/1997	5/28/1997	Combined	BB-004	DA-BB-004
389 DECATUR ST	389 DECATUR ST	BROOKLYN	9600345	4/8/1996	4/8/1996	Combined	NC-015	DA-NC-015
L.K. COMSTOCK	46-60 55TH AVE	MASPETH	9808377	10/7/1998	9/18/2000	Combined	NC-029	DA-NC-029
HUNTERS POINT PLAZA	47-40 21ST STREET	LONG ISLAND CITY	106695	9/27/2001	9/27/2001	Combined	BB-013	DA-BB-013
47-40 21ST ST/QUEENS	47-40 21ST STREET	LONG ISLAND CITY	9012958	3/19/1991	3/19/1991	Combined	BB-013	DA-BB-013
ATLANTIC SCHENECTADY	1740 ATLANTIC AVENUE	BROOKLYN	7587	9/27/2000	2/24/2004	Combined	NC-015	DA-NC-015
71-06 67TH PLACE	71-06 67TH PLACE	GLENDALE	9211212	12/29/1992	12/29/1992	Combined	NC-083	DA-NC-083

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
MANHOLE 1674	PACIFIC STREET AT SMITH	BROOKLYN	5823	8/15/2000	2/13/2002	Combined	NC-015	DA-NC-015
UNNAMED	72-24 61RD ST	GLENDALE	206358	9/12/2002	10/11/2002	Combined	NC-083	DA-NC-083
PENSKE TRUCK LEASING	33-17 47TH AVENUE	LONG ISLAND CITY	305303	8/13/2003	NULL	Combined	BB-026	DA-BB-026
SERVICE BOX 32104	IFO 1410 PROSPECT PLACE	BROOKLYN	4129	7/6/2000	10/17/2001	Combined	NC-015	DA-NC-015
SUNOCO STATION AT	60-40 MYRTLE AVE	RIDGEWOOD	201056	4/28/2002	5/8/2002	Combined	NC-083	DA-NC-083
47-07 39TH ST	47-07 39TH ST	SUNNYSIDE	9600092	4/2/1996	4/2/1996	Combined	BB-026	DA-BB-026
227 TROUTMAN STREET	227 TROUTMAN STREET	BROOKLYN	9415056	2/16/1995	2/16/1995	Combined	NC-015	DA-NC-015
UNNAMED	60-45 ELIOT AVE	MASPETH	304727	8/4/2003	10/15/2003	Combined	NC-077	DA-NC-077
15 CLAY ST	15 CLAY ST	BROOKLYN	9514002	1/26/1996	2/15/1996	Combined	NCB-023	DA-NCB-023
BREVOORT	329 PATCHEN AVE	BROOKLYN	9004479	7/23/1990	5/1/1995	Combined	NC-015	DA-NC-015
UNNAMED	66-45 CLINTON AV	MASPETH	209436	12/13/2002	1/15/2004	Combined	NC-077	DA-NC-077
60-49 69TH AVE/FLAHERTY	60-49 69TH AVE	RIDGEWOOD	9109856	12/16/1991	12/16/1991	Combined	NC-083	DA-NC-083
VNA AUTOMOTIVE	50-02 49TH STREET	WOODSIDE	10198	12/10/2000	5/23/2001	Combined	BB-009	DA-BB-009
VAULT 852	10-20 CLAY ST	BROOKLYN	4127	7/6/2000	10/17/2001	Combined	NCB-023	DA-NCB-023
CENTRAL AVE/EVERGREEN	TROUTMAN ST	BROOKLYN	201734	5/16/2002	5/17/2002	Combined	NC-015	DA-NC-015
MANHOLE 64635	TRUXTON ST & SACKMAN	BROOKLYN	205477	8/25/2002	9/10/2009	Combined	NC-015	DA-NC-015
WOLF PETROLEUM CORP	1532 BUSHWICK AVE	BROOKLYN	212200	3/12/2003	10/21/2004	Combined	NC-015	DA-NC-015
1339 GREENE AVE	1339 GREENE AVE	BROOKLYN	402623	6/9/2004	1/5/2006	Combined	NC-015	DA-NC-015
CLOSED-LACKOF RECENT INFO	438 GROVE ST	BROOKLYN	8706015	10/16/1987	3/4/2003	Combined	NC-083	DA-NC-083
TEXACO/CHEVRON	36-20 QUEENS BOULEVARD	LONG ISLAND CITY	9603692	6/17/1996	NULL	Combined	BB-026	DA-BB-026
464 WILSON AVENUE/BKLYN	464 WILSON AVENUE	BROOKLYN	8910592	2/6/1990	6/20/1995	Combined	NC-015	DA-NC-015
65-05 68TH AV	65-05 68TH AV	GLENDALE	9800814	4/15/1998	2/12/2003	Combined	NC-077	DA-NC-077
RESIDENTS	1124 PUTNAM AVE	BROOKLYN	9808291	10/5/1998	11/4/1998	Combined	NC-015	DA-NC-015
OCEAN HILL HOUSES -NYCHA	24 STONE AVENUE	BROOKLYN	302414	6/6/2003	1/15/2008	Combined	NC-015	DA-NC-015
WOLF PETROLEUM CORP	60-04 METROPOLITAN AVE	FLUSHING	9610115	11/13/1996	1/4/2005	Combined	NC-077	DA-NC-077
DUNWELL ELEVATOR	879 GRAND STREET	BROOKLYN	8908532	11/29/1989	2/27/2003	Combined	NC-015	DA-NC-015
60-36 68TH ROAD	60036 68TH ROAD	RIDGEWOOD	9407937	9/14/1994	2/10/2003	Combined	NC-077	DA-NC-077
51-02 21ST ST	51-02 21ST ST	LONG ISLAND CITY	8806127	10/20/1988	7/19/2004	Combined	BB-043	DA-BB-043
743 HANCOCK STREET	743 HANCOCK STREET	BROOKLYN	9415493	2/27/1995	2/28/1995	Combined	NC-015	DA-NC-015
77 MACDOUGAL ST	77 MACDOUGAL ST	BROOKLYN	9707862	10/3/1997	9/30/2008	Combined	NC-015	DA-NC-015
82 WYCKOFF AVE	82 WYCKOFF AVE	BROOKLYN	30031	12/13/2000	4/4/2003	Combined	NC-015	DA-NC-015
77 COMMERCIAL STREET	77 COMMERCIAL STREET	BROOKLYN	9811015	12/2/1998	7/2/1999	Combined	NCB-023	DA-NCB-023
UNNAMED	546 BAINBRIDGE ST	BROOKLYN	5848	8/15/2000	5/9/2003	Combined	NC-015	DA-NC-015
TANK TRUCK EXPLOSION	1781 ATLANTIC AVE	BROOKLYN	8605581	12/3/1986	3/28/2005	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 73	241 MACDOUGAL ST	BROOKLYN	9809502	10/23/1998	2/12/2003	Combined	NC-015	DA-NC-015
CONCRETE BASEMENT	1718 NORMAN ST	RIDGEWOOD	200479	4/13/2002	1/12/2004	Combined	NC-083	DA-NC-083
JOHNSON RESIDENCE	716 HANCOCK ST	BROOKLYN	9911485	1/3/2000	8/22/2003	Combined	NC-015	DA-NC-015
GASETERIA	59-36 MAURICE AVENUE	MASPETH	9200947	4/17/1992	1/26/1996	Combined	NC-077	DA-NC-077
GASETERIA	59-36 MAURICE AVE	MASPETH	9812204	1/2/1999	1/19/2000	Combined	NC-077	DA-NC-077
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9709771	11/21/1997	10/21/2003	Combined	BB-013	DA-BB-013
17-26 STOCKHOLM ST - QNS	17-26 STOCKHOLM ST	RIDGEWOOD	8910179	1/19/1990	2/20/1990	Combined	NC-083	DA-NC-083
AMOCO SERVICE STATION	1740 ATLANTIC AVE	BROOKLYN	313509	3/9/2004	7/7/2004	Combined	NC-015	DA-NC-015
1740 ATLANTIC AVENUE	1740 ATLANTIC AVENUE	BROOKLYN	8605149	11/2/1986	11/2/1986	Combined	NC-015	DA-NC-015
MAX GAS STATION	56-73 58TH ST	MASPETH	212120	3/10/2003	4/22/2003	Combined	NC-077	DA-NC-077
203 HOPKINSON AVE/BKLYN	203 HOPKINSON AVENUE	BROOKLYN	8809338	3/3/1989	3/3/1989	Combined	NC-015	DA-NC-015
58-40 BORDEN AVE	58-40 BORDEN AVE	MASPETH	9507894	9/27/1995	10/24/1995	Combined	NC-077	DA-NC-077
45-34 47TH ST	45-34 47TH STREET	WOODSIDE	9414268	1/27/1994	1/27/1995	Combined	BB-009	DA-BB-009
1362 DEKALB AVE/BKLYN	1362 DEKALB AVENUE	BROOKLYN	9012043	2/19/1991	2/19/1991	Combined	NC-015	DA-NC-015

Table B-4

Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
618 DECATUR ST	618 DECATUR ST	BROOKLYN	9408841	10/3/1994	10/11/1994	Combined	NC-015	DA-NC-015
GULF GAS STATION	30-15 THOMSON AVE	LONG ISLAND CITY	9610833	12/2/1996	6/7/1999	Combined	BB-026	DA-BB-026
18-19 DEKALB AVE	18-19 DEKALB AVE	RIDGEWOOD	9211195	12/29/1992	12/29/1992	Combined	NC-083	DA-NC-083
295-A BAINBRIDGE ST	295-A BAINBRIDGE ST	BROOKLYN	9503055	6/12/1995	2/28/2003	Combined	NC-015	DA-NC-015
UNNAMED	1868 HIMROD ST	RIDGEWOOD	9912027	1/18/2000	1/26/2000	Combined	NC-083	DA-NC-083
VAULT 5855	DEKALB AVE	BROOKLYN	9514194	1/1/1996	2/7/2005	Combined	NC-015	DA-NC-015
UNNAMED	1627 HANCOCK ST	RIDGEWOOD	10385	12/15/2000	2/13/2003	Combined	NC-083	DA-NC-083
STEVEN SUPPLY CO	15 CLAY ST	BROOKLYN	9514630	2/15/1996	4/29/1996	Combined	NCB-023	DA-NCB-023
419 STOCKHOLM ST	419 STOCKHOLM STREET	BROOKLYN	9415190	2/20/1995	3/4/2003	Combined	NC-083	DA-NC-083
MANHOLE 19450	IFO 264 ELDERT ST	BROOKLYN	1962	5/16/2000	9/24/2001	Combined	NC-015	DA-NC-015
UNNAMED	1509 BUSHWICK AVE	BROOKLYN	9802684	6/1/1998	10/21/1998	Combined	NC-015	DA-NC-015
EVANJELICO LUTHERAN CHURC	69-26 COOPER AV	GLENDALE	111554	3/7/2002	5/20/2002	Combined	NC-083	DA-NC-083
SARATOGA SQUARE APTS -NYCHA	930 HALSEY ST	BROOKLYN	9801627	5/8/1998	8/16/2002	Combined	NC-015	DA-NC-015
630 HANCOCK STREET	630 HANCOCK STREET	BROOKLYN	9511821	12/18/1995	12/19/1995	Combined	NC-015	DA-NC-015
531 KNICKERBOCKER AVENUE	531 KNICKERBOCKER AVENUE	BROOKLYN	8910353	1/29/1990	7/29/2003	Combined	NC-015	DA-NC-015
IFO 1784 ATLANTIC AVENUE	IFO 1784 ATLANTIC AVENUE	BROOKLYN	211248	2/10/2003	2/10/2003	Combined	NC-015	DA-NC-015
MH 15338	1006 METROPOLITIAN AVE	BROOKLYN	10042	12/6/2000	4/19/2001	Combined	NC-015	DA-NC-015
MULTIPLE DWELLING	300 KNICKERBOCKER AVE	BROOKLYN	9913380	2/25/2000	2/29/2000	Combined	NC-015	DA-NC-015
74-46 64TH	74-46 64TH	GLENDALE	9209331	11/11/1992	11/11/1992	Combined	NC-083	DA-NC-083
RELIANT ENERGY	53RD STREET & 1ST AVENUE	BROOKLYN	203776	7/10/2002	5/28/2004	Combined	NC-015	DA-NC-015
95 EVERGREEN ASSOCIATES	95 EVERGREEN AVE	BROOKLYN	8903570	7/10/1989	9/30/1992	Combined	NC-015	DA-NC-015
CITGO GAS STATION	1525 MYRTLE AVENUE	BROOKLYN	9806133	8/17/1998	11/14/2003	Combined	NC-015	DA-NC-015
VACANT LOT	640 LEXINGTON AVE	BROOKLYN	9713919	3/16/1998	4/7/2003	Combined	NC-015	DA-NC-015
IN FRONT OF	68-41 JAY AVE	MASPETH	9700493	4/4/1997	5/7/1998	Combined	NC-077	DA-NC-077
HOPE GARDENS	330 WILSON AVE	BROOKLYN	9516227	3/18/1996	5/30/1996	Combined	NC-015	DA-NC-015
62-80 60TH PLACE	62-80 60TH PLACE	RIDGEWOOD	9514648	2/15/1996	2/15/1996	Combined	NC-077	DA-NC-077
STUYVESANT GARDENS	845 GATES AVENUE	BROOKLYN	9604712	7/10/1996	7/12/1996	Combined	NC-015	DA-NC-015
ADA & JULIO ROSA	1193 GREENE AVE	BROOKLYN	9712162	1/31/1998	12/11/2006	Combined	NC-015	DA-NC-015
UNNAMED	1653 WEIRFIELD ST	RIDGEWOOD	9813235	1/26/1999	2/26/2003	Combined	NC-083	DA-NC-083
MANHOLE 3340	386 DECATUR ST	BROOKLYN	104106	7/18/2001	8/23/2001	Combined	NC-015	DA-NC-015
598 BAINBRIDGE ST	598 BAINBRIDGE ST	BROOKLYN	9512828	1/15/1996	1/16/1996	Combined	NC-015	DA-NC-015
72-05 66TH STREET	72-05 66TH STREET	GLENDALE	9208895	11/2/1992	11/2/1992	Combined	NC-083	DA-NC-083
0	TROUTMAN ST	BROOKLYN	9525	11/20/2000	12/26/2001	Combined	NC-015	DA-NC-015
ASTORIA FUEL OIL FARM	21ST ST & 20TH AVENUE	ASTORIA	8701012	5/5/1987	NULL	Combined	BB-026	DA-BB-026
ASTORIA FUEL OIL FARM	21ST ST & 20TH AVENUE	ASTORIA	8701012	5/5/1987	NULL	Combined	BB-026	DA-BB-026
CLOSED-LACKOF RECENT INFO	47-20 40TH STREET	SUNNYSIDE	9801943	5/14/1998	2/19/2003	Combined	BB-009	DA-BB-009
COC0 COLA BOTTLING CO.	58-40 BORDEN AVE	MASPETH	9712759	2/16/1998	3/3/2003	Combined	NC-077	DA-NC-077
RESIDENCE	190 CORNELIA ST	BROOKLYN	9713461	3/4/1998	2/19/2003	Combined	NC-015	DA-NC-015
539 CHAUNCEY STREET	539 CHAUNCEY STREET	BROOKLYN	9415088	2/16/1995	2/16/1995	Combined	NC-015	DA-NC-015
55-30 58TH STREET	NYC EMS 55-30 58TH ST	MASPETH	9408217	9/21/1994	2/10/2003	Combined	NC-077	DA-NC-077
1451 MYRTLE AVENUE	1451 MYRTLE AVENUE	BROOKLYN	9415395	2/24/1994	2/24/1995	Combined	NC-015	DA-NC-015
OCEAN HILL -NYCHA	24 STONE AVENUE	BROOKLYN	9010234	12/20/1990	NULL	Combined	NC-015	DA-NC-015
25 CENTRAL AVE	25 CENTRAL AVE	BROOKLYN	9508260	10/5/1995	10/10/1995	Combined	NC-015	DA-NC-015
AMTECH CORPORATION	36-12 47TH AVENUE	LONG ISLAND CITY	9705053	7/25/1997	7/28/1997	Combined	BB-026	DA-BB-026
COMMERCIAL	56 BOGART ST	BROOKLYN	402705	6/11/2004	3/7/2006	Combined	NC-015	DA-NC-015
AMOCO STATION	1740 ATLANTIC AVENUE	BROOKLYN	313485	3/9/2004	10/18/2004	Combined	NC-015	DA-NC-015
LIC PASSENGER YARD - LIRR	BORDEN AVENUE	LONG ISLAND CITY	9313234	2/8/1994	NULL	Combined	BB-013	DA-BB-013
743 HANCOCK STREET	743 HANCOCK STREET	BROOKLYN	9207660	10/2/1992	10/6/1992	Combined	NC-015	DA-NC-015

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
579 SENECA AVENUE	579 SENECA AVENUE	RIDGEWOOD	9515706	3/7/1996	3/7/1996	Combined	NC-083	DA-NC-083
228 HULL ST	228 HULL ST	BROOKLYN	9600752	4/16/1996	12/15/2003	Combined	NC-015	DA-NC-015
296 CENTER AVENUE	296 CENTER AVENUE	BROOKLYN	9412104	12/10/1994	12/10/1994	Combined	NC-015	DA-NC-015
64-25 65TH PLACE	64-25 65TH PLACE	MIDDLE VILLAGE	9511934	12/13/1995	12/26/2003	Combined	NC-077	DA-NC-077
APARTMENT BLDG	50-22 40TH ST	SUNNYSIDE	9714374	3/27/1998	10/2/1998	Combined	BB-009	DA-BB-009
157 SUYDAM ST	157 SUYDAM ST & CENTRAL	BROOKLYN	9413391	1/7/1995	1/7/1995	Combined	NC-015	DA-NC-015
RES. FIGUE ROA	1074 HALSEY ST	BROOKLYN	9403319	6/7/1994	6/7/1994	Combined	NC-015	DA-NC-015
32 RALPH AV - BKLN	32 RALPH AVENUE	BROOKLYN	8910005	1/18/1990	7/9/2002	Combined	NC-015	DA-NC-015
MANHOLE 63289	ELDERT ST/BROADWAY	BROOKLYN	9909985	11/17/1999	3/29/2002	Combined	NC-015	DA-NC-015
707 BUSHWICK AVENUE	707 BUSHWICK AVENUE	BROOKLYN	9412665	12/21/1994	12/29/1994	Combined	NC-015	DA-NC-015
UNNAMED	1909 FLUSHING AVENUE	FLUSHING	9805302	7/28/1998	10/3/2003	Combined	NC-083	DA-NC-083
55-60 60TH STREET	55-60 60TH STREET	MASPETH	9304571	7/12/1993	7/13/1993	Combined	NC-077	DA-NC-077
UNNAMED	53RD STREET & 1ST AVENUE	BROOKLYN	203085	6/23/2002	6/24/2002	Combined	NC-015	DA-NC-015
KATHRYN GUORISCO	60-57 LINDEN STREET	RIDGEWOOD	9411727	12/2/1994	12/2/1994	Combined	NC-077	DA-NC-077
MOFFAT ST AND	IRVING AVE	BROOKLYN	111775	3/13/2002	4/17/2003	Combined	NC-015	DA-NC-015
APARTMENT	188 STOCKHOLM STREET	BROOKLYN	406792	9/19/2004	1/23/2006	Combined	NC-015	DA-NC-015
EXXON MOBIL	35-15 GREENPOINT AVENUE	LONG ISLAND CITY	109377	12/21/2001	1/17/2002	Combined	BB-009	DA-BB-009
MOBIL S/S	35-15 GREENPOINT AVENUE	LONG ISLAND CITY	9909529	11/5/1999	12/2/1999	Combined	BB-009	DA-BB-009
V G NICHOLS CORP	55-05 MYRTLE AVE	RIDGEWOOD	9510368	11/17/1995	11/17/1995	Combined	NC-083	DA-NC-083
LIRR	LIRR NEAR BLISS TOWER	QUEENS	9701744	5/9/1997	9/27/2005	Combined	BB-011	DA-BB-011
PRIVATE RESIDENCE	443 BLEEKER ST	RIDGEWOOD	9613567	2/19/1997	3/15/2006	Combined	NC-083	DA-NC-083
CLOSED-LACKOF RECENT INFO	26 LAWTON STREET	BROOKLYN	9103589	7/1/1991	3/5/2003	Combined	NC-015	DA-NC-015
615 DECATUR ST	615 DECATUR ST	BROOKLYN	6043	8/21/2000	11/22/2005	Combined	NC-015	DA-NC-015
UNNAMED	28TH ST & EMMONS AVE	BROOKLYN	10364	12/14/2000	6/13/2003	Combined	NC-015	DA-NC-015
PILGRIM CHRISTIAN ACADEMY	600 CENTRAL AVE	BROOKLYN	9911428	12/30/1999	3/3/2003	Combined	NC-015	DA-NC-015
1054-1066 LAFAYETTE AVE	1054-1066 LAFAYETTE AVE	BROOKLYN	9804807	6/8/1998	3/20/2003	Combined	NC-015	DA-NC-015
47-22 PEARSON PL/QUEENS	47-22 PEARSON PLACE	LONG ISLAND CITY	8900343	4/12/1989	4/26/1989	Combined	BB-026	DA-BB-026
MASPETH SIGN SHOP DOT -DDC	58-50 57TH ROAD	MASPETH	9009697	12/6/1990	6/14/1995	Combined	NC-077	DA-NC-077
SERVICE BOX 11065	833 HART STREET IN FRT OF	BROOKLYN	9128	11/7/2000	5/29/2001	Combined	NC-015	DA-NC-015
393 MELROSE STREET	393 MELROSE STREET	BROOKLYN	301316	5/6/2003	10/16/2007	Combined	NC-015	DA-NC-015
ENGINE CO. 283 FDNY -DDC	885 HOWARD AVENUE	BROOKLYN	9800282	4/7/1998	11/15/2005	Combined	NC-015	DA-NC-015
J.V. TRADING	65-75 TRAFFIC AV	GLENDALE	9914265	3/17/2000	8/21/2003	Combined	NC-077	DA-NC-077
UNNAMED	78-11 68TH AVE	MIDDLE VILLAGE	9905572	8/5/1999	8/9/1999	Combined	NC-083	DA-NC-083
CONSOLIDATD LAUNDRY - LIC	48-09 34TH STREET	LONG ISLAND CITY	8908153	11/10/1989	1/29/1997	Combined	BB-009	DA-BB-009
69TH PL	69TH PL	MASPETH	430003	5/3/2004	6/4/2004	Combined	NC-077	DA-NC-077
70/25 CYPRUS HILL ST	70/25 CYPRUS HILL ST	RIDGEWAY	130030	10/18/2001	7/11/2006	Combined	NC-083	DA-NC-083
WILLIAMSBURG HOUSES	211 STAGG WALK	BROOKLYN	9506548	8/28/1995	8/29/1995	Combined	NC-015	DA-NC-015
WILLIAMSBURG HOUSES -NYCHA	125 STAGG WALK	BROOKLYN	9811227	12/7/1998	12/2/2005	Combined	NC-015	DA-NC-015
BRINDI TRAILER SVC	292 SCHOLES STREET	BROOKLYN	208385	11/12/2002	11/13/2002	Combined	NC-015	DA-NC-015
NEW CONSTRUCTION	150 SUMPTER ST	BROOKLYN	9712516	2/9/1998	2/9/1998	Combined	NC-015	DA-NC-015
114 FORREST STREET	114 FORREST STREET	BROOKLYN	302890	6/18/2003	10/30/2003	Combined	NC-015	DA-NC-015
65TH AND 6TH	65TH ST AND 6TH AVE	BROOKLYN	311009	12/26/2003	1/5/2004	Combined	NC-015	DA-NC-015
RESI: LEE	70-12 69TH ST	GLENDALE	9614656	3/20/1997	3/20/1997	Combined	NC-083	DA-NC-083
1215 MYRTLE AVE	1215 MYRTLE AVE	BROOKLYN	109332	12/20/2001	12/21/2001	Combined	NC-015	DA-NC-015
GOWANUS CANNAL	29TH STREET & 2ND AVENUE	BROOKLYN	9706169	8/21/1997	8/21/1997	Combined	NC-015	DA-NC-015
69-51 74TH ST	69-51 74TH ST	MIDDLE VILLAGE	9201035	4/22/1992	4/27/1992	Combined	NC-083	DA-NC-083
STUYVESANT GARDENS -NYCHA	734 GATES AVENUE	NEW YORK CITY	9801011	4/21/1998	12/1/2005	Combined	NC-015	DA-NC-015
47-10 32ND PLACE	47-10 32ND PLACE	LONG ISLAND CITY	9209825	11/23/1992	11/23/1992	Combined	BB-026	DA-BB-026
UNNAMED	181 HARMON ST	BROOKLYN	9901022	4/27/1999	11/24/2003	Combined	NC-015	DA-NC-015

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Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
41 HOWARD AV / BKLN	41 HOWARD AVE	BROOKLYN	8909247	12/21/1989	10/7/1992	Combined	NC-015	DA-NC-015
PARKING GARAGE	11-15 50TH AVE	LONG ISLAND CITY	9610315	11/18/1996	3/31/2003	Combined	BB-013	DA-BB-013
5917 67TH STREET	5917 67TH STREET	RIDGEWOOD	9208288	10/19/1992	10/19/1992	Combined	NC-077	DA-NC-077
2141 GREEN AVENUE	2141 GREEN AVENUE	RIDGEWOOD	9502051	5/12/1995	5/18/1995	Combined	NC-083	DA-NC-083
VS 3931	LEXINGTON AVE & CLASSON	BROOKLYN	108	4/4/2000	1/17/2002	Combined	NC-015	DA-NC-015
SERVICE BOX	71 WIERFELD ST	BROOKLYN	1063	4/26/2000	12/28/2001	Combined	NC-015	DA-NC-015
MOTIVA	25 PAIDGE AVENUE	BROOKLYN	8709990	2/19/1988	10/28/2003	Combined	NCB-021	DA-NCB-021
UNNAMED	1729 BLEEKER ST	RIDGEWOOD	212627	3/22/2003	11/13/2003	Combined	NC-077	DA-NC-077
2110 BOLTON STREET	2110 BOLTON STREET	BROOKLYN	9210698	12/16/1992	12/16/1992	Combined	NC-015	DA-NC-015
VERDEROSA RESIDENCE	64-25 65TH PL	MIDDLE VILLAGE	9511896	12/18/1995	12/20/1995	Combined	NC-077	DA-NC-077
MR. PRASAUD	317 WOODBINE ST	BROOKLYN	203407	7/1/2002	12/15/2003	Combined	NC-015	DA-NC-015
MANHOLE #1982	WILLOUGHBY AV & ADELPHI	BROOKLYN	9908156	10/5/1999	2/20/2002	Combined	NC-015	DA-NC-015
UNNAMED	792 HART ST	BROOKLYN	400333	4/11/2004	4/23/2004	Combined	NC-015	DA-NC-015
UNNAMED	5950-5952 58TH RD	MASPETH	12865	3/6/2001	4/10/2001	Combined	NC-077	DA-NC-077
70 CENTRAL AVENUE	70 CENTRAL AVENUE	BROOKLYN	9310364	11/26/1993	1/27/1994	Combined	NC-015	DA-NC-015
143 WEIRFIELD ST	143 WEIRFIELD ST	BROOKLYN	9414864	2/12/1995	2/24/1995	Combined	NC-015	DA-NC-015
315 CORNELIUS ST/BKLYN	315 CORNELIUS STREET	BROOKLYN	8906897	10/12/1989	10/13/1989	Combined	NC-015	DA-NC-015
EAST RIVER/LOWER NARROWS	53RD STREET & 1ST AVENUE	BROOKLYN	9509308	10/27/1995	2/26/1998	Combined	NC-015	DA-NC-015
NARROWS GAS TURBINES	53RD STREET & 1ST AVENUE	BROOKLYN	9511608	12/14/1995	1/28/2002	Combined	NC-015	DA-NC-015
UNNAMED	58-69 57TH RD	MASPETH	75	4/3/2000	4/3/2000	Combined	NC-077	DA-NC-077
UNOCCUPIED WAREHOUSE	88 PORTER AVENUE	BROOKLYN	210928	1/31/2003	NULL	Combined	NC-015	DA-NC-015
METROPOLITAN INTER TRUCKS	58-80 BORDEN AVE	MASPETH	9707184	9/11/1997	1/18/2005	Combined	NC-077	DA-NC-077
48-55 46TH STREET	48-55 46TH ST	WOODSIDE	9207305	9/24/1992	9/24/1992	Combined	BB-009	DA-BB-009
GAS STATION	1781 ATLANTIC AVENUE	BROOKLYN	9911266	12/24/1999	NULL	Combined	NC-015	DA-NC-015
SERVICE BOX # 21235	174 HULL ST	BROOKLYN	405087	7/27/2004	10/27/2004	Combined	NC-015	DA-NC-015
FORREST ST & DIVISION PL	FORREST ST & DIVISION PL	BROOKLYN	9007166	9/29/1990	7/22/2005	Combined	NC-015	DA-NC-015
TRACTOR TRAILER	46-05 56TH ROAD	MASPETH	7947	10/6/2000	11/16/2000	Combined	NC-029	DA-NC-029
SERVICE BOX #55820	IFO 240 MORGAN AVE	BROOKLYN	7874	10/4/2000	12/14/2001	Combined	NC-015	DA-NC-015
UNNAMED	9TH STREET & 3RD AVENUE	BROOKLYN	109546	12/30/2001	7/30/2002	Combined	NC-015	DA-NC-015
COMFORT AND COMPANY	47-47 AUSTELL PLACE	LONG ISLAND CITY	9414137	1/25/1995	1/25/1995	Combined	BB-026	DA-BB-026
PRIVATE PARKING AREA	358-374 VERNON AVE	BROOKLYN	9711963	1/6/1998	7/14/1999	Combined	NC-015	DA-NC-015
SERVICEBOX 31166	1641 PARK PL	BROOKLYN	13652	3/29/2001	5/17/2001	Combined	NC-015	DA-NC-015
58-55 QUEENS MIDTOWN EXP	58-55 QUEENS MIDTOWN EXPY	MASPETH	9406623	9/9/1993	12/8/1994	Combined	NC-077	DA-NC-077
PUBLIC SERVICE TRUCK RENT	25-61 49TH AVE	LONG ISLAND CITY	209494	12/16/2002	12/9/2003	Combined	BB-040	DA-BB-040
47-46 40TH ST.	47-46 40TH STREET	SUNNYSIDE	9312892	1/31/1994	2/1/1994	Combined	BB-009	DA-BB-009
NYC HOUSING AUTHORITY - NYCHA	930 HALSEY ST	BROOKLYN	4890	7/24/2000	12/2/2005	Combined	NC-015	DA-NC-015
1155-1205 MANHATTAN AVE	1155-1205 MANHATTAN AVE	BROOKLYN	9303748	6/23/1993	11/19/1998	Combined	NCB-022	DA-NCB-022
MH 48264	STERLING PLACE AND BUFFAL	BROOKLYN	1048	4/26/2000	12/28/2001	Combined	NC-015	DA-NC-015
CROSSTOWN ANNEX	65 COMMERCIAL STREET	BROOKLYN	9011113	1/18/1991	1/30/2004	Combined	NCB-023	DA-NCB-023
TM 70	METROPOLITAN AVE	BROOKLYN	210905	1/29/2003	2/26/2003	Combined	NC-015	DA-NC-015
GOWANUS GAS TURBINES	27TH ST & 1ST AVE	BROOKLYN	9004623	7/26/1990	7/26/1990	Combined	NC-015	DA-NC-015
47-22 PEARSON PLACE	47-22 PEARSON PLACE	LONG ISLAND CITY	9206718	9/10/1992	7/29/1993	Combined	BB-026	DA-BB-026
SERVICE BOX #72223	1312 PUTMAN AVE	BROOKLYN	9901962	5/20/1999	4/3/2002	Combined	NC-015	DA-NC-015
141 CHAUNCEY ST/HOLY ROSA	141 CHAUNCEY ST	BROOKLYN	8706770	11/9/1987	11/19/1992	Combined	NC-015	DA-NC-015
53RD ST & 1ST AVE	53RD STREET & 1ST AVENUE	BROOKLYN	9502073	5/18/1995	5/30/1995	Combined	NC-015	DA-NC-015
NARROWS GAS TURBINE SITE	53RD STREET & 1ST AVENUE	BROOKLYN	9504651	7/18/1995	7/23/2004	Combined	NC-015	DA-NC-015
NARROWS GAS TURBINE SITE	53RD STREET & 1ST AVENUE	BROOKLYN	9607341	9/10/1996	5/27/1998	Combined	NC-015	DA-NC-015
X	438 GROVE ST	BROOKLYN	306206	9/11/2003	10/15/2004	Combined	NC-083	DA-NC-083

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
50-10 27TH ST	50-10 27TH ST	LONG ISLAND CITY	9930009	7/23/1999	8/5/1999	Combined	BB-040	DA-BB-040
60-57 GRAND AVENUE	60-57 GRAND AVENUE	MASPETH	9510587	11/22/1995	11/22/1995	Combined	NC-077	DA-NC-077
561 CHAUNCEY STREET	561 CHAUNCEY STREET	BROOKLYN	9513028	1/18/1996	1/19/1996	Combined	NC-015	DA-NC-015
32-32 QUEENS BLVD	32-32 QUEENS BLVD	LONG ISLAND CITY	9309167	10/28/1993	7/27/1994	Combined	BB-026	DA-BB-026
DECRESENTE RESIDENCE	59-19 58TH DR	MASPETH	9514015	2/2/1996	1/28/1997	Combined	NC-077	DA-NC-077
47-50 VAN DAM ST.	47-50 VAN DAM ST	LONG ISLAND CITY	9308558	10/14/1993	10/14/1993	Combined	BB-026	DA-BB-026
MASPETH GARAGE	59-09 56TH RD	MASPETH	30040	10/26/1995	2/27/2003	Combined	NC-077	DA-NC-077
UNNAMED	1058 DECATUR ST	BROOKLYN	210184	1/7/2003	2/13/2003	Combined	NC-015	DA-NC-015
PRIVATE RESIDENCE	50-51 41ST ST	LONG ISLAND CITY	9613141	2/5/1997	2/6/1997	Combined	BB-009	DA-BB-009
IFO HUNTERS POINT PLAZA	47-40 21ST STREET	LONG ISLAND CITY	9830022	1/7/1999	1/8/1998	Combined	BB-013	DA-BB-013
FRESH POND DEPOT - NYCT	66-99 FRESH POND ROAD	RIDGEWOOD	9710483	12/12/1997	6/28/2005	Combined	NC-077	DA-NC-077
58-75 MAURICE AVE	58-75 MAURICE AVE	MASPETH	9107205	10/4/1991	12/3/1993	Combined	NC-077	DA-NC-077
SERVICE BOX 20343	732 HALSEY ST	BROOKLYN	9911681	1/7/2000	3/4/2002	Combined	NC-015	DA-NC-015
C&M AUTO CENTER	79-59 COOPER AVENUE	GLENDALE	205290	8/20/2002	8/4/2005	Combined	NC-083	DA-NC-083
STRAP METAL BUSINESS	1105A MYRTLE AVE	BROOKLYN	9707996	10/7/1997	4/30/1998	Combined	NC-015	DA-NC-015
UNNAMED	39-20 48TH AVE	LONG ISLAND CITY	210103	1/7/2003	1/7/2003	Combined	BB-009	DA-BB-009
5-35 54TH AVENUE	5-35 54TH AVENUE	LONG ISLAND CITY	9413904	1/17/1995	1/19/1995	Combined	BB-015	DA-BB-015
FORMER CON ED FACILITY	53RD STREET & 1ST AVENUE	BROOKLYN	9906816	9/8/1999	11/2/1999	Combined	NC-015	DA-NC-015
SERVICE BOX 21468	861 JEFFERSON AVE	BROOKLYN	9812957	1/21/1999	10/18/2002	Combined	NC-015	DA-NC-015
GETTY SERVICE STATION 342	65-15 COOPER AVE	GLENDALE	9711951	1/26/1998	9/23/2004	Combined	NC-083	DA-NC-083
ST ALOYYSIUS CONVENT	1817 STANHOPE ST	RIDGEWOOD	9912366	1/23/2000	NULL	Combined	NC-083	DA-NC-083
47-02 METROPOLITAN AVE	47-02 METROPOLITAN AVE	MASPETH	9502513	5/30/1995	5/30/1995	Combined	NC-083	DA-NC-083
FRESH POND DEPOT - NYCT	66-99 FRESH POND ROAD	RIDGEWOOD	9509740	11/2/1995	12/27/2000	Combined	NC-077	DA-NC-077
ABCO SUPPLY	ABCO REFRIGERATION SUPPLY CORP	LONG ISLAND CITY	9802259	5/20/1998	9/14/2006	Combined	BB-009	DA-BB-009
QUEENS MIDTOWN TUNNEL	10-55 51ST AVENUE	LONG ISLAND CITY	9201987	6/30/1991	6/24/2004	Combined	BB-013	DA-BB-013
BY KENT AV	METROPOLITAN	BROOKLYN	106102	9/7/2001	5/15/2002	Combined	NC-015	DA-NC-015
HIMROD STREET-MANHOLE	HIMROD STREET	BROOKLYN	9405003	6/28/1994	3/6/1995	Combined	NC-015	DA-NC-015
SERVICE BOX 7807	82 STARR ST	BROOKLYN	9905428	8/4/1999	4/4/2002	Combined	NC-015	DA-NC-015
MANHOLE #53504	115 WYCOFF AVE	BROOKLYN	9908245	10/7/1999	2/20/2002	Combined	NC-015	DA-NC-015
854 MONROE STREET	854 MONROE STREET	BROOKLYN	9503168	6/13/1995	6/9/2008	Combined	NC-015	DA-NC-015
SERVICE BOX 8648	54 JEFFERSON ST	BROOKLYN	9811158	12/4/1998	2/13/2003	Combined	NC-015	DA-NC-015
47-36 11TH ST	47-36 11TH ST	LONG ISLAND CITY	9411546	11/29/1994	11/29/1994	Combined	BB-013	DA-BB-013
MANHOLE 19450	ELDERT ST/KNICKERBOCKER	BROOKLYN	9913779	3/7/2000	3/22/2002	Combined	NC-015	DA-NC-015
AUTO SHOP	403-405 WILSON AVE	BROOKLYN	204682	8/2/2002	7/17/2003	Combined	NC-015	DA-NC-015
1155-1205 MANHATTAN AVE	1155-1205 MANHATTAN AVE	BROOKLYN	9302726	5/29/1993	5/29/1993	Combined	NCB-022	DA-NCB-022
RIDGEWOOD BANK	71-02 FOREST AV	RIDGEWOOD	200759	4/19/2002	7/11/2006	Combined	NC-083	DA-NC-083
GIVINGS RESIDENCE	671 EVERGREEN AVE	BROOKLYN	9902882	6/12/1999	4/6/2004	Combined	NC-015	DA-NC-015
372 TENEYCK ST	372 TENEYCK ST	BROOKLYN	300518	4/15/2003	NULL	Combined	NC-015	DA-NC-015
1997 PACIFIC STREET	1997 PACIFIC STREET	BROOKLYN	9309613	11/9/1993	11/9/1993	Combined	NC-015	DA-NC-015
254 WYCKOFF AVENUE	254 WYCKOFF AVENUE	BROOKLYN	9312009	1/11/1994	1/12/1994	Combined	NC-015	DA-NC-015
UNNAMED	687 BUSHWICK AVE	BROOKLYN	11038	1/9/2001	12/11/2003	Combined	NC-015	DA-NC-015
TRANSFORMER MANHOLE 983	LEXINGTON AV & TOMPKINS A	BROOKLYN	9901136	4/29/1999	6/14/2002	Combined	NC-015	DA-NC-015
NEWTOWN CREEK	1205 MANHATTAN AVENUE	BROOKLYN	4808	7/21/2000	4/17/2003	Combined	NCB-022	DA-NCB-022
13-14 JACKSON AVE/QUEENS	13-14 JACKSON AVENUE	LONG ISLAND CITY	9005403	8/15/1990	11/15/1994	Combined	BB-013	DA-BB-013
43-06 54TH RD.	43-06 54TH RD	MASPETH	9306926	9/7/1993	9/7/1993	Combined	NC-029	DA-NC-029
55-60 60TH ST	55-60 60TH ST	MASPETH	9508415	10/10/1995	2/20/1998	Combined	NC-077	DA-NC-077
VAULT TM 1118	92ND ST & FIFTH AVE	BROOKLYN	201814	5/18/2002	4/21/2003	Combined	NC-015	DA-NC-015
50TH ST & 2ND AVE/BKLYN	50TH STREET & 2ND AVE	BROOKLYN	8804576	8/24/1988	8/24/1988	Combined	NC-015	DA-NC-015

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
OLD GAS STATION	79-66 COOPER AVENUE	GLENDALE	9711449	1/12/1998	2/24/2003	Combined	NC-083	DA-NC-083
ABANDONED BLDG	1630 GEORGE STREET	RIDGEWOOD	4810	7/21/2000	6/27/2008	Combined	NC-083	DA-NC-083
H.P.D. HOUSING	21 HULL ST	BROOKLYN	9611846	12/31/1996	12/31/1996	Combined	NC-015	DA-NC-015
APARTMENT BLDG	531 KOSCIUSKO STREET	BROOKLYN	9702910	6/6/1997	9/12/1997	Combined	NC-015	DA-NC-015
54-35 46TH / SLUSH METAL	54-35 46TH	MASPETH	9205753	8/17/1992	8/19/1992	Combined	NC-029	DA-NC-029
JOHN OBRIEN	47-47 39TH PLACE	SUNNYSIDE	107179	10/9/2001	11/5/2001	Combined	BB-009	DA-BB-009
BASEMENT	73 BUFFALO AVE	BROOKLYN	9711910	1/24/1998	2/26/2003	Combined	NC-015	DA-NC-015
1109 MANHATTAN AVE	1109 MANHATTAN AVE	BROOKLYN	9608561	10/9/1996	11/22/1996	Combined	NCB-022	DA-NCB-022
FED SAVINGS & LOAN ASSOC	56-18 69TH ST	MASPETH	212261	3/13/2003	11/19/2003	Combined	NC-077	DA-NC-077
NYSDEC REGION 2	47-40 21ST STREET	LONG ISLAND CITY	9910992	12/16/1999	10/24/2000	Combined	BB-013	DA-BB-013
130 SCHAFFER STREET	130 SCHAFFER STREET	BROOKLYN	9212901	2/17/1993	2/17/1993	Combined	NC-015	DA-NC-015
MOBIL S/S	59-36 COOPER AVENUE	GLENDALE	8709005	1/21/1988	NULL	Combined	NC-083	DA-NC-083
STUYVESANT GARDENS -NYCHA	734 GATES AVENUE	NEW YORK CITY	9804491	7/9/1998	2/19/2003	Combined	NC-015	DA-NC-015
GASETERIA	30-05 QUEENS BLVD	LONG ISLAND CITY	9416874	3/29/1995	3/29/1995	Combined	BB-026	DA-BB-026
62-15 61ST STREET	62-15 61ST STREET	RIDGEWOOD	9506276	8/21/1995	8/24/1995	Combined	NC-077	DA-NC-077
WAREHOUSE	56-72 BOGART STREET	BROOKLYN	9709358	11/12/1997	8/9/2005	Combined	NC-015	DA-NC-015
535 JOHNSON AVENUE	535 JOHNSON AVENUE	BROOKLYN	9413171	12/9/1994	6/14/1995	Combined	NC-015	DA-NC-015
UNNAMED	233 HOWARD AVENUE	BROOKLYN	105366	8/17/2001	9/28/2001	Combined	NC-015	DA-NC-015
810 METROPOLITAN AVE	810 METROPOLITAN AVENUE	BROOKLYN	9404715	7/6/1994	11/22/1994	Combined	NC-015	DA-NC-015
LETY S FASHION	65-O2 60TH PL	RIDGEWOOD	9901831	5/17/1999	8/3/1999	Combined	NC-077	DA-NC-077
VAULT 2057	1013 GRAND ST	BROOKLYN	9906750	9/7/1999	1/28/2002	Combined	NC-015	DA-NC-015
ROSE OF SHARON CHURCH	1007 BROADWAY	BROOKLYN	9702141	5/19/1997	3/10/2003	Combined	NC-015	DA-NC-015
3807 48TH AVENUE	38-07 48TH AVENUE	LONG ISLAND CITY	9500043	4/3/1995	4/3/1995	Combined	BB-026	DA-BB-026
COOPER AVE & 73RD PL	COOPER AVE & 73RD PL	QUEENS	8202300	7/30/1982	NULL	Combined	NC-083	DA-NC-083
53-30 65TH PLACE	53-30 65TH PLACE	MASPETH	9504843	7/20/1995	7/20/1995	Combined	NC-077	DA-NC-077
86TH ST & FIFTH AVENUE	86TH ST & FIFTH AVENUE	BROOKLYN	9312033	1/12/1994	3/21/1994	Combined	NC-015	DA-NC-015
248 ST. NICHOLAS AVENUE	248 ST. NICHOLAS AVENUE	BROOKLYN	9309152	10/28/1993	10/16/1997	Combined	NC-083	DA-NC-083
78-14 74TH STREET	78-14 74TH STREET	GLENDALE	9513859	1/31/1996	1/31/1996	Combined	NC-083	DA-NC-083
2020 HIMROD STREET	2020 HIMROD STREET	RIDGEWOOD	9304388	7/8/1993	7/8/1993	Combined	NC-083	DA-NC-083
1064 HERKIMER STREET	1064 HERKIMER STREET	BROOKLYN	8910306	1/26/1990	7/29/2003	Combined	NC-015	DA-NC-015
1166 MANHATTAN AVE	1166 MANHATTAN AVE	BROOKLYN	8603247	8/14/1986	8/14/1986	Combined	NCB-022	DA-NCB-022
MANHOLE	59-01 CATALPA AVE	MASPETH	109958	1/16/2002	1/17/2002	Combined	NC-083	DA-NC-083
32-50 HUNTERS POINT AVE	32-50 HUNTERS POINT AVE	LONG ISLAND CITY	12739	2/28/2001	NULL	Combined	BB-009	DA-BB-009
UNNAMED	449 HIMROD ST	BROOKLYN	307060	10/4/2003	10/16/2003	Combined	NC-083	DA-NC-083
GETTY 58007	70-21 73RD PLACE	GLENDALE	9806847	3/1/1998	9/4/1998	Combined	NC-083	DA-NC-083
UNNAMED	43-16 53RD ST	WOODSIDE	9908482	10/12/1999	10/15/1999	Combined	BB-009	DA-BB-009
326 MENEHAN ST	326 MENEHAN ST	BROOKLYN	9800347	4/8/1998	4/8/1998	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL	794 MONROE ST	BROOKLYN	314273	3/29/2004	3/30/2004	Combined	NC-015	DA-NC-015
78-14 74TH STREET	78-14 74TH STREET	GLENDALE	9313002	2/3/1994	2/3/1994	Combined	NC-083	DA-NC-083
32-50 HUNTERS POINT AVE	32-50 HUNTERS POINT AVE	LONG ISLAND CITY	9410842	11/14/1994	11/14/1994	Combined	BB-009	DA-BB-009
51-35 34TH ST	51-35 34TH ST	LONG ISLAND CITY	9300379	4/8/1993	6/13/1995	Combined	BB-004	DA-BB-004
618 DECATUR ST	618 DECATUR ST	BROOKLYN	9501663	5/8/1995	1/26/2004	Combined	NC-015	DA-NC-015
MANHOLE 6154	67TH ST & 6TH AVE	BROOKLYN	9660	11/24/2000	12/26/2001	Combined	NC-015	DA-NC-015
GOWANUS GAS TURBINES	27TH STREET & 3RD AVENUE	BROOKLYN	9405590	7/25/1994	3/28/1995	Combined	NC-015	DA-NC-015
EMPIRE WAREHOUSE	48-02 48TH STREET	WOODSIDE	9903970	7/6/1999	8/23/2000	Combined	BB-009	DA-BB-009
VACANT LOT NEXT TO HER	83 MACDOUGAL ST	BROOKLYN	9515842	3/11/1996	7/15/2005	Combined	NC-015	DA-NC-015
1722 GEORGE ST	1722 GEORGE ST	RIDGEWOOD	9610853	12/3/1996	12/3/1996	Combined	NC-083	DA-NC-083
368 CENTRAL AVE	368 CENTRAL AVE	BROOKLYN	8912135	3/21/1990	3/23/1990	Combined	NC-015	DA-NC-015
MANHOLE #7464	1094 FLUSHING AVE	BROOKLYN	9814934	3/16/1999	4/1/1999	Combined	NC-015	DA-NC-015

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
MANHOLE 7464	1094 FLUSHING AVE	BROOKLYN	9815347	3/26/1999	3/31/1999	Combined	NC-015	DA-NC-015
MANHOLE 7464	1094 FLUSHING AVE	BROOKLYN	9905329	8/3/1999	11/5/1999	Combined	NC-015	DA-NC-015
SERVICE BOX 14548	411-413 BAINBRIDGE ST	BROOKLYN	9903141	6/18/1999	5/18/2000	Combined	NC-015	DA-NC-015
HANSEL & GRETEL	79-36 COOPER AVE	GLENDALE	9710845	12/24/1997	2/24/2003	Combined	NC-083	DA-NC-083
UNNAMED	DITMARS ST/BROADWAY	BROOKLYN	212494	3/19/2003	4/18/2003	Combined	NC-015	DA-NC-015
GOWANUS BAY	33RD ST & 1ST AVE	BROOKLYN	9606916	8/30/1996	8/30/1996	Combined	NC-015	DA-NC-015
MANHOLE #7464	1094 FLUSHING AVE	BROOKLYN	9901309	5/4/1999	5/18/1999	Combined	NC-015	DA-NC-015
556 EVERGREEN AVE	556 EVERGREEN AVE	BROOKLYN	9601214	4/24/1996	4/24/1996	Combined	NC-015	DA-NC-015
FINK BAKING	5-35 54TH AVENUE	LONG ISLAND CITY	9704673	7/18/1997	8/27/1997	Combined	BB-015	DA-BB-015
1205 MANHATTAN AVE	1205 MANHATTAN AVENUE	BROOKLYN	9208271	10/14/1992	10/17/1992	Combined	NCB-022	DA-NCB-022
MONTAUK STEEL	25-20 BORDEN AVE	LONG ISLAND CITY	9904704	7/20/1999	12/12/2001	Combined	BB-004	DA-BB-004
417 RALPH AVENUE	417 RALPH AVENUE	BROOKLYN	9314183	3/4/1994	2/12/2003	Combined	NC-015	DA-NC-015
480 KNICKERBOCKER AVE	480 KNICKERBOCKER AVENUE	BROOKLYN	9402762	NULL	1/14/1997	Combined	NC-015	DA-NC-015
NARROWS GAS SITE	53 STREET & 1 AVENUE	BROOKLYN	9703228	6/13/1997	NULL	Combined	NC-015	DA-NC-015
NARROWS GAS SITE	53 STREET & 1 AVENUE	BROOKLYN	9703228	6/13/1997	NULL	Combined	NC-015	DA-NC-015
UNNAMED	671 MONROE ST	BROOKLYN	9812302	1/4/1999	9/14/1999	Combined	NC-015	DA-NC-015
UPS	46-05 56TH RD	MASPETH	9102712	6/6/1991	NULL	Combined	NC-029	DA-NC-029
147 NOLL STREET	147 NOLL ST	BROOKLYN	6735	9/7/2000	12/6/2002	Combined	NC-015	DA-NC-015
65-21 70TH AVE.	65-21 70TH AVE.	GLENDALE	9208131	10/14/1992	10/14/1992	Combined	NC-083	DA-NC-083
RESIDENCE	333 MARION STREET	BROOKLYN	8216	10/13/2000	3/24/2003	Combined	NC-015	DA-NC-015
10-85 IRVING AVE	10-85 IRVING AVE	RIDGEWOOD	9102839	11/5/1990	7/9/1991	Combined	NC-083	DA-NC-083
MELENDEZ RESIDENCE	72 47 60TH LANE	GLENDALE	405585	8/21/2004	10/1/2004	Combined	NC-083	DA-NC-083
GREEN SERVICE STA	49-01 VAN DAM STREET	LONG ISLAND CITY	8804104	8/9/1988	3/28/2005	Combined	BB-009	DA-BB-009
4832 42ND STREET	48-32 42ND STREET	SUNNYSIDE	9409927	10/25/1994	10/25/1994	Combined	BB-009	DA-BB-009
UNNAMED	60-28 56TH ROAD	MASPETH	110521	2/1/2002	2/14/2002	Combined	NC-077	DA-NC-077
METROPOLITAN AVENUE	METROPOLITAN AVENUE	BROOKLYN	9505873	8/12/1995	2/11/2003	Combined	NC-015	DA-NC-015
BRICK & BALERSTEIN	10-85 IRVING AVE	RIDGEWOOD	200381	4/11/2002	1/20/2004	Combined	NC-083	DA-NC-083
GRANT RESIDENCE	335 MARION ST	BROOKLYN	9912025	1/18/2000	1/26/2000	Combined	NC-015	DA-NC-015
1065 HART STREET	1065 HART ST	BROOKLYN	9200091	4/3/1992	4/3/1992	Combined	NC-083	DA-NC-083
940 GATES AVE	940 GATES AVE	BROOKLYN	9214459	3/30/1993	3/31/1993	Combined	NC-015	DA-NC-015
60-20 COOPER AVENUE	60-20 COOPER AVENUE	GLENDALE	9306205	8/20/1993	8/20/1993	Combined	NC-083	DA-NC-083
METROPOLITAN AVE BRIDGE	METROPOLITAN AVENUE	BROOKLYN	205135	8/15/2002	8/16/2002	Combined	NC-015	DA-NC-015
ST.ELIZABETH SETON	751 KNICKERBOCKER AVE	BROOKLYN	210795	1/28/2003	7/26/2004	Combined	NC-015	DA-NC-015
MANHOLE 6175	60TH ST AND 6TH AVE	BROOKLYN	9813360	2/1/1999	3/3/1999	Combined	NC-015	DA-NC-015
RESIDENCE UNDER CONSTRUCT	109 SUYDAM ST	BROOKLYN	100368	4/9/2001	12/28/2005	Combined	NC-015	DA-NC-015
60-28 56TH ROAD	60-28 56TH ROAD	MASPETH	200669	4/17/2002	12/12/2003	Combined	NC-077	DA-NC-077
BROOKLYN NORTH 08 DOS -DDC	1755 PACIFIC STREET	BROOKLYN	5325	8/3/2000	NULL	Combined	NC-015	DA-NC-015
HOPE GARDENS -NYCHA	330 WILSON AVE	BROOKLYN	9601155	4/23/1996	7/7/2009	Combined	NC-015	DA-NC-015
UNNAMED	40TH STREET & 7TH AVENUE	BROOKLYN	9810317	11/16/1998	10/31/2002	Combined	NC-015	DA-NC-015
MANHOLE 15285	METROPOLITAN AVE/HAVEMEYE	BROOKLYN	2608	6/1/2000	9/25/2001	Combined	NC-015	DA-NC-015
GAS STATION - CITGO -MTBE	50-02 METROPOLITAN AVENUE	RIDGEWOOD	8801980	6/2/1988	NULL	Combined	NC-083	DA-NC-083
POLE 44115	163 UTICA AVE	BROOKLYN	9906255	8/25/1999	2/20/2002	Combined	NC-015	DA-NC-015
50-05 47TH AVE.	50-05 47TH AVENUE	WOODSIDE	9207739	10/5/1992	10/5/1992	Combined	BB-009	DA-BB-009
233 HOWARD AVENUE	233 HOWARD AVENUE	BROOKLYN	9401030	4/21/1994	4/22/1994	Combined	NC-015	DA-NC-015
CORNISH MINI MILLS	121 INGRAHAM ST	BROOKLYN	9600503	4/11/1996	11/22/1996	Combined	NC-015	DA-NC-015
62-34 MT. OLIVET CRESCENT	62-34 MT. OLIVET CRESCENT	MIDDLE VILLAGE	9311503	12/24/1993	12/24/1993	Combined	NC-077	DA-NC-077
VAULT #8486	VANDERVOORT ST&METROPOLIT	BROOKLYN	304889	8/7/2003	9/22/2003	Combined	NC-015	DA-NC-015
SERVICE BOX 41972 IFO	63 SCHAEFER ST	BROOKLYN	9810334	11/16/1998	10/31/2002	Combined	NC-015	DA-NC-015
RESIDENCE	47-26 48TH STREET	WOODSIDE	9600229	4/4/1996	2/18/2003	Combined	BB-009	DA-BB-009

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
1203 BUSHWICK AVENUE	1203 BUSHWICK AVENUE	BROOKLYN	9411936	12/7/1994	12/7/1994	Combined	NC-015	DA-NC-015
61-49 METROPOLITAN/MOBIL	61-49 METROPOLITAN AVE	MIDDLE VILLAGE	9108786	11/17/1991	3/30/1992	Combined	NC-077	DA-NC-077
10TH STREET & 2ND AVENUE	10TH STREET & 2ND AVENUE	BROOKLYN	9404751	7/7/1994	7/7/1994	Combined	NC-015	DA-NC-015
20 CHARLOTTE ST.	20 CHARLOTTE ST.	RIDGEWOOD	9213214	2/26/1993	2/23/1998	Combined	NC-083	DA-NC-083
7312 68TH ROAD	7312 68TH ROAD	MIDDLE VILLAGE	9708276	10/15/1997	10/15/1997	Combined	NC-083	DA-NC-083
UNNAMED	41-09 41ST STREET	SUNNYSIDE	102807	6/13/2001	9/15/2003	Combined	BB-026	DA-BB-026
PRIVATE RESIDENCE	1095 HERKIMER ST	BROOKLYN	9700115	4/2/1997	4/17/2003	Combined	NC-015	DA-NC-015
UNNAMED	66-26 METROPOLITAN AVE	MIDDLE VILLAGE	204992	8/12/2002	5/8/2003	Combined	NC-077	DA-NC-077
SB 12324	372-29 CORNELLIA ST	BROOKLYN	9904952	7/26/1999	4/4/2002	Combined	NC-015	DA-NC-015
59-25 58TH DRIVE	59025 58TH DRIVE	MASPETH	9502747	6/4/1995	6/4/1995	Combined	NC-077	DA-NC-077
TRANSFORMER MANHOLE 60	42ND ST & 1ST AVE	BROOKLYN	314169	3/26/2004	6/23/2004	Combined	NC-015	DA-NC-015
47-23 49TH PLACE	47-23 39TH PLACE-PVT RE	LONG ISLAND CITY	9412476	12/16/1994	12/16/1994	Combined	BB-009	DA-BB-009
60-20 68TH AVE	60-20 68TH AVE	RIDGEWOOD	9108721	11/14/1991	3/14/2003	Combined	NC-083	DA-NC-083
5736 65TH ST	5736 65TH ST	MASPETH	9602779	5/28/1996	11/22/1996	Combined	NC-077	DA-NC-077
743 HANCOCK ST/BKLYN	743 HANCOCK STREET	BROOKLYN	9010983	1/15/1991	3/14/1991	Combined	NC-015	DA-NC-015
4949 30TH	4949 30TH	LONG ISLAND CITY	9503317	6/16/1995	6/16/1995	Combined	BB-009	DA-BB-009
SIDE OF ROAD	OPP 44 EAGLE ST	BROOKLYN	202873	6/18/2002	8/2/2002	Combined	NCB-023	DA-NCB-023
65-75 TRAFFIC AVENUE	65-75 TRAFFIC AVENUE	QUEENS	304509	7/29/2003	7/5/2006	Combined	NC-077	DA-NC-077
49 WYCKOFF AVE	49 WYCKOFF AVE	BROOKLYN	9516569	3/25/1996	3/25/1996	Combined	NC-015	DA-NC-015
TV 2765	1011 FLUSHING AVE	BROOKLYN	10801	12/29/2000	4/13/2001	Combined	NC-015	DA-NC-015
45-24 37TH ST	45-24 37TH ST	LONG ISLAND CITY	310261	12/3/2003	7/22/2005	Combined	BB-026	DA-BB-026
MORGAN OIL CORP	200 MORGAN AVENUE	BROOKLYN	9105949	9/3/1991	9/19/1991	Combined	NC-015	DA-NC-015
200 MORGAN AVE	200 MORGAN AVENUE	BROOKLYN	9112693	3/12/1992	3/13/1992	Combined	NC-015	DA-NC-015
UNNAMED	1369 BROADWAY	BROOKLYN	402541	6/8/1995	8/20/2004	Combined	NC-015	DA-NC-015
H.S. FINISHING PRODUCTS	1768 DEAN ST	BROOKLYN	210974	2/2/2003	6/23/2003	Combined	NC-015	DA-NC-015
UNNAMED	49-01 VAN DAM STREET	LONG ISLAND CITY	9107165	10/3/1991	10/3/1991	Combined	BB-009	DA-BB-009
EMPTY LOT	1534 PROSPECT PLACE	BROOKLYN	404380	7/23/2004	NULL	Combined	NC-015	DA-NC-015
MOBIL S/S	61-49 METROPOLITAN AVE	MIDDLE VILLAGE	8545	10/22/2000	12/14/2000	Combined	NC-077	DA-NC-077
50-44 41ST STREET	50-44 41ST STREET	LONG ISLAND CITY	9208705	10/28/1992	10/28/1992	Combined	BB-009	DA-BB-009
RESIDENCE	50 BUSHWICK AVE	BROOKLYN	100016	4/2/2001	4/2/2001	Combined	NC-015	DA-NC-015
419 STOCKHOLM STREET	419 STOCKHOLM STREET	BROOKLYN	9311584	12/28/1993	12/28/1993	Combined	NC-083	DA-NC-083
UNNAMED	630 DECATUR ST	BROOKLYN	109008	12/10/2001	3/10/2003	Combined	NC-015	DA-NC-015
6515 COOPEL AVE.	6515 COOPER AVE.	GLENDALE	9206691	8/14/1992	10/19/1992	Combined	NC-083	DA-NC-083
MANHOLE 20985	IFO 872 HERKIMER ST	BROOKLYN	9912646	2/5/2000	2/26/2002	Combined	NC-015	DA-NC-015
GETTY GAS STATION #58073	60-41 METROPOLITAN AVE	RIDGEWOOD	9801873	5/13/1998	10/18/2005	Combined	NC-077	DA-NC-077
66-26 METROPOLITAN AVE	66-26 METROPOLITAN AVE	MIDDLE VILLAGE	9408662	9/29/1994	2/6/1995	Combined	NC-077	DA-NC-077
SUN CO INC	31-31 QUEENS BLVD	LONG ISLAND CITY	9514145	2/6/1996	2/13/1996	Combined	BB-026	DA-BB-026
UNNAMED	846 BUSHWICK AVE	BROOKLYN	307472	10/15/2003	11/26/2003	Combined	NC-015	DA-NC-015
60-30 68TH RD	60-30 68TH RD	RIDGEWOOD	9513420	1/24/1996	1/24/1996	Combined	NC-083	DA-NC-083
UNNAMED	50 BUSHWICK AVE	BROOKLYN	100018	4/2/2001	6/1/2004	Combined	NC-015	DA-NC-015
ANGELO DASARO RES - QNS	19-37 GREENE AV	RIDGEWOOD	9000137	4/5/1990	4/5/1990	Combined	NC-083	DA-NC-083
UNNAMED	678 HART ST	BROOKLYN	308282	11/5/2003	1/30/2004	Combined	NC-015	DA-NC-015
494 A MACON STREET	494 A MACON STREET	BROOKLYN	9313333	2/10/1994	2/12/1994	Combined	NC-015	DA-NC-015
488 IRVING AVE.	488 IRVING AVE	BROOKLYN	9205036	8/1/1992	8/1/1992	Combined	NC-015	DA-NC-015
FORMER GAS STATION	1565-67 MYRTLE AVE	BROOKLYN	12229	4/15/1999	9/20/2005	Combined	NC-015	DA-NC-015
LIRR	5-02 BORDEN AVE	LONG ISLAND CITY	9806386	8/24/1998	7/8/2003	Combined	BB-043	DA-BB-043
UNNAMED	229-233 MARION ST	BROOKLYN	9808332	9/3/1998	5/30/2001	Combined	NC-015	DA-NC-015
743 HANCOCK ST.	743 HANCOCK STREET	BROOKLYN	9311500	12/24/1993	12/24/1993	Combined	NC-015	DA-NC-015
MANHOLE #567	HALSEY ST & BROADWAY	BROOKLYN	103489	6/29/2001	6/12/2003	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
VAULT 2553	1011 FLUSHING AVE	BROOKLYN	4138	7/6/2000	10/17/2001	Combined	NC-015	DA-NC-015
64-31 65TH LANE/MALLOY	64-31 65TH LANE/MALLOY	MIDDLE VILLAGE	9112189	2/27/1992	2/28/1992	Combined	NC-077	DA-NC-077
78-17 65TH STREET	78-17 65TH STREET	GLENDALE	9314259	3/5/1994	3/7/1994	Combined	NC-083	DA-NC-083
51-61 48TH STREET	51-61 48TH STREET	WOODSIDE	9510917	11/30/1995	11/30/1995	Combined	NC-029	DA-NC-029
5122 48TH ST	51-22 48TH ST	WOODSIDE	9600806	4/17/1996	4/17/1996	Combined	NC-029	DA-NC-029
23-02 49TH AVENUE	23-02 49TH AVENUE	LONG ISLAND CITY	9712326	2/4/1998	3/28/2000	Combined	BB-043	DA-BB-043
60-55 69TH AVE	60-55 69TH AVE	RIDGEWOOD	9512253	12/30/1995	1/2/1996	Combined	NC-083	DA-NC-083
UNNAMED	50-02 55TH AVE	MASPETH	9712735	2/6/1998	8/1/2003	Combined	NC-077	DA-NC-077
1677 CORNELIA STREET	1677 CORNELIA STREET	RIDGEWOOD	9510232	11/15/1995	11/15/1995	Combined	NC-083	DA-NC-083
884 HART STREET	884 HART STREET	BROOKLYN	9501567	5/5/1995	5/8/1995	Combined	NC-015	DA-NC-015
NARROWS PUMP HOUSE	53RD STREET & 1ST AVENUE	BROOKLYN	9656	11/24/2000	9/6/2006	Combined	NC-015	DA-NC-015
39-02 QUEENS BLVD/ MERIT	39-02 QUEENS BLVD	LONG ISLAND CITY	9102484	6/2/1991	6/3/1991	Combined	BB-026	DA-BB-026
39-02 QUEENS BLVD/EXPRESS	39-02 QUEENS BLVD	LONG ISLAND CITY	9105316	8/16/1991	8/16/1991	Combined	BB-026	DA-BB-026
2020 EASTERN PARKWAY	2020 EASTERN PARKWAY	BROOKLYN	206799	10/1/2002	10/4/2002	Combined	NC-015	DA-NC-015
FRESH POND DEPOT	66-69 FRESH POND RD	RIDGEWOOD	589	4/14/2000	7/10/2002	Combined	NC-077	DA-NC-077
1525 MYRTLE AVENUE	1525 MYRTLE AVENUE	BROOKLYN	9505827	8/10/1995	NULL	Combined	NC-015	DA-NC-015
ARC FUEL OIL	132 STUYVESANT AVE	BROOKLYN	430001	3/26/2004	10/27/2004	Combined	NC-015	DA-NC-015
MOTIVA	25 PAIDGE AVENUE	BROOKLYN	8703522	7/25/1987	7/30/1987	Combined	NCB-021	DA-NCB-021
GLENDALE SUB STATION	57-77 RUST ST	MASPETH	300684	4/18/2003	6/13/2003	Combined	NC-077	DA-NC-077
MASPETH SUBSTATION	57-77 RUST STREET	MASPETH	9614406	3/12/1997	NULL	Combined	NC-077	DA-NC-077
50-19 49TH STREET	50-19 49TH STREET	WOODSIDE	9902240	5/27/1999	NULL	Combined	BB-009	DA-BB-009
WINQ RES	242 SUMPTER ST	BROOKLYN	9812474	1/8/1999	4/17/2001	Combined	NC-015	DA-NC-015
50-48 BORDEN AVE	50-48 BORDEN AVE	MASPETH	9508308	10/6/1995	10/24/1995	Combined	NC-077	DA-NC-077
SERVICE BOX 20476	1167 HALSEY ST	BROOKLYN	9811536	12/14/1998	2/19/2003	Combined	NC-015	DA-NC-015
CON ED MANHOLE # 53253	191 WOODBINE STREET	BROOKLYN	404566	7/27/2004	10/7/2004	Combined	NC-015	DA-NC-015
183 MALCOM-X BLVD.	183 MALCOM-X BLVD	BROOKLYN	9314684	3/15/1994	3/15/1994	Combined	NC-015	DA-NC-015
444 BAINBRIDGE ST	444 BAINBRIDGE ST	BROOKLYN	9106421	9/14/1991	9/7/1991	Combined	NC-015	DA-NC-015
MOTIVA ENTERPRISES	25 PAIDGE AVENUE	BROOKLYN	9002114	5/23/1990	NULL	Combined	NCB-021	DA-NCB-021
MOBIL S/S #17-H1X	35-15 GREENPOINT AVENUE	LONG ISLAND CITY	311602	1/14/2004	2/2/2004	Combined	BB-009	DA-BB-009
UNNAMED	63 ELDERT ST	BROOKLYN	104561	7/28/2001	7/31/2001	Combined	NC-015	DA-NC-015
OCEAN HILL HOUSES -NYCHA	24 STONE AVENUE	BROOKLYN	9412305	12/14/1994	12/15/1994	Combined	NC-015	DA-NC-015
MOTIVA	25 PAIDGE AVENUE	BROOKLYN	9413568	1/11/1995	10/28/2003	Combined	NCB-021	DA-NCB-021
HESS/MERIT GAS STATION	39-02 QUEENS BLVD	LONG ISLAND CITY	9703447	6/19/1997	NULL	Combined	BB-026	DA-BB-026
1310 HALSEY STREET	1310 HALSEY STREET	BROOKLYN	9310769	12/6/1993	12/6/1993	Combined	NC-015	DA-NC-015
UNNAMED	301 VANDERVOORT PL	BROOKLYN	9902045	5/21/1999	3/3/2003	Combined	NC-015	DA-NC-015
GASETERIA	59-36 MAURICE AVENUE	MASPETH	9006135	9/4/1990	NULL	Combined	NC-077	DA-NC-077
53-78- 66TH STREET	53-78 66TH STREET	JACKSON HEIGHTS	9401384	4/28/1994	4/28/1994	Combined	NC-077	DA-NC-077
STEIGER BROS EXPRESS	69-80 73RD PL	MIDDLE VILLAGE	9904355	7/13/1999	8/20/1999	Combined	NC-083	DA-NC-083
COMERCIAL PROPERTY	6912 FRESH POND RD.	RIDGEWOOD	310949	12/24/2003	7/27/2004	Combined	NC-083	DA-NC-083
931 GREENE AVE	931 GREENE AVE	BROOKLYN	307063	10/4/2003	11/21/2003	Combined	NC-015	DA-NC-015
UNNAMED	62-15 61ST STREET	RIDGEWOOD	101719	5/14/2001	4/11/2003	Combined	NC-077	DA-NC-077
4949 30TH STREET	4949 30TH STREET	LONG ISLAND CITY	9503618	6/23/1995	6/23/1995	Combined	BB-009	DA-BB-009
UNNAMED	51-53 HARMON ST	BROOKLYN	9913466	2/28/2000	2/28/2002	Combined	NC-015	DA-NC-015
MOBIL STATION	7105 MYRTLE AVE	GLENDALE	9604300	6/30/1996	2/5/2010	Combined	NC-083	DA-NC-083
5-35 54TH STREET	5-35 54TH STREET	LONG ISLAND CITY	9401091	4/22/1994	4/22/1994	Combined	BB-015	DA-BB-015
129 BLEECKER STREET	129 BLEECKER STREET	BROOKLYN	403794	7/9/2004	9/25/2006	Combined	NC-015	DA-NC-015
1081 LAFAYETTE AVE	1081 LAFAYETTE AVE	BROOKLYN	9609628	11/1/1996	11/1/1996	Combined	NC-015	DA-NC-015
GETTY 58007	70-21 73RD PLACE	GLENDALE	8710185	3/4/1988	7/16/1992	Combined	NC-083	DA-NC-083

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
SERVICE BOX 44000	304 SCHEAFER ST	BROOKLYN	9902788	6/10/1999	5/18/2000	Combined	NC-083	DA-NC-083
480 KNICKERBOCKER AVE	480 KNICKERBOCKER AVENUE	BROOKLYN	9501813	5/12/1995	2/12/2003	Combined	NC-015	DA-NC-015
292-296 SCHOLES STREET	292 SCHOLES STREET	BROOKLYN	9208253	9/16/1992	12/30/2003	Combined	NC-015	DA-NC-015
CLOSED AUTOMOTIVE SHOP	1545 MYRTLE AVE	BROOKLYN	102702	6/11/2001	10/22/2001	Combined	NC-015	DA-NC-015
509 MCDONOUGH ST	509 MCDONOUGH ST	BROOKLYN	9412173	12/12/1994	12/12/1994	Combined	NC-015	DA-NC-015
MANHOLE #3256	PUTNAM AVE	BROOKLYN	311932	1/23/2004	3/12/2004	Combined	NC-015	DA-NC-015
66-26 METROPOLITAN AVE	66-26 METROPOLITAN AVE	MIDDLE VILLAGE	9509260	10/26/1995	12/12/1995	Combined	NC-077	DA-NC-077
UNNAMED	53RD STREET & 1ST AVENUE	BROOKLYN	302942	6/19/2003	8/20/2003	Combined	NC-015	DA-NC-015
CLOSED-LACKOF RECENT INFO	408 GROVE ST	BROOKLYN	8705961	10/15/1987	3/4/2003	Combined	NC-083	DA-NC-083
ON SIDEWALK	1152 BUSHWICK AVE	BROOKLYN	211053	10/1/2002	4/14/2003	Combined	NC-015	DA-NC-015
WAREHOUSE	43-23 35TH ST	LONG ISLAND	301327	5/6/2003	7/22/2003	Combined	BB-026	DA-BB-026
BP AMOCO STATION #2107	60-90 ELIOT AVE	MASPETH	107863	10/3/2001	NULL	Combined	NC-077	DA-NC-077
BASEMENT FLOOR - CONCRETE	531 KOSCIUSKO STREET	BROOKLYN	9702904	6/6/1997	2/19/2003	Combined	NC-015	DA-NC-015
501 MACON ST	501 MACON ST	BROOKLYN	9511888	12/19/1995	12/20/1995	Combined	NC-015	DA-NC-015
UNIV ELECTRIC SIGN CO	59-26 55TH DR	MASPETH	9810063	4/6/1998	7/12/2006	Combined	NC-077	DA-NC-077
23-02 49TH AVENUE	23-02 49TH AVENUE	LONG ISLAND CITY	30009	6/29/2000	1/25/2006	Combined	BB-043	DA-BB-043
VAULT 2591	1037 GATE AVE	BROOKLYN	9514505	2/13/1996	2/7/2005	Combined	NC-015	DA-NC-015
1525 MYRTLE AVENUE	1525 MYRTLE AVENUE	BROOKLYN	8607497	3/9/1987	8/31/1987	Combined	NC-015	DA-NC-015
39-02 QUEENS BLVD/MERIT	39-02 QUEENS BLVD	LONG ISLAND CITY	8909106	12/15/1989	12/19/1990	Combined	BB-026	DA-BB-026
MOTIVA	25 PAIDGE AVENUE	BROOKLYN	8905525	9/5/1989	1/26/1998	Combined	NCB-021	DA-NCB-021
60-44 COOPER AVE.	60-44 COOPER AVE.	GLENDALE	9208480	10/22/1992	10/23/1992	Combined	NC-083	DA-NC-083
UNNAMED	535 54TH AVE	LONG ISLAND CITY	9911921	1/14/2000	3/4/2003	Combined	BB-015	DA-BB-015
SUBSTATION	57-77 RUST STREET	MASPETH	304106	7/18/2003	NULL	Combined	NC-077	DA-NC-077
CLOSED-LACKOF RECENT INFO	125 STUYVESANT AVENUE	BROOKLYN	9305256	7/27/1993	3/10/2003	Combined	NC-015	DA-NC-015
NEW YORK BLOOD CENTER	47-39 35TH ST	LONG ISLAND CITY	9614084	2/27/1996	NULL	Combined	BB-026	DA-BB-026
BROOKLYN 8 GARAGE	1760 ATLANTIC AVE	BROOKLYN	9300017	4/1/1993	12/30/2002	Combined	NC-015	DA-NC-015
FORMER MASPETH SUBSTATION	57-77 RUST ST	MASPETH	4153	6/28/2000	7/7/2000	Combined	NC-077	DA-NC-077
GETTY S/S #219 - GETTY PROPERTIES	49-25 VAN DAM STREET	LONG ISLAND CITY	9411532	11/29/1994	5/25/2006	Combined	BB-009	DA-BB-009
41-11 40TH STREET	41-11 40TH STREET	SUNNYSIDE	9511071	12/4/1995	12/6/1995	Combined	BB-026	DA-BB-026
FINK BAKERY	535 54TH AVE	LONG ISLAND CITY	9515158	2/26/1996	2/26/1996	Combined	BB-015	DA-BB-015
341 WEIRFIELD STREET	341 WEIRFIELD STREET	BROOKLYN	9506985	9/7/1995	9/8/1995	Combined	NC-015	DA-NC-015
HOPE GARDENS -NYCHA	140 MENAHAN ST	BROOKLYN	9315455	5/24/1991	9/23/2008	Combined	NC-015	DA-NC-015
291 ST. NICHOLAS AVE	291 ST. NICHOLAS AVE	RIDGEWOOD	9412819	12/26/1994	1/3/1995	Combined	NC-083	DA-NC-083
1441 DEKALB AVE	1441 DEKALB AVE	BROOKLYN	9211835	1/15/1993	3/31/1995	Combined	NC-015	DA-NC-015
RESI: MINGO	259 WOODBINE ST	BROOKLYN	208042	11/2/2002	4/28/2004	Combined	NC-015	DA-NC-015
6706 54TH ST	67-06 54TH AVE	MASPETH	9409198	10/11/1994	2/18/2003	Combined	NC-077	DA-NC-077
WOODWARD AND FLUSHING AVE	WOODWARD AND FLUSHING AVE	QUEENS	9209629	11/18/1992	8/15/2005	Combined	NC-083	DA-NC-083
FRESH DIRECT	23-30 BORDEN AVE	LONG ISLAND CITY	200586	4/16/2002	2/13/2003	Combined	BB-010	DA-BB-010
68-33 FRESH POND ROAD	68-33 FRESH POND ROAD	RIDGEWOOD	9416878	3/29/1995	3/30/1995	Combined	NC-077	DA-NC-077
539 CHAUNCEY STREET	539 CHAUNCEY STREET	BROOKLYN	9415076	2/16/1995	2/16/1995	Combined	NC-015	DA-NC-015
GETTY S/S #58007 - GETTY PROPERTIES	70-21 73RD PL	GLENDALE	9710666	12/18/1997	8/21/2006	Combined	NC-083	DA-NC-083
57-25 59TH ST	0PP 57-25 59TH ST	MASPETH	9415026	2/15/1995	2/15/1995	Combined	NC-077	DA-NC-077
FORMER BP AMOCO 31-36 QUEENS BLVD -MTBE	31-36 QUEENS BLVD	LONG ISLAND CITY	9609152	10/22/1996	NULL	Combined	BB-026	DA-BB-026
41-11 40TH STREET	41-11 40TH STREET	LONG ISLAND CITY	9409047	10/6/1994	10/6/1994	Combined	BB-026	DA-BB-026
DOS	525 JOHNSON AVENUE	BROOKLYN	9402039	5/11/1994	3/10/2003	Combined	NC-015	DA-NC-015
SERVICE BOX 21517	1884-86 JEFFERSON AVE	BROOKLYN	9813399	2/2/1999	5/19/2000	Combined	NC-015	DA-NC-015
UNNAMED	23-30 50TH AVE	LONG ISLAND CITY	208486	11/15/2002	11/17/2003	Combined	BB-043	DA-BB-043
749 JEFFERSON AVE.	749 JEFFERSON AVENUE	BROOKLYN	9215054	2/20/1993	3/2/1993	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
UNNAMED	1311-A BUSHWICK AVE	BROOKLYN	9713231	2/26/1998	10/3/2003	Combined	NC-015	DA-NC-015
47-36 36TH ST/B BOWMAN	47-36 36TH STREET	LONG ISLAND CITY	9109642	12/10/1991	12/10/1991	Combined	BB-026	DA-BB-026
GETTY	70-21 73RD PL	GLENDALE	305275	8/18/2003	12/24/2003	Combined	NC-083	DA-NC-083
7224 72ND PLACE	7224 72ND PLACE	GLENDALE	9404433	6/30/1994	6/30/1994	Combined	NC-083	DA-NC-083
BROOKLYN NORTH 04 DOS -DDC	525 JOHNSON AVENUE	BROOKLYN	130003	5/20/1994	NULL	Combined	NC-015	DA-NC-015
ABANDONED BUILDING	964 GATES AVE	BROOKLYN	9614384	3/11/1997	8/12/1997	Combined	NC-015	DA-NC-015
7118 MYRTLE AVE	7118 MYRTLE AVE	GLENDALE	9600383	4/9/1996	4/9/1996	Combined	NC-083	DA-NC-083
TM569	HANCOCK STREET/BUSHWORK	BROOKLYN	3751	6/27/2000	9/27/2001	Combined	NC-015	DA-NC-015
962 GREENE AVE	962 GREENE AVE	BROOKLYN	9412668	12/21/1994	12/21/1994	Combined	NC-015	DA-NC-015
58-10 64TH ST	58010 64TH ST	MASPETH	9415193	2/20/1995	2/18/2003	Combined	NC-077	DA-NC-077
KINGSBORO HOUSES	1880 PACIFIC STREET	BROOKLYN	9010149	12/18/1990	4/26/1995	Combined	NC-015	DA-NC-015
UNIVERSAL SIGN CO	59-26 55TH DRIVE	MASPETH	9712964	2/20/1998	3/25/1998	Combined	NC-077	DA-NC-077
SHEET METAL MANUFACTURING	10-80 WYCKOFF AVE	RIDGEWOOD	9801631	5/8/1998	8/5/2005	Combined	NC-083	DA-NC-083
59-26 55TH DRIVE	59-26 55TH DRIVE	MASPETH	9602941	5/31/1996	5/31/1996	Combined	NC-077	DA-NC-077
EMS MASPETH FACILITIES HHC -DDC	55-30 58TH STREET	MASPETH	208421	11/14/2002	12/9/2005	Combined	NC-077	DA-NC-077
47-36 36TH ST	47-36 36TH STREET	LONG ISLAND CITY	9709597	11/18/1997	11/18/1997	Combined	BB-026	DA-BB-026
BROWNING-FERRIS INDUSTR	105-115 THAMES ST	BROOKLYN	9809360	10/26/1998	NULL	Combined	NC-015	DA-NC-015
FRAZIER BROTHERS	79 RALPH AVE	BROOKLYN	9711144	1/5/1998	3/28/2005	Combined	NC-015	DA-NC-015
46-36 54TH ROAD	46-36 54TH ROAD	MASPETH	9803315	6/15/1998	8/26/1998	Combined	NC-029	DA-NC-029
62-47 60TH DRIVE	62-47 60TH DRIVE	MASPETH	9504872	7/21/1995	7/21/1995	Combined	NC-077	DA-NC-077
880 METROPOLITAN AVE	880 METROPOLITAN AVE	BROOKLYN	9303810	6/16/1993	6/24/1993	Combined	NC-015	DA-NC-015
FORMER WASTE TRANSFER STATION	247-251 GREEN ST	BROOKLYN	112015	3/21/2002	1/27/2005	Combined	NCB-021	DA-NCB-021
1455 MYRTLE AVENUE	1455 MYRTLE AVENUE	BROOKLYN	9213941	3/19/1993	3/19/1993	Combined	NC-015	DA-NC-015
GOWANUS CANAL	29TH STREET & 2ND AVENUE	BROOKLYN	9512987	1/18/1996	3/21/2002	Combined	NC-015	DA-NC-015
PATCHEN AV &	GREENE AV	BROOKLYN	9905402	8/4/1999	12/21/1999	Combined	NC-015	DA-NC-015
1866 MENEHAN STREET	1866 MENAHAN STREET	RIDGEWOOD	210158	1/7/2003	1/14/2004	Combined	NC-083	DA-NC-083
72-05 66TH ST	72-05 66TH ST	GLENDALE	9112943	3/21/1992	3/21/1992	Combined	NC-083	DA-NC-083
LINEAR LIGHTING	49-33 31ST PLACE	LONG ISLAND CITY	9904297	7/12/1999	7/14/1999	Combined	BB-009	DA-BB-009
ABANDONED BUILDING	288 CHAUNCEY ST	BROOKLYN	9612944	1/31/1997	7/13/2005	Combined	NC-015	DA-NC-015
UNNAMED	26-32 SKILLMAN AVE	LONG ISLAND CITY	303917	7/14/2003	1/7/2004	Combined	BB-026	DA-BB-026
CLOSED-LACKOF RECENT INFO	52020 37TH STREET	LONG ISLAND CITY	8709604	2/11/1988	3/4/2003	Combined	BB-026	DA-BB-026
FORMER SERVICE STATION -MTBE	79 RALPH AVE	BROOKLYN	9805815	8/10/1998	NULL	Combined	NC-015	DA-NC-015
COMMERICAL BUILIDING ON A	53-10 46TH ST.	MASPETH	403709	7/7/2004	12/16/2004	Combined	NC-029	DA-NC-029
1209 BUSHWICK AVE	1209 BUSHWICK AVE	BROOKLYN	9913509	2/29/2000	8/3/2005	Combined	NC-015	DA-NC-015
RESIDENTS	10-33 JACKSON AVE	LONG ISLAND CITY	208454	11/14/2002	9/29/2003	Combined	BB-013	DA-BB-013
TM 547	LINDEN ST / KNICKERBOCKER	BROOKLYN	9906078	8/20/1999	11/8/1999	Combined	NC-015	DA-NC-015
1717 TROUTMAN STREET	1717 TROUTMAN STREET	BROOKLYN	9312124	1/14/1994	1/14/1994	Combined	NC-083	DA-NC-083
HPD SITE	61-63 CENTRAL AVE	BROOKLYN	110667	2/7/2002	11/21/2008	Combined	NC-015	DA-NC-015
26-32 SKILLMAN AVE	26-32 SKILLMAN AVE	LONG ISLAND CITY	209560	12/17/2002	2/17/2006	Combined	BB-026	DA-BB-026
REISDENT	661 JEFFERSON AVE	BROOKLYN	310353	12/5/2003	12/18/2003	Combined	NC-015	DA-NC-015
T & A AUTO REPAIRS	13-24 JACKSON AVENUE	LONG ISLAND CITY	8470	10/19/2000	NULL	Combined	BB-013	DA-BB-013
GRIMALDI BAKERY	2101 MENAHAN	RIDGEWOOD	9602998	6/3/1996	6/3/1996	Combined	NC-077	DA-NC-077
TRANSIT AUTHORITY YARD -NYCT	BUSHWICK AVE E. NEW YORK	BROOKLYN	9839	11/3/2000	5/21/2007	Combined	NC-015	DA-NC-015
ON SIDEWALK	47-15 PEARSON PL	LONG ISLAND CITY	110585	2/5/2002	7/31/2003	Combined	BB-026	DA-BB-026
329 KNICKERBOCKER AVE	329 KNICKERBOKER AVENUE	BROOKLYN	9711616	1/15/1998	5/16/2006	Combined	NC-015	DA-NC-015
61-30 65TH ST-VAPORS IN HOMES	61-30 65TH ST	MIDDLE VILLAGE	9700910	4/19/1997	8/18/2009	Combined	NC-077	DA-NC-077
SMALL REPAIR SHOP	111 TROUTMAN ST	BROOKLYN	206394	9/19/2002	10/8/2002	Combined	NC-015	DA-NC-015
APARTMENT HOUSE	76-13 MYRTLE AVE	GLENDALE	9829	11/29/2000	12/12/2000	Combined	NC-083	DA-NC-083
SAKIR (FRANK) PROPERTY	463 GRANDVIEW AV	RIDGEWOOD	107793	10/28/2001	5/15/2002	Combined	NC-077	DA-NC-077

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
559 CHAUNCEY ST	559 CHAUNCEY ST	BROOKLYN	9112908	3/19/1992	3/19/1992	Combined	NC-015	DA-NC-015
PUTNAM STREET AT	BUSHWICK AVE & PUTNAM	BROOKLYN	207884	10/30/2002	12/27/2002	Combined	NC-015	DA-NC-015
SB #53417	32A WOODBINE ST	BROOKLYN	1472	5/5/2000	9/21/2001	Combined	NC-015	DA-NC-015
45-18 40TH ST - APT 3-R	45-18 40TH ST APT 3R	LONG ISLAND CITY	9608450	10/7/1996	2/14/1997	Combined	BB-026	DA-BB-026
NARROWS GAS TURBINE FACIL	53RD STREET & 1ST AVENUE	BROOKLYN	9611125	12/9/1996	6/3/1998	Combined	NC-015	DA-NC-015
HILL RES	1317 HANCOCK ST	BROOKLYN	9815389	3/27/1999	11/24/2003	Combined	NC-015	DA-NC-015
UNNAMED	68-17 60 ST	RIDGEWOOD	9712999	2/21/1998	2/23/1998	Combined	NC-083	DA-NC-083
RESIDENCE AT	555 BAINBRIDGE STREET	BROOKLYN	9713636	3/7/1998	3/10/1998	Combined	NC-015	DA-NC-015
NARROWS GAS TURBINES	53RD STREET & 1ST AVENUE	BROOKLYN	9701615	5/6/1997	10/26/1998	Combined	NC-015	DA-NC-015
10-85 IRVING AVE.	10-85 IRVING AVENUE	BROOKLYN	9008571	11/5/1990	9/30/1992	Combined	NC-015	DA-NC-015
1873 PUTMAN AVE	1873 PUTMAN AVE	RIDGEWOOD	9903765	6/30/1999	12/14/2005	Combined	NC-083	DA-NC-083
GREENPOINT AVENUE S/S	34-21 GREEN POINT AVE	LONG ISLAND	9801522	5/5/1998	6/22/1999	Combined	BB-011	DA-BB-011
HULSE RES	5672 MELVINA PL	MASPETH	111473	3/3/2002	2/5/2004	Combined	NC-077	DA-NC-077
OLD SERVICE STATION	38-06 GREENPOINT AVE	LONG ISLAND CITY	9813917	2/16/1999	6/9/2008	Combined	BB-009	DA-BB-009
RELIANT ENERGY	53RD STREET & 1ST AVENUE	BROOKLYN	203655	7/7/2002	7/3/2002	Combined	NC-015	DA-NC-015
49-70 31ST STREET	49-70 31ST STREET	LONG ISLAND CITY	9511795	12/18/1995	12/18/1995	Combined	BB-009	DA-BB-009
52-20 37 ST	52-20 37TH ST	LONG ISLAND CITY	8907364	10/25/1989	2/13/2003	Combined	BB-011	DA-BB-011
1084 BUSHWICK	1084 BUSHWICK AVE	BROOKLYN	9208672	10/27/1992	10/28/1992	Combined	NC-015	DA-NC-015
65 SOMERS ST	65 SOMERS ST	BROOKLYN	9511673	12/15/1995	12/15/1995	Combined	NC-015	DA-NC-015
5385 66TH STREET	5385 66TH STREET	MASPETH	9313142	2/5/1994	2/6/1994	Combined	NC-077	DA-NC-077
SERVICE BOX #37927	270 STAGG ST	BROOKLYN	9909926	11/16/1999	3/29/2002	Combined	NC-015	DA-NC-015
IDAL REALITY	942 LAFAYETTE AVE	BROOKLYN	9814007	2/18/1999	3/4/2003	Combined	NC-015	DA-NC-015
62-57 80TH RD	62-57 80TH RD	RIDGEWOOD	9502618	6/1/1995	6/1/1995	Combined	NC-083	DA-NC-083
MANHOLE #10412	1158 MYRTLE AVE	BROOKLYN	5796	8/15/2000	2/13/2002	Combined	NC-015	DA-NC-015
368 CENTRAL AVE.	368 CENTRAL AVE	BROOKLYN	9211633	1/8/1993	1/8/1993	Combined	NC-015	DA-NC-015
GETTY-6519 COOPER AVE.	6519 COOPER AVE.	GLENDALE	9207236	9/22/1992	10/19/1992	Combined	NC-083	DA-NC-083
15TH STREET & 8TH AVENUE	15TH STREET & 8TH AVENUE	BROOKLYN	9900541	4/15/1999	4/16/1999	Combined	NC-015	DA-NC-015
749 JEFFERSON AVENUE	749 JEFFERSON AVENUE	BROOKLYN	9213006	2/20/1993	2/20/1993	Combined	NC-015	DA-NC-015
KINGSBOROUGH HOUSES -NYCHA	1880 PACIFIC STREET	BROOKLYN	9410866	11/14/1994	7/7/2009	Combined	NC-015	DA-NC-015
WINCO PRINTING	43-31 33RD ST	LONG ISLAND CITY	9912057	1/18/2000	3/8/2000	Combined	BB-026	DA-BB-026
45 RALPH AVENUE	45 RALPH AVENUE	BROOKLYN	9405983	8/2/1994	8/2/1994	Combined	NC-015	DA-NC-015
UNNAMED	61-41 55TH ST	MASPETH	301217	5/3/2003	5/5/2003	Combined	NC-077	DA-NC-077
77 PRECINCT NYPD -DDC	127 UTICA AVENUE	BROOKLYN	9514855	2/20/1996	11/15/1999	Combined	NC-015	DA-NC-015
398 DECATUR STREET	398 DECATUR STREET	BROOKLYN	406498	9/11/2004	10/5/2004	Combined	NC-015	DA-NC-015
KINEBREW RES	383 MCDONOUGH ST	BROOKLYN	9904192	7/9/1999	6/30/2005	Combined	NC-015	DA-NC-015
GOWANUS BAY	28TH STREET & FIRST AVE	BROOKLYN	2336	5/25/2000	8/25/2000	Combined	NC-015	DA-NC-015
IN FRONT OF	112 TROUTMAN ST	BROOKLYN	212458	3/18/2003	4/18/2003	Combined	NC-015	DA-NC-015
55TH ST&1ST AV/LUTHERAN	55TH ST & 1ST AVENUE	BROOKLYN	9012411	3/4/1991	3/4/1991	Combined	NC-015	DA-NC-015
UNNAMED	DEKALB AVE/MARCUS GARVEY	BROOKLYN	312715	2/16/2004	3/17/2004	Combined	NC-015	DA-NC-015
UNNAMED	1435 BUSHWICK AVE	BROOKLYN	30010	6/28/2000	6/28/2000	Combined	NC-015	DA-NC-015
GETTY S/S #344 - GETTY PROPERTIES	31-05 QUEENS BLVD	LONG ISLAND CITY	9849	11/30/2000	1/5/2007	Combined	BB-026	DA-BB-026
ABANDONED BLDG	966 GATES AVE	BROOKLYN	9614376	3/11/1997	8/14/2009	Combined	NC-015	DA-NC-015
UNNAMED	37-16 QUEENS BLVD	LONG ISLAND CITY	305076	8/13/2003	10/1/2003	Combined	BB-026	DA-BB-026
X	237 RALPH AVE	BROOKLYN	111424	3/4/2002	4/30/2007	Combined	NC-015	DA-NC-015
345 TENEYCK STREET	345 TENEYCK STREET	BROOKLYN	9210082	12/1/1992	12/1/1992	Combined	NC-015	DA-NC-015
APARTMENT BLDG	839 HALSEY STREET	BROOKLYN	9514531	2/13/1996	2/13/1996	Combined	NC-015	DA-NC-015
UNNAMED	141 EVERGREEN AVE	BROOKLYN	102268	5/30/2001	6/19/2001	Combined	NC-015	DA-NC-015
17 PALMETTO ST	17 PALMETTO ST	BROOKLYN	9512329	1/2/1996	7/27/1998	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
ON STREET	70-16 67TH ST	GLENDALE	200106	4/3/2002	9/8/2003	Combined	NC-083	DA-NC-083
UNNAMED	STERLING PL & WASHINGTON	BROOKLYN	9812516	1/11/1999	10/17/2002	Combined	NC-015	DA-NC-015
NEWTON CREEK REG #B7	METROPOLITAN AV	BROOKLYN	9710120	12/2/1997	12/5/1997	Combined	NC-015	DA-NC-015
GREENPOINT SAVINGS BANK	1225 BUSHWICK AVE	BROOKLYN	9711700	1/19/1998	1/20/1998	Combined	NC-015	DA-NC-015
APT. BUILDING	1706 WOODBINE STREET	RIDGEWOOD	9906092	8/21/1999	6/13/2007	Combined	NC-083	DA-NC-083
UNNAMED	76-18 69TH PLACE	GLENDALE	205595	8/28/2002	10/9/2002	Combined	NC-083	DA-NC-083
839 HALSEY STREET	839 HALSEY STREET	BROOKLYN	9514530	2/13/1996	2/15/1996	Combined	NC-015	DA-NC-015
BQE E/B &	METROPOLITAN AV	BROOKLYN	9702070	5/17/1997	2/24/2003	Combined	NC-015	DA-NC-015
GAS STATION	53-26 VAN DAM ST	LONG ISLAND CITY	401077	4/30/2004	8/21/2007	Combined	BB-012	DA-BB-012
UNNAMED	1852 DECATUR	RIDGEWOOD	107211	10/12/2001	10/12/2001	Combined	NC-083	DA-NC-083
UNNAMED	45-15 48 ST	WOODSIDE	4325	7/11/2000	11/21/2003	Combined	BB-009	DA-BB-009
SERVICE BOX #11417	IFO 137 STANHOPE ST	BROOKLYN	9909496	11/4/1999	3/28/2002	Combined	NC-015	DA-NC-015
GOWANUS SUB-STATION	27TH STREET & 3RD AVENUE	BROOKLYN	9606095	8/12/1996	8/2/2001	Combined	NC-015	DA-NC-015
4554 41ST STREET	4554 41ST STREET	SUNNYSIDE	9511354	12/8/1995	12/8/1995	Combined	BB-026	DA-BB-026
1882 ATLANTIC AVENUE	1882 ATLANTIC AVENUE	BROOKLYN	9314834	3/18/1994	6/25/2002	Combined	NC-015	DA-NC-015
BREVOORT -NYCHA	329 PATCHEN AVE	BROOKLYN	9200971	4/24/1992	NULL	Combined	NC-015	DA-NC-015
LA FRES FORD SERVICE -MTBE	49-21 METROPOLITAN AVE	RIDGEWOOD	9904130	4/29/1999	NULL	Combined	NC-083	DA-NC-083
ROADWAY PACKAGE SYSTEMS	55090 48TH STREET	MASPETH	9400064	9/6/1994	4/3/2006	Combined	NC-029	DA-NC-029
1016 PUTNAM AVENUE	1016 PUTNAM AVENUE	BROOKLYN	9412373	12/15/1994	12/16/1994	Combined	NC-015	DA-NC-015
APARTMENT	1444 PARK PLACE	BROOKLYN	9514545	2/13/1996	3/25/1996	Combined	NC-015	DA-NC-015
GETTY	31-05 QUEENS BLVD	LONG ISLAND CITY	9705058	7/28/1997	12/2/2004	Combined	BB-026	DA-BB-026
GETTY #344	31-05 QUEENS BLVD	LONG ISLAND CITY	9909630	11/8/1999	12/2/2004	Combined	BB-026	DA-BB-026
23 HIMROD ST	23 HIMROD ST	BROOKLYN	9202073	5/20/1992	5/20/1992	Combined	NC-015	DA-NC-015
JOYVA CORPORATION	53 VARICK AVE	BROOKLYN	302698	6/13/2003	7/23/2003	Combined	NC-015	DA-NC-015
WOLF PETROLEUM CORP	60-04 METROPOLITAN AVE	FLUSHING	9109418	12/4/1991	2/12/2003	Combined	NC-077	DA-NC-077
418 BAINBRIDGE ST	418 BAINBRIDGE ST	BROOKLYN	9608686	10/11/1996	2/19/2003	Combined	NC-015	DA-NC-015
1063 HALSEY STREET	1063 HALSEY STREET	BROOKLYN	9413379	1/7/1995	2/18/2003	Combined	NC-015	DA-NC-015
CITGO STATION	65-20 COOPER AV	GLENDALE	9600931	4/19/1996	6/19/2007	Combined	NC-083	DA-NC-083
QUATTRO PROPERTIES	222 MORGAN AVENUE	BROOKLYN	9585	11/21/2000	8/28/2003	Combined	NC-015	DA-NC-015
200 MORGAN AVE.	200 MORGAN AVENUE	BROOKLYN	9208755	10/29/1992	2/5/1998	Combined	NC-015	DA-NC-015
HESS-1885 ATLANTIC AVE	1885 ATLANTIC AVE	BROOKLYN	9303355	6/14/1993	3/18/2003	Combined	NC-015	DA-NC-015
GOWANUS SUBSTATION CP #4	27TH STREET & 3RD AVENUE	BROOKLYN	111289	2/27/2002	NULL	Combined	NC-015	DA-NC-015
GOWANUS SUB STATION	27TH STREET & 3RD AVENUE	BROOKLYN	9614802	3/24/1997	3/26/1997	Combined	NC-015	DA-NC-015
710 HALSEY STREET	710 HALSEY STREET	BROOKLYN	9308510	10/13/1993	10/13/1993	Combined	NC-015	DA-NC-015
28-90 REVIEW AVENUE	28-90 REVIEW AVENUE	LONG ISLAND CITY	9311731	1/3/1994	1/3/1994	Combined	BB-010	DA-BB-010
1500 PUTNAM AVE	1500 PUTNAM AVENUE	BROOKLYN	9212880	2/16/1993	2/16/1993	Combined	NC-015	DA-NC-015
NY APPLE TOURS	2550 BORDEN AVE	LONG ISLAND CITY	9802647	5/30/1998	3/24/2000	Combined	BB-004	DA-BB-004
APARTMENT BUILDING	1451 MYRTLE AVENUE	BROOKLYN	310559	12/12/2003	3/17/2004	Combined	NC-015	DA-NC-015
BROOKLYN CHILDREN	1819 BERGEN STREET	BROOKLYN	106070	9/7/2001	7/21/2003	Combined	NC-015	DA-NC-015
WOLF PETROLEUM CORP	60-04 METROPOLITAN AVE	FLUSHING	7595	9/28/2000	12/24/2003	Combined	NC-077	DA-NC-077
43-41 32ND PLACE	43-41 32ND PLACE	LONG ISLAND CITY	9303078	6/8/1993	6/25/1993	Combined	BB-026	DA-BB-026
32-32 QUEENS BLVD/SUNOCO	32-32 QUEENS BLVD	NEW YORK CITY	8905358	8/30/1989	NULL	Combined	BB-026	DA-BB-026
240 COVERT STREET	240 COVERT STREET	BROOKLYN	9413142	1/3/1995	1/3/1995	Combined	NC-015	DA-NC-015
265-67 IRVING AVE	265-67 IRVING AVE	BROOKLYN	9902399	5/20/1999	12/20/2005	Combined	NC-015	DA-NC-015
62-67 80TH RD	62-67 80TH RD	RIDGEWOOD	9504408	7/12/1995	7/12/1995	Combined	NC-083	DA-NC-083
GASETERIA	30-05/30-25 QUEENS BLVD	LONG ISLAND CITY	9912794	2/9/2000	NULL	Combined	BB-026	DA-BB-026
UNNAMED	1080 BUSHWICK AVE	BROOKLYN	104030	7/16/2001	2/13/2003	Combined	NC-015	DA-NC-015
28-90 REVIEW AVE/QUEENS	28-90 REVIEW AVENUE	LONG ISLAND CITY	9010146	12/18/1990	11/8/1991	Combined	BB-010	DA-BB-010

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Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
RESI:BARNES	1500 PUTNAM AVENUE	BROOKLYN	3198	6/14/2000	3/21/2003	Combined	NC-015	DA-NC-015
144 EVERGREEN	MELROSE AND EVERGREEN	BROOKLYN	9911140	12/21/1999	2/15/2005	Combined	NC-015	DA-NC-015
47-36 36TH STREET	47-36 36TH STREET	LONG ISLAND CITY	9312370	1/21/1994	1/21/1994	Combined	BB-026	DA-BB-026
ENGINE CO. 233/LADD. CO. 176 FDNY -DDC	25 ROCKAWAY AVENUE	BROOKLYN	102559	6/7/2001	10/7/2009	Combined	NC-015	DA-NC-015
OVERSEAS ASSOC	400 MCGUINESS BLVD	BROOKLYN	9706680	9/3/1997	9/4/1997	Combined	NCB-021	DA-NCB-021
NYPD 81ST PCT	18 RALPH AVE	BROOKLYN	9513317	1/23/1996	5/23/1997	Combined	NC-015	DA-NC-015
MANHOLE #62590	24TH ST & 6TH AVE	BROOKLYN	207412	10/17/2002	4/29/2003	Combined	NC-015	DA-NC-015
61-40 55TH DRIVE	61-40 55TH DRIVE	MASPETH	9404686	7/6/1994	7/6/1994	Combined	NC-077	DA-NC-077
DHL DIST -MTBE	3269 GALE AVE	LONG ISLAND CITY	9813012	1/22/1999	NULL	Combined	BB-009	DA-BB-009
RESIDENCE	953 LAFAYETTE AVE	BROOKLYN	310396	12/8/2003	12/20/2005	Combined	NC-015	DA-NC-015
BARNES RESIDENCE	1500 PUTNAM AVENUE	BROOKLYN	9710858	12/24/1997	12/26/1997	Combined	NC-015	DA-NC-015
66-14 53RD DR	66-14 53RD DR	MASPETH	9108117	10/30/1991	5/25/1995	Combined	NC-077	DA-NC-077
124 STUYVESANT AVENUE	124 STUYVESANT AVENUE	BROOKLYN	9505650	8/7/1995	8/29/2006	Combined	NC-015	DA-NC-015
50 TROUTMAN STREET	50 TROUTMAN STREET	BROOKLYN	300471	4/14/2003	4/18/2003	Combined	NC-015	DA-NC-015
75-50 METROPOLITAN AV-QNS	75-50 METROPOLITAN AV	MIDDLE VILLAGE	8911610	3/9/1990	3/9/1990	Combined	NC-083	DA-NC-083
UNNAMED	67-20 80TH ST	MIDDLE VILLAGE	210164	1/8/2003	4/30/2003	Combined	NC-083	DA-NC-083
46-05 56TH ROAD	46-05 56TH ROAD	MASPETH	9411230	11/22/1994	11/22/1994	Combined	NC-029	DA-NC-029
UNNAMED	64 BOX ST	BROOKLYN	10491	12/18/2000	6/13/2003	Combined	NCB-022	DA-NCB-022
73-13 COOPER AVENUE	73-13 COOPER AVENUE	GLENDALE	9306063	7/27/1993	6/22/2004	Combined	NC-083	DA-NC-083
EXXONMOBIL S/S#17-GDC	49-21 QUEENS BLVD	WOODSIDE	9400198	4/5/1994	1/25/2008	Combined	BB-009	DA-BB-009
ANDY'S CLEANERS	66-30 FRESH POND BLVD	RIDGEWOOD	9408408	9/24/1994	12/20/1994	Combined	NC-077	DA-NC-077
CINCOTTA	6412 FOREST AVE	RIDGEWOOD	7163	9/18/2000	11/28/2005	Combined	NC-077	DA-NC-077
MARBREN TIRE CO	32-16 HUNTERS POINT AVE	LONG ISLAND CITY	100567	4/14/2001	4/18/2003	Combined	BB-009	DA-BB-009
COMMERCIAL BLDG	1451 MYRTLE AVENUE	BROOKLYN	312025	1/27/2004	1/27/2004	Combined	NC-015	DA-NC-015
48-01 QUEENS BLVD	48-01 QUEENS BLVD	WOODSIDE	9301285	4/27/1993	4/18/1995	Combined	BB-009	DA-BB-009
UNNAMED	903 HERKIMER ST	BROOKLYN	201208	5/1/2002	3/3/2003	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 145	100 NOLL ST	BROOKLYN	9907295	9/17/1999	3/3/2003	Combined	NC-015	DA-NC-015
TIRE PLACE OF QUEENS	67-20 80TH ST	MIDDLE VILLAGE	301631	5/15/2003	5/16/2003	Combined	NC-083	DA-NC-083
55-15 69TH PLACE	55-15 69TH PL	MASPETH	9911261	12/24/1999	1/3/2000	Combined	NC-077	DA-NC-077
FAST LANE AUTO REPAIR	16-12 STEPHEN ST	RIDGEWOOD	9712278	2/3/1998	3/3/1998	Combined	NC-083	DA-NC-083
1878 DECATUR STREET	1878 DECATUR STREET	RIDGEWOOD	9212109	1/22/1993	1/22/1993	Combined	NC-083	DA-NC-083
73-13 COOPER AVENUE	73-13 COOPER AVENUE	GLENDALE	9314583	3/14/1994	2/11/2003	Combined	NC-083	DA-NC-083
38-15 QUEENS BLVD/SUNOCO	38-15 QUEENS BLVD	LONG ISLAND CITY	8904831	8/15/1989	NULL	Combined	BB-026	DA-BB-026
ST STANISLAUS CHURCH	57-15 61ST ST	MASPETH	108420	11/20/2001	2/14/2002	Combined	NC-077	DA-NC-077
322 IRVING AVE	322 IRVING AVE	BROOKLYN	9204706	7/24/1992	7/24/1992	Combined	NC-015	DA-NC-015
6280 60TH PLACE	6280 60TH PLACE	RIDGEWOOD	9513568	1/26/1996	1/26/1996	Combined	NC-077	DA-NC-077
UNITRON GRAPHICS, INC	47-10 32ND PLACE	LONG ISLAND CITY	8907359	8/30/1989	10/25/1989	Combined	BB-026	DA-BB-026
UNNAMED	70-09 73RD PLACE	GLENDALE	300485	4/11/2003	6/3/2003	Combined	NC-083	DA-NC-083
UNNAMED	1994 ATLANTIC AVE	BROOKLYN	9907632	9/24/1999	1/9/2004	Combined	NC-015	DA-NC-015
STAGING SCAFFOLDING	25-20 BORDEN AVE	LONG ISLAND CITY	109751	12/18/2001	7/29/2002	Combined	BB-004	DA-BB-004
GAS STATION -GKR SERVICE STATION/GULF -MTBE	73-38 COOPER AVENUE	GLENDALE	9815042	3/19/1999	NULL	Combined	NC-083	DA-NC-083
FARHAT REALTY CORP	1575 BUSHWICK AVE	BROOKLYN	9413561	1/11/1995	1/11/1995	Combined	NC-015	DA-NC-015
39-20 48TH AVE	39-20 48TH AVE	LONG ISLAND CITY	9301398	4/29/1993	6/24/2005	Combined	BB-013	DA-BB-013
ST RAPHAEL CHURCH	35-20 GREENPOINT AVE	LONG ISLAND CITY	9802516	5/27/1998	11/16/1998	Combined	BB-009	DA-BB-009
HOPE GARDENS - NYCHA	330 WILSON AVE	BROOKLYN	9308780	10/19/1993	3/18/1996	Combined	NC-015	DA-NC-015
656 WOODWARD AVE	656 WOODWARD AVE	RIDGEWOOD	9212777	2/11/1993	2/17/1993	Combined	NC-083	DA-NC-083
SERVICE BOX 11749	906 GREENE AVE	BROOKLYN	304209	7/21/2003	8/27/2003	Combined	NC-015	DA-NC-015
452 MAC DONOUGH ST	452 MAC DONOUGH ST	BROOKLYN	9508547	10/12/1995	10/12/1995	Combined	NC-015	DA-NC-015

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
5825 69TH AVENUE	5825 69TH AVENUE	RIDGEWOOD	9309046	10/26/1993	10/26/1993	Combined	NC-083	DA-NC-083
797 HERKIMER ST	797 HERKIMER ST	BROOKLYN	9603365	6/11/1996	6/13/1996	Combined	NC-015	DA-NC-015
949 WILLOUGHBY AVE/BKLYN	949 WILLOUGHBY AVENUE	BROOKLYN	8710918	3/30/1988	10/7/1992	Combined	NC-015	DA-NC-015
CITGO PBS 2-340138 PUMP #	36-20 QUEENS BLVD	LONG ISLAND CITY	410913	1/5/2005	3/18/2005	Combined	BB-026	DA-BB-026
MANHOLE 66326	1042 HERKIMER ST	BROOKLYN	9914670	3/28/2000	3/27/2002	Combined	NC-015	DA-NC-015
43RD ST & 1ST AVE	43RD STREET & 1ST AVENUE	BROOKLYN	9506628	8/29/1995	8/29/1995	Combined	NC-015	DA-NC-015
100 MORGAN AVENUE	100 MORGAN AVE	BROOKLYN	9909719	11/10/1999	11/20/2000	Combined	NC-015	DA-NC-015
RESIDENCE	702 DECATUR ST	BROOKLYN	411465	1/24/2005	11/25/2005	Combined	NC-015	DA-NC-015
RESIDENTIAL BUILDING	555 BAINBRIDGE STREET	BROOKLYN	411790	2/3/2005	10/24/2006	Combined	NC-015	DA-NC-015
RESIDENCE	7162 69TH PLACE	GLENDALE	412333	2/18/2005	3/8/2005	Combined	NC-083	DA-NC-083
FORMER GAS SATION	1086-1098 LAFAYETTE AVE	BROOKLYN	412474	2/24/2005	3/23/2006	Combined	NC-015	DA-NC-015
DERBY TEXTILE CORP	41 VARICK AVE	BROOKLYN	9713513	3/5/1998	8/18/2004	Combined	NC-015	DA-NC-015
LAGUARDIA COMMUNITY COLLE	31-10 THOMPSON AVE	LONG ISLAND CITY	407416	10/4/2004	9/21/2006	Combined	BB-026	DA-BB-026
GAS ON THE MOVE	1802 ATLANTIC AVENUE	BROOKLYN	407693	10/12/2004	NULL	Combined	NC-015	DA-NC-015
BASEMENT OIL SPILL	189 CHAUNCEY ST	BROOKLYN	408020	10/19/2004	4/4/2006	Combined	NC-015	DA-NC-015
PRIVATE RES.	1214 JEFFERSON AVE	BROOKLYN	410958	1/7/2005	1/11/2005	Combined	NC-015	DA-NC-015
ROADWAY/ TRUCK #607	61-06 56TH RD.	MASPETH	410956	1/3/2005	1/12/2005	Combined	NC-077	DA-NC-077
BROOKLYN CHILDREN CENTER	1819 BERGEN STREET	BROOKLYN	411485	1/25/2005	12/7/2005	Combined	NC-015	DA-NC-015
NYC SANITATION DISTRICT 4	525 JOHNSON ST	BROOKLYN	846	4/20/2000	NULL	Combined	NC-015	DA-NC-015
UNNAMED	196 CORNELIA ST	BROOKLYN	9713409	3/3/1998	3/4/2003	Combined	NC-015	DA-NC-015
FORMER CUMBERLAND GULF STATION #121067	60-93 FLUSHING AVENUE (16TH STRE	MASPETH	9503466	6/16/1995	11/13/2007	Combined	NC-077	DA-NC-077
SAFEWAY CONSTRUCTION	54-60 44TH STREET	MASPETH	410845	1/4/2005	4/20/2007	Combined	NC-029	DA-NC-029
ON THE PROPERTY	338 SCHOLES STREET	BROOKLYN	501244	4/29/2005	6/9/2006	Combined	NC-015	DA-NC-015
CLARK RESIDENCE	964 GREENE AVE	BROOKLYN	410481	12/21/2004	11/3/2005	Combined	NC-015	DA-NC-015
PUBLIC HOUSING	1841 FULTON ST	BROOKLYN	510034	11/22/2005	11/23/2005	Combined	NC-015	DA-NC-015
RESIDENCE	61-12 MRYTLE AVE	RIDGEWOOD	510573	12/8/2005	12/14/2005	Combined	NC-083	DA-NC-083
VS #6381	13 STREET & AVE N	BROOKLYN	512243	1/23/2006	6/14/2006	Combined	NC-015	DA-NC-015
COMMERCIAL BUILDING	41-38 37TH STREET	LONG ISLAND CITY	513398	2/21/2006	2/23/2006	Combined	BB-026	DA-BB-026
30-15 48TH AVE	30-15 48TH AVE	LONG ISLAND CITY	9512395	1/4/1996	1/4/1996	Combined	BB-026	DA-BB-026
CAR LEAK	615 MACDOUGH ST	BROOKLYN	407975	10/18/2004	10/20/2004	Combined	NC-015	DA-NC-015
PRIVATE RESIDENCE	11 SOMERS ST	BROOKLYN	409230	11/17/2004	11/16/2005	Combined	NC-015	DA-NC-015
APARTMENT BUIDLING	613 GRAND VIEW AVE	RIDGEWOOD	413423	3/25/2005	3/29/2005	Combined	NC-077	DA-NC-077
SERVICE BOX #28721	738 MACON ST	BROOKLYN	501478	5/5/2005	7/12/2005	Combined	NC-015	DA-NC-015
SERVICE BOX #28718	755 MACON ST	BROOKLYN	501479	5/5/2005	7/12/2005	Combined	NC-015	DA-NC-015
SB 31357	312 PATCHER AVE	BROOKLYN	501669	5/10/2005	3/20/2008	Combined	NC-015	DA-NC-015
RESIDENCE	467 MACDONOUGH STREET	BROOKLYN	504491	7/14/2005	7/15/2005	Combined	NC-015	DA-NC-015
APT BUILDING TANK	85 MEADOW STREET	BROOKLYN	504662	7/19/2005	12/9/2005	Combined	NC-015	DA-NC-015
BASEMENT TANK PROBLEM	1817 HIMROD STREET	RIDGEWOOD	505880	8/12/2005	6/8/2006	Combined	NC-083	DA-NC-083
GARATZIOTIS, ARISS RESIDE	578 BUSHWICK AVENUE	BROOKLYN	510383	12/3/2005	12/5/2005	Combined	NC-015	DA-NC-015
KINKED FUEL LINE IN BASEMENT OF HOME	1015 JEFFERSON AVE	BROOKLYN	507099	9/12/2005	11/15/2005	Combined	NC-015	DA-NC-015
RESIDENCE	842 MACON ST	BROOKLYN	500513	4/12/2005	4/13/2005	Combined	NC-015	DA-NC-015
MANHOLE # 1206	264 HIMROD STREET	BROOKLYN	500825	4/19/2005	7/12/2005	Combined	NC-015	DA-NC-015
SIDEWALK	06-11 WOODWARD AVE.	RIDGEWOOD	410764	12/31/2004	1/11/2005	Combined	NC-083	DA-NC-083
RESIDENCE	19 ABERDEEN STREET	BROOKLYN	412658	3/2/2005	3/9/2005	Combined	NC-015	DA-NC-015
MANGANO HOME	611 WOODWARD AVE.	RIDGEWOOD	413293	3/22/2005	3/24/2005	Combined	NC-083	DA-NC-083
SERVICE BOX 1673	498 CHAUNCEY ST	BROOKLYN	502165	5/23/2005	7/26/2005	Combined	NC-015	DA-NC-015
PULASKI BRIDGE	25 PAIDGE AVENUE	BROOKLYN	503096	6/14/2005	6/15/2005	Combined	NCB-021	DA-NCB-021
TRANSFORMER VAULT 715	1038 GATE AVE	BROOKLYN	503939	7/1/2005	9/9/2005	Combined	NC-015	DA-NC-015

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
INDUSTRIAL BUILDING	58-24 MAURICE AVE	MASPETH	506425	8/24/2005	6/28/2007	Combined	NC-077	DA-NC-077
PIERRE HOME	1016 HALSEY STREET	BROOKLYN	508407	10/14/2005	11/3/2005	Combined	NC-015	DA-NC-015
CROCE RESIDENCE	59-36 60TH ST	MASPETH	503881	7/1/2005	7/14/2005	Combined	NC-077	DA-NC-077
HANSRAJIE PAYNE	171 IRVING AVE	BROOKLYN	504551	7/16/2005	2/27/2006	Combined	NC-015	DA-NC-015
1819 GROVE ST	1819 GROVE ST	RIDGEWOOD	509636	11/9/2005	12/19/2005	Combined	NC-083	DA-NC-083
SITE	62-52 METROPOLITAN AVE	MIDDLEVILLAGE	510212	11/29/2005	5/5/2006	Combined	NC-077	DA-NC-077
VAULT VS2314	37 HARMAN ST	BROOKLYN	513322	2/18/2006	5/1/2006	Combined	NC-015	DA-NC-015
MANHOLE # 61639	980 FLUSHING AVE	BROOKLYN	514200	3/11/2006	3/20/2008	Combined	NC-015	DA-NC-015
VAULTS 2553 AND 2765	1011 FLUSHING AVE	BROOKLYN	512630	1/30/2006	6/14/2006	Combined	NC-015	DA-NC-015
GETTY	1781 ATLANTIC AVE	BROOKLYN	513055	2/10/2006	3/15/2006	Combined	NC-015	DA-NC-015
COMMERCIAL	10-50 JACKSON AVE	LONG ISLAND CITY	508055	10/5/2005	2/13/2006	Combined	BB-013	DA-BB-013
FORMER GAS & WAREHOUSE	11-23 BROADWAY/375-393 1O	BROOKLYN	508266	10/11/2005	NULL	Combined	NC-015	DA-NC-015
APARTMENT	121 JEFFERSON STREET	BROOKLYN	508980	10/27/2005	11/8/2005	Combined	NC-015	DA-NC-015
OLD GAS STATION -MTBE	1175 FLUSHING AVE	BROOKLYN	510000	11/21/2005	NULL	Combined	NC-015	DA-NC-015
GETTY # 58007	70-21 73RD PLACE	GLENDALE	512160	1/20/2006	10/24/2008	Combined	NC-083	DA-NC-083
355 HIMROD STREET	355 HIMROD STREET	BROOKLYN	512211	1/21/2006	1/27/2006	Combined	NC-015	DA-NC-015
NATALE RESIDENCE	113 ST. NICHOLAS AVE	BROOKLYN	512016	1/18/2006	1/19/2006	Combined	NC-015	DA-NC-015
LEXINGTON AVENUE	881 LEXINGTON AVE	BROOKLYN	513295	2/17/2006	3/10/2006	Combined	NC-015	DA-NC-015
CLOSED-LACKOF RECENT INFO	4301 39TH STREET	LONG ISLAND CITY	9200200	4/6/1992	3/6/2003	Combined	BB-026	DA-BB-026
GAS STATION -MTBE	49-01 VAN DAM STREET	LONG ISLAND CITY	9410908	11/15/1994	NULL	Combined	BB-009	DA-BB-009
GAS STATION	69-20 80TH STREET	MIDDLEVILLAGE	513675	2/27/2006	NULL	Combined	NC-083	DA-NC-083
GULSTON HOME	182 BAINBRIDGE STREET	BROOKLYN	513938	3/6/2006	3/7/2006	Combined	NC-015	DA-NC-015
PRIVATE RESIDENCE	1206 GREENE AVE	BROOKLYN	601076	4/27/2006	4/28/2006	Combined	NC-015	DA-NC-015
BROOKLYN NORTH 08 DOS -DDC	1755 PACIFIC STREET	BROOKLYN	9610332	11/18/1996	3/2/2005	Combined	NC-015	DA-NC-015
IFO AUTO RADIATOR	3 KNICKERBOCKER AVE	BROOKLYN	207179	10/10/2002	10/11/2002	Combined	NC-015	DA-NC-015
VAULT 2597	METROPOLITAN AV	BROOKLYN	312422	2/8/2004	7/15/2004	Combined	NC-015	DA-NC-015
21-14 HIMROD ST.	21-14 HIMROD ST.	RIDGEWOOD	9312040	1/12/1994	1/12/1994	Combined	NC-077	DA-NC-077
X	406 GROVE ST	BROOKLYN	306204	9/11/2003	10/15/2004	Combined	NC-083	DA-NC-083
BS 3181	39TH ST & 1ST AVE	BROOKLYN	9905186	7/30/1999	4/4/2002	Combined	NC-015	DA-NC-015
1132 VEKALB AVE	1132 DEKALB AVE	BROOKLYN	9209884	11/24/1992	11/30/1992	Combined	NC-015	DA-NC-015
SB 17458	412 DECATUR ST	BROOKLYN	303856	7/11/2003	8/27/2003	Combined	NC-015	DA-NC-015
222 MORGAN AVENUE	222 MORGAN AVENUE	BROOKLYN	9312206	1/17/1994	1/17/1994	Combined	NC-015	DA-NC-015
980 CYPRESS AVE/QUEENS	980 CYPRESS AVENUE	RIDGEWOOD	8911804	3/13/1990	12/22/1993	Combined	NC-083	DA-NC-083
RIDGEWOOD YOUTH CENTER	1463-1479 GATES AVE	BROOKLYN	9713662	3/10/1998	7/31/2006	Combined	NC-015	DA-NC-015
68-30 78TH STREET	68-30 78TH STREET	MIDDLE VILLAGE	9212397	1/2/1993	2/2/1993	Combined	NC-083	DA-NC-083
UNNAMED	95 GROVE STREET	BROOKLYN	9714048	3/18/1998	10/9/2003	Combined	NC-015	DA-NC-015
MULTI-DWELLING	619 HALSEY ST	BROOKLYN	9714267	3/24/1998	10/9/2003	Combined	NC-015	DA-NC-015
UNNAMED	47-09 36TH ST	LONG ISLAND CITY	208426	11/14/2002	3/21/2003	Combined	BB-026	DA-BB-026
BREVOORT HOUSES -NYCHA	329 PATCHEN AVE	BROOKLYN	9808684	10/13/1998	11/19/2007	Combined	NC-015	DA-NC-015
1500 PUTNAM AVENUE	1500 PUTNAM AVENUE	BROOKLYN	9414596	2/6/1995	2/6/1995	Combined	NC-015	DA-NC-015
JUNIOR HIGH SCHOOL 57	125 STUYVESANT AVENUE	BROOKLYN	9605970	8/7/1996	7/14/2005	Combined	NC-015	DA-NC-015
48-48 48TH ST	48-48 48TH ST	MASPETH	9504760	7/19/1995	2/28/2003	Combined	BB-009	DA-BB-009
HOPE GARDENS -NYCHA	330 WILSON AVE	BROOKLYN	9009937	12/12/1990	4/26/1995	Combined	NC-015	DA-NC-015
656 WOODWARD AVE	656 WOODWARD AVE	RIDGEWOOD	9212694	2/9/1993	2/9/1993	Combined	NC-083	DA-NC-083
47-36 36TH STREET	47-36 36TH STREET	LONG ISLAND CITY	9512438	1/5/1996	1/5/1996	Combined	BB-026	DA-BB-026
F AND M BRUSH	7002 72ND PLACE	GLENDALE	9801582	5/6/1998	8/30/2004	Combined	NC-083	DA-NC-083
SERVICE BOX AT	2042A PACIFIC AVENUE	BROOKLYN	9809791	11/4/1998	11/6/2002	Combined	NC-015	DA-NC-015
COMMERCIAL LOT	1855 ATLANTIC AVE	BROOKLYN	401074	4/30/2004	5/24/2004	Combined	NC-015	DA-NC-015

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
RESIDENCE	6627 79TH PLACE	MIDDLE VILLAGE	408150	10/22/2004	11/25/2005	Combined	NC-083	DA-NC-083
ON ROAD -DRUM RUN	862 WILLOUGHBY AVE	BROOKLYN	501508	5/6/2005	7/13/2005	Combined	NC-015	DA-NC-015
JOSEPH CIRONE RESIDENCE	74-47 64TH ST	GLENDALE	502097	5/21/2005	4/17/2006	Combined	NC-083	DA-NC-083
STAR CANDLE CO.	29-35 ASH ST	BROOKLYN	509371	11/4/2005	12/22/2005	Combined	NCB-022	DA-NCB-022
ON ROADWAY	60-15 MYRTLE AVE	RIDGEWOOD	509897	11/18/2005	11/29/2005	Combined	NC-083	DA-NC-083
RESIDENCE	1097 PUTNAM AVE	BROOKLYN	511584	1/6/2006	2/8/2006	Combined	NC-015	DA-NC-015
2006 A FULTON STREET	2006 A FULTON STREET	BROOKLYN	600324	4/10/2006	5/17/2006	Combined	NC-015	DA-NC-015
GETTY #58007	70-21 73RD PLACE	GLENDALE	600432	4/11/2006	11/17/2006	Combined	NC-083	DA-NC-083
GETTY	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	308808	11/18/2003	11/19/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	3023 GREENPORT AVE	LONG ISLAND	400917	4/27/2004	8/16/2004	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	13607	3/28/2001	4/11/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	3023 GREENPOINT AVENUE	LONG ISLAND CITY	109013	12/11/2001	12/11/2001	Combined	BB-011	DA-BB-011
GETTY PETROLEUM TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	211536	2/20/2003	2/21/2003	Combined	BB-011	DA-BB-011
GETTY GAS TERMINAL #730	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	9810192	11/12/1998	11/30/1998	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	105922	9/4/2001	2/3/2005	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	111954	3/20/2002	3/20/2002	Combined	BB-011	DA-BB-011
UNNAMED	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	400450	4/14/2004	8/16/2004	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	305808	9/2/2003	12/4/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	330021	7/20/2003	10/30/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	212435	3/18/2003	2/3/2005	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	302104	5/29/2003	5/29/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	12556	2/23/2001	2/3/2005	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	304568	7/30/2003	7/31/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	3023 GREENPOINT AVENUE	LONG ISLAND CITY	108340	11/16/2001	11/19/2001	Combined	BB-011	DA-BB-011
UNNAMED	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	301764	5/19/2003	10/27/2003	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	109957	1/16/2002	2/14/2002	Combined	BB-011	DA-BB-011
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	330045	10/6/2003	10/16/2003	Combined	BB-011	DA-BB-011
30-23 GREENPOINT AVE	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	13260	3/19/2001	7/18/2003	Combined	BB-011	DA-BB-011
690 FAIRVIEW AVENUE	690 FAIRVIEW AVENUE	RIDGEWOOD	9412485	12/17/1994	12/17/1994	Combined	NC-083	DA-NC-083
MANHOLE #15350	VARICK AVE & METROPOLITAN	BROOKLYN	9906203	8/24/1999	11/10/1999	Direct Drainage	NA	
CCX RAILROAD	49-15 MASPETH AVE	MASPETH	9572	11/21/2000	3/6/2006	Direct Drainage	NA	
5200 FLUSHING AVE/KAM KUO	52-00 FLUSHING AVE	MASPETH	9205707	8/18/1992	8/26/1992	Direct Drainage	NA	
FORMER MANHATTEN QUEENS	251 LOMBARDY ST	BROOKLYN	9712807	2/5/1998	7/31/2006	Direct Drainage	NA	
BLOCK #297 LOT #1	34-45 REVIEW AVE	LONG ISLAND CITY	9508686	9/1/1995	NULL	Direct Drainage		
VAULT 4545	37-18 RAILROAD AVE	LONG ISLAND CITY	211448	2/17/2003	4/3/2003	Direct Drainage		
MOBIL OIL	5 BRIDGEWATER STREET	BROOKLYN	9905794	8/13/1999	3/4/2003	Direct Drainage	NA	
NEWTOWN CREEK	500 KINGSLAND AVE	BROOKLYN	9514780	2/19/1996	2/22/1996	Direct Drainage	NC-002	DA-BB-002
ENGINE CO. 206 FDNY -DDC	1201 GRAND STREET	BROOKLYN	9703500	6/20/1997	1/20/2005	Direct Drainage	NA	
ENGINE CO. 206 FDNY -DDC	1201 GRAND STREET	BROOKLYN	12768	3/2/2001	NULL	Direct Drainage	NA	
10-26 53RD AVENUE	10-26 53RD AVENUE	LONG ISLAND CITY	9506878	9/6/1995	10/16/1997	Direct Drainage		
UNNAMED	37-50 RAILROAD AVE	LONG ISLAND CITY	9813114	1/25/1999	10/4/1999	Direct Drainage		
1213 GRAND STREET	1213 GRAND STREET	BROOKLYN	9512436	1/4/1995	5/15/2002	Direct Drainage	NA	
285 LOMBARDI STREET	285 LOMBARDI STREET	BROOKLYN	9311216	12/16/1993	12/16/1993	Direct Drainage	NA	
V#3227	59-50 54TH ST	MASPETH	9900753	4/20/1999	10/27/2004	Direct Drainage	NA	
CONSTRUCTION PROJECT	347 FREEMAN ST	BROOKLYN	9812	11/28/2000	11/30/2000	Direct Drainage	NC-002	DA-BB-002
N E C / B N S	10-26 53RD AVENUE	LONG ISLAND CITY	11702	7/1/2000	10/31/2003	Direct Drainage		
1251 METROPOLITAN AVE. /	1251 METROPOLITAN AVE	BROOKLYN	8607890	3/24/1987	3/25/1987	Direct Drainage	NA	
430 CHERRY ST/BROOKLYN	430 CHERRY STREET	BROOKLYN	8808957	11/1/1988	2/16/1989	Direct Drainage	NA	
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	9106287	9/11/1991	10/16/1997	Direct Drainage	NC-002	DA-BB-002

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
232 GARDNER AVE	232 GARDNER AVE	BROOKLYN	9705376	8/4/1997	8/4/1997	Direct Drainage	NA	
VAULT 434	221 MEADOW STREET	BROOKLYN	207116	10/9/2002	4/29/2003	Direct Drainage	NA	
WILLIAMSBURG STEEL	99 PAIDGE AVE	BROOKLYN	9605209	7/17/1996	NULL	Direct Drainage	NA	
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	8907186	10/20/1989	10/20/1989	Direct Drainage	NC-002	DA-BB-002
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	9012950	3/19/1991	12/27/2002	Direct Drainage	NC-002	DA-BB-002
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	9104730	8/1/1991	3/30/1995	Direct Drainage	NC-002	DA-BB-002
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	8909181	12/19/1989	12/19/1989	Direct Drainage	NC-002	DA-BB-002
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	9012482	3/5/1991	2/11/2010	Direct Drainage	NC-002	DA-BB-002
ROADWAY EXPRESS INC	1313 GRAND ST	BROOKLYN	9808077	9/30/1998	9/12/2007	Direct Drainage	NA	
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	8912333	3/27/1990	2/4/1998	Direct Drainage	NC-002	DA-BB-002
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	9004386	7/20/1990	6/20/1995	Direct Drainage	NC-002	DA-BB-002
QUEENS W. 5 GARAGE	48-01 58TH RD	maspeth	9801377	5/1/1998	11/3/2003	Direct Drainage	NA	
UNNAMED	1313 GRAND ST	BROOKLYN	103983	7/14/2001	7/28/2001	Direct Drainage	NA	
METRO GARAGE	1188 METROPOLITAN AVE	BROOKLYN	206038	9/10/2002	3/16/2004	Direct Drainage	NA	
59-50 54TH ST	59-50 54TH ST	MASPETH	9502024	5/17/1995	2/28/2003	Direct Drainage	NA	
EXXON TERMINAL	320 FREEMAN AVENUE	BROOKLYN	8710916	3/30/1988	3/30/1988	Direct Drainage	NC-002	DA-BB-002
METRO TERMINALS	498 KINGSLAND AVE	BROOKLYN	9705125	7/29/1997	4/12/2005	Direct Drainage	NC-002	DA-BB-002
TEMO SALES	57-03 48TH ST	MASPETH	7036	9/14/2000	11/28/2005	Direct Drainage	NA	
CONWAY CENTRAL EXPRESS	49-15 MASPETH AVENUE	MASPETH	9805268	7/28/1998	3/6/2006	Direct Drainage	NA	
1194 METROPOLITAN AVE	1194 METROPOLITAN AVE	BROOKLYN	9107650	10/16/1991	11/19/1992	Direct Drainage	NA	
PREMIUM OIL	1188 METROPOLITAN AVE	BROOKLYN	11310	1/17/2001	9/15/2003	Direct Drainage	NA	
CONSOLIDATED CARPET	1157 GRAND ST	BROOKLYN	9511303	12/7/1995	2/7/2006	Direct Drainage	NA	
GREEN HILL	2 REWE ST & 300 VANDERVOO	BROOKLYN	302094	5/29/2003	1/31/2006	Direct Drainage	NA	
STORAGE BUILDING	1194 METROPOLITAN AVE	BROOKLYN	9514664	2/15/1996	2/20/1996	Direct Drainage	NA	
213 MEADOW ST.	213 MEADOW ST	BROOKLYN	9315532	3/31/1994	3/31/1994	Direct Drainage	NA	
1188 METROPOLITAN AVE	1188 METROPOLITAN AVE	BROOKLYN	302832	6/17/2003	NULL	Direct Drainage	NA	
ENGINE CO. 206 FDNY -DDC	1201 GRAND STREET	BROOKLYN	300635	4/17/2003	7/10/2008	Direct Drainage	NA	
EXXON TERMINAL	320 FREEMAN STREET	BROOKLYN	9101866	5/16/1991	12/23/2002	Direct Drainage	NC-002	DA-BB-002
538 STEWART AVE	538 STEWART AVE	BROOKLYN	9901671	5/13/1999	11/16/2005	Direct Drainage	NA	
47-55 27TH ST	47-55 27TH ST	LONG ISLAND CITY	9708741	10/26/1997	10/27/1997	Direct Drainage		
1313 GRAND ST/BKLYN/ROADW	1313 GRAND ST	BROOKLYN	8708981	1/21/1988	10/7/1992	Direct Drainage	NA	
RESIDENTIAL BLOCK	566 76TH STREET & 5TH AVE	BROOKLYN	310414	12/9/2003	2/3/2004	Direct Drainage	NA	
251 LOMBARDI ST	251 LOMBARDI ST	BROOKLYN	9804103	7/1/1998	1/19/1999	Direct Drainage	NA	
2903 HUNTER AVE	2903 HUNTER AVE	LONG ISLAND CITY	9300670	4/14/1993	4/14/1993	Direct Drainage		
KALEX CHEMICAL PRODUCTS	235 GARDNER AVENUE	BROOKLYN	8808903	2/14/1989	7/6/2004	Direct Drainage	NA	
KALEX CHEMICAL PRODUCTS	235 GARDNER AVENUE	BROOKLYN	9405227	7/17/1994	7/17/1994	Direct Drainage	NA	
NATIONAL ENVELOPE	2910 HUNTER POINT AV	LONG ISLAND	9604370	7/1/1996	7/8/1996	Direct Drainage		
QUEENS WEST DEV. CORP	5TH ST	LONG ISLAND CITY	308331	11/5/2003	1/13/2005	Direct Drainage		
12 REWE ST/BROOKLYN	12 REWE STREET	BROOKLYN	9011716	2/7/1991	3/30/1995	Direct Drainage	NA	
1301 GRAND STREET	1301 GRAND STREET	BROOKLYN	9309269	11/1/1993	11/2/1993	Direct Drainage	NA	
KC TRANSPORTERS	52-01 FLUSHING AVE	MASPETH	111944	3/19/2002	3/20/2002	Direct Drainage	NA	
KOREAN TRADE DIST CENTER	34-35 REVIEW AVENUE	LONG ISLAND CITY	9600544	4/5/1996	8/15/1997	Direct Drainage		
38-54 REVIEW AVE	38-54 REVIEW AVE	LONG ISLAND CITY	9212478	2/3/1993	2/2/1993	Direct Drainage		
PEERLESS IMPORTERS	563-565 GARDNER AVE	BROOKLYN	306600	9/22/2003	11/13/2003	Direct Drainage	NA	
NYC NEWTON CREEK WPCP	320 FREEMAN STREET	BROOKLYN	9601620	5/1/1996	7/31/1997	Direct Drainage	NC-002	DA-BB-002
QUEENS WEST 05/05A DOS -DDC	58-74 54TH STREET	QUEENS	9006042	8/31/1990	NULL	Direct Drainage	NA	
GETTY TERMINAL	30-23 GREENPOINT AVENUE	LONG ISLAND CITY	406818	9/20/2004	10/22/2004	Direct Drainage		
COMMERCIAL	49-15 MASPETH AV	MASPETH	9612083	5/26/1995	7/28/2003	Direct Drainage	NA	
KALEX CHEMICAL PRODUCTS	235 GARDNER AVENUE	BROOKLYN	9002646	6/6/1990	10/2/1992	Direct Drainage	NA	

Table B-4
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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
39-90 REVIEW AVENUE	39-90 REVIEW AVENUE	LONG ISLAND CITY	9416828	3/28/1995	3/28/1995	Direct Drainage		
ANHEUSER-BUSH	55-01 2ND ST	LONG ISLAND CITY	9901476	5/5/1999	6/7/1999	Direct Drainage		
MANYA CORPORATION	235 GARDNER AVENUE	BROOKLYN	9909043	10/25/1999	10/7/2005	Direct Drainage	NA	
HUMBOLT STREET AND	GRAND STREET	BROOKLYN	203627	7/5/2002	11/4/2002	Direct Drainage	NA	
NY ENVELOPE	2910 HUNTERS POINT AV	LONG ISLAND CITY	102148	5/25/2001	6/17/2005	Direct Drainage		
GRAND STREET BRIDGE	GRAND STREET	BROOKLYN	9708510	10/21/1997	10/21/1997	Direct Drainage	NA	
UNNAMED	38-50 REVIEW AVE	LONG ISLAND CITY	110414	1/30/2002	2/25/2002	Direct Drainage		
99 PAIDGE AVE	99 PAIDGE AVE	BROOKLYN	9210719	12/16/1992	12/16/1992	Direct Drainage	NA	
GETTY TERMINAL - MOSF	3023 GREENPOINT AVENUE	LONG ISLAND CITY	411602	1/29/2005	2/3/2005	Direct Drainage		
VAULT V560	221-41 MEADOW ST	BROOKLYN	508686	10/20/2005	1/10/2008	Direct Drainage	NA	
MANHOLE 1299	1131 GRAND ST	BROOKLYN	503634	6/27/2005	8/31/2005	Direct Drainage	NA	
WASTE MANAG.	475 SCOTT AVE	BROOKLYN	506785	4/18/2005	8/29/2006	Direct Drainage	NA	
GETTY TERMINAL	3023 GREENPORT AVE	LONG ISLAND CITY	411874	2/7/2005	6/30/2005	Direct Drainage		
UB DISTRIBUTORS	1213 GRAND STREET	BROOKLYN	9807882	9/28/1998	5/15/2002	Direct Drainage	NA	
COMMERCIA PROPERTY	29-10 HUNTERS POINT AVE	LONG ISLAND CITY	601095	4/28/2006	5/15/2006	Direct Drainage		
APPLE FUEL OIL	55TH AVENUE	MASPETH	9804418	7/8/1998	3/31/2006	Other	unknown	
OLD GAS STATION	60-02 MAURICE AVE	MASPETH	9914441	3/22/2000	8/16/2001	Other	unknown	
MANHOLE 30529	205 MOFFAT ST	BROOKLYN	1970	5/16/2000	9/24/2001	Other	unknown	
NABISCO	65-11 OTTO RD	GLENDALE	9103069	6/17/1991	8/6/2003	Other	unknown	
POLE 88332 SOUTH SIDE OF	55TH AV (2 POLES W OF 44T	MASPETH	9814540	3/5/1999	3/10/1998	Other	unknown	
669 CENTRAL AVENUE	CENTRAL AVE & SCHAUNCEY S	BROOKLYN	207845	10/29/2002	10/29/2002	Other	unknown	
COMMERCIAL LOT	673 CENTRAL AVE	BROOKLYN	402374	6/3/2004	6/30/2005	Other	unknown	
669 CENTRAL AVENUE	669 CENTRAL AVENUE	BROOKLYN	303344	6/30/2003	7/3/2003	Other	unknown	
42-42 54TH AVENUE	42-42 54TH AVENUE	MASPETH	9402364	5/17/1994	5/18/1994	Other	unknown	
NABISCO	66-11 OTTO RD	FLUSHING	5787	8/14/2000	8/6/2003	Other	unknown	
SUNOCO GAS STA	35 HIGHLAND BLVD	BROOKLYN	9709845	11/24/1997	4/14/2006	Other	unknown	
SUNOCO	35 HIGHLAND BLVD	BROOKLYN	9709827	11/24/1997	1/30/1998	Other	unknown	
NY & ATLANTIC RAILWAY	68-01 OTTO RD	GLENDALE	11356	1/18/2001	5/27/2003	Other	unknown	
UNNAMED	669 CENTRAL AVENUE	BROOKLYN	207850	10/29/2002	12/27/2002	Other	unknown	
RESIDENCE	68-01 OTTO ROAD	GLENDALE	410657	12/28/2004	1/28/2005	Other	unknown	
DAY CARE CENTER	272 MOFFAT ST	BROOKLYN	102851	6/14/2001	10/19/2006	Other	unknown	
MANHOLE TM2993	337-59 MOFFAT ST	BROOKLYN	409556	11/25/2004	10/23/2006	Other	unknown	
MOBIL	300 NORTH HENRY STREET	BROOKLYN	8910558	2/3/1990	12/3/2003	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL TERMINAL	300 NORTH HENRY STREET	BROOKLYN	9110597	1/10/1992	1/10/1992	Separate	ST-90, NCB633	DA-NCB-633/90
400 KINGSLAND AVE/BKLYN	400 Kingsland Avenue	GREEN POINT	9100376	4/9/1991	4/9/1991	Separate	ST-90, NCB633	DA-NCB-633/90
125 APOLLO STREET	125 Apollo Street	GREEN POINT	9404089	6/23/1994	6/23/1994	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL COMP.	125 Apollo Street	GREEN POINT	9416491	3/21/1995	3/21/1995	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL GREENPOINT	300 NORTH HENRY STREET	BROOKLYN	8800244	4/7/1988	NULL	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL GREENPOINT	300 NORTH HENRY STREET	BROOKLYN	8800842	4/27/1988	4/23/2003	Separate	ST-90, NCB633	DA-NCB-633/90
125 APOLLO STREET	125 Apollo Street	GREEN POINT	9307377	9/17/1993	9/17/1993	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL	300 NORTH HENRY STREET	BROOKLYN	9009468	11/30/1990	2/10/2003	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL TERMINAL	125 Apollo Street	GREEN POINT	9405822	7/29/1994	4/25/1995	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL OIL TERMINAL	300 NORTH HENRY STREET	BROOKLYN	9414801	2/10/1995	2/10/1995	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL CO	125 Apollo Street	GREEN POINT	9512785	1/15/1996	9/26/1997	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL COMPANY	125 Apollo Street	GREEN POINT	8702168	6/16/1987	6/16/1987	Separate	ST-90, NCB633	DA-NCB-633/90
BPAMOCO TERMINAL GREENPT	125 Apollo Street	GREEN POINT	9003253	6/20/1990	6/4/2004	Separate	ST-90, NCB633	DA-NCB-633/90
4681 METROPOLITAN AVE	4681 METROPOLITAN AVE	BROOKLYN	9301925	5/11/1993	6/4/1993	Separate	NCB-629, ST-60	DA-ST-60/629
MOBIL GREENPOINT	300 NORTH HENRY STREET	BROOKLYN	8808149	1/12/1989	9/24/2003	Separate	ST-90, NCB633	DA-NCB-633/90

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
AMOCO OIL COMPANY	125 Apollo Street	GREEN POINT	9309444	11/3/1993	11/29/1994	Separate	ST-90, NCB633	DA-NCB-633/90
BP AMOCO	125 Apollo Street	GREEN POINT	9505697	8/8/1995	6/4/2004	Separate	ST-90, NCB633	DA-NCB-633/90
165 RANDOLPH ST ASSOC	165 RANDOLPH ST	BROOKLYN	9110290	12/31/1991	3/30/1995	Separate	NCB-629, ST-60	DA-ST-60/629
111 GARDNER AVENUE	111 GARDNER AVENUE	BROOKLYN	9311997	1/11/1994	1/11/1994	Separate	NCB-629, ST-60	DA-ST-60/629
55-80 47TH STREET	55-80 47TH STREET	MASPETH	9210787	12/17/1992	12/17/1992	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BCF OIL REFINING INC.	360 MASPETH AVENUE	BROOKLYN	9403829	6/17/1994	9/2/2003	Separate	ST-22	DA-ST-22
MOBIL GREENPOINT	300 NORTH HENRY STREET	BROOKLYN	9312129	1/14/1994	10/16/2002	Separate	ST-90, NCB633	DA-NCB-633/90
BCF OIL REFINERY, INC	360 MASPETH AVENUE	BROOKLYN	9406807	8/19/1994	NULL	Separate	ST-22	DA-ST-22
NYC ERP SITE	57-15 49TH ST	MASPETH	313650	3/12/2004	NULL	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BCF OIL REFINING INC	360 MASPETH AVENUE	BROOKLYN	8701849	6/4/1987	6/10/1987	Separate	ST-22	DA-ST-22
BCF REFINING	360 MASPETH AVENUE	BROOKLYN	9008251	9/25/1990	9/2/2003	Separate	ST-22	DA-ST-22
360 KINGSLAND AVE/BKLYN	360 KINGSLAND AVENUE	BROOKLYN	9008584	11/5/1990	11/7/1990	Separate	ST-90, NCB633	DA-NCB-633/90
360 KINGSLAND AVENUE	360 KINGSLAND AVENUE	BROOKLYN	9501526	5/4/1995	10/11/1995	Separate	ST-90, NCB633	DA-NCB-633/90
ISLAND TRANSPORTATION	47TH ST	MASPETH	9709690	11/14/1997	1/8/1998	Separate	ST-60NC, ST-54	DA-ST-60NC/54
AT LIGHT LIGHTING	57-47 47TH STREET	MASPETH	9709898	11/25/1997	11/25/1997	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MODEL TOWING	427 GREENPOINT AVE	BROOKLYN	10980	1/7/2001	6/13/2003	Separate	ST-90, NCB633	DA-NCB-633/90
X	185 RANDOLPH STREET	BROOKLYN	212548	3/20/2003	12/7/2005	Separate	NCB-629, ST-60	DA-ST-60/629
UNNAMED	460 KINGSLAND AVENUE	BROOKLYN	307959	10/28/2003	11/13/2003	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEKWPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9500431	4/11/1995	5/5/2005	Separate	ST-90, NCB633	DA-NCB-633/90
SUBSTATION	287 MASPETH AVENUE	BROOKLYN	310061	11/26/2003	12/17/2003	Separate	ST-22	DA-ST-22
OLD COMMERCIAL AREA	92-94 SCOTT AVE	BROOKLYN	212121	3/10/2003	12/29/2003	Separate	NCB-629, ST-60	DA-ST-60/629
BRADCO SUPPLY	7 RAILROAD PLACE	MASPETH	9714039	3/18/1998	6/13/2005	Separate	ST-60NC, ST-54	DA-ST-60NC/54
DITMAS OIL COMAPNY	364 MASPETH AVENUE	BROOKLYN	9006603	9/15/1990	NULL	Separate	ST-22	DA-ST-22
NEW TOWN CREEK	329 GREENPOINT AVENUE	BROOKLYN	405275	8/13/2004	4/20/2005	Separate	ST-90, NCB633	DA-NCB-633/90
330 CALYER STREET	330 CALYER STREET	BROOKLYN	9402866	5/26/1994	5/31/1994	Separate	ST-90, NCB633	DA-NCB-633/90
57-15 49TH ST	57-15 49TH ST	MASPETH	9804647	7/6/1998	6/18/2004	Separate	ST-60NC, ST-54	DA-ST-60NC/54
59-97 57TH ST/GRAND ST	59-97 57TH ST	MASPETH	9201888	5/15/1992	5/15/1992	Separate	ST-60NC, ST-54	DA-ST-60NC/54
CLOSED-LACKOF RECENT INFO	287 MASPETH AVENUE	BROOKLYN	9009058	11/16/1990	3/4/2003	Separate	ST-22	DA-ST-22
DITMAS OIL COMPANY	364 MASPETH AVENUE	BROOKLYN	9208027	10/12/1992	10/12/1992	Separate	ST-22	DA-ST-22
DEPT OF CLEAN WATERS	329 GREENPOINT AVENUE	BROOKLYN	9606892	8/29/1996	8/29/1996	Separate	ST-90, NCB633	DA-NCB-633/90
55-90 47TH STREET/QUEENS	55-90 47TH STREET	MASPETH	8906900	10/12/1989	1/2/1990	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	13213	3/17/2001	4/5/2001	Separate	ST-90, NCB633	DA-NCB-633/90
ABF FREIGHT SYSTEMS	414 MASPETH AVE	BROOKLYN	9611489	12/18/1996	NULL	Separate	ST-22	DA-ST-22
CIBRO TERMINALS	1100 GRAND STREET	BROOKLYN	9104487	7/26/1991	3/25/2009	Separate	ST-56	DA-ST-56
GASETERIA OIL CORP	364 MASPETH AVENUE	BROOKLYN	9812647	1/7/1999	9/19/2003	Separate	ST-22	DA-ST-22
3 RAILROAD PL	3 RAILROAD PL	MASPETH	9906743	9/7/1999	NULL	Separate	ST-60NC, ST-54	DA-ST-60NC/54
DEPT OF SANITATION SITE	161 VARICK AVE	BROOKLYN	305740	8/29/2003	10/16/2003	Separate	NCB-629, ST-60	DA-ST-60/629
BFI	72 SCOTT AVENUE	BROOKLYN	9702085	5/18/1997	12/3/2004	Separate	NCB-629, ST-60	DA-ST-60/629
CASALINO	160 STEWART ST	BROOKLYN	9706947	9/11/1997	11/13/1997	Separate	NCB-629, ST-60	DA-ST-60/629
BROOKLYN UNION GAS	287 MASPETH AVENUE	BROOKLYN	9305107	7/13/1993	3/28/2005	Separate	ST-22	DA-ST-22
DITMAS OIL COMPANY	364 MASPETH AVENUE	BROOKLYN	9011585	2/4/1991	2/5/1991	Separate	ST-22	DA-ST-22
MENDON LEASING CORP	362 KINGSLAND AVENUE	BROOKLYN	9511378	12/8/1995	2/28/2003	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	3594	6/23/2000	5/5/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK CONT.PLANT	301 GREENPOINT AVENUE	BROOKLYN	204403	7/27/2002	7/29/2002	Separate	ST-90, NCB633	DA-NCB-633/90
COMMERCIAL BUILDING	520 KINGSLAND AVE	BROOKLYN	104811	8/3/2001	12/4/2009	Separate	ST-90, NCB633	DA-NCB-633/90
BROWNING FERRIS INDUSTRIA	72 SCOTT AVENUE	BROOKLYN	9703477	6/20/1997	6/25/1997	Separate	NCB-629, ST-60	DA-ST-60/629
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9408029	9/16/1994	12/16/2002	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9602370	4/1/1996	4/18/2001	Separate	ST-90, NCB633	DA-NCB-633/90
ROLET FOOD PRODUCTS	70 SCOTT AVE	BROOKLYN	109443	12/26/2001	1/14/2002	Separate	NCB-629, ST-60	DA-ST-60/629

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
GREENPOINT ENERGY CTR	287 MASPETH AVENUE	BROOKLYN	104143	7/15/2001	2/13/2003	Separate	ST-22	DA-ST-22
BORO TIMBER CO	57-45 47TH ST	MASPETH	9714130	7/1/1996	7/12/2006	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	867	4/14/2000	NULL	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	301 GREENPOINT AVENUE	BROOKLYN	9810145	11/11/1998	10/4/1999	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9911559	1/4/2000	2/26/2003	Separate	ST-90, NCB633	DA-NCB-633/90
NEW STYLE WASTE, INC	3 RAILROAD PLACE	MASPETH	9613076	2/4/1997	2/5/1997	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEW TOWN CREEK WATER TREA	329 GREENPOINT AVENUE	BROOKLYN	202662	6/12/2002	6/12/2002	Separate	ST-90, NCB633	DA-NCB-633/90
161 / 165 VARICK AVE	161 VARICK AVE	BROOKLYN	201226	5/2/2002	3/29/2006	Separate	NCB-629, ST-60	DA-ST-60/629
UNNAMED	400 KINGSLAND AVE	BROOKLYN	211277	2/11/2003	6/30/2003	Separate	ST-90, NCB633	DA-NCB-633/90
KEYSPAN GREENPOINT	287 MASPETH AVENUE	BROOKLYN	106270	9/13/2001	2/6/2007	Separate	ST-22	DA-ST-22
BROWNING FERRIS INDUST	72 SCOTT AVENUE	BROOKLYN	9703275	6/13/1997	6/16/1997	Separate	NCB-629, ST-60	DA-ST-60/629
72 SCOTT AVE	72 SCOTT AVENUE	BROOKLYN	9708693	10/24/1997	10/20/2004	Separate	NCB-629, ST-60	DA-ST-60/629
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	1944	5/15/2000	5/5/2005	Separate	ST-90, NCB633	DA-NCB-633/90
MASPETH WAREHOUSE (CIRRO)	55-04 MASPETH AVE	MASPETH	8225	10/12/2000	5/11/2004	Separate	ST-60NC, ST-54	DA-ST-60NC/54
34-02 LAUREL HILL BLVD	34-02 LAURAL HILL BLVD	MASPETH	9511676	12/15/1995	12/15/1995	Separate	ST-48, ST-72	DA-ST-48/72
400 KINGSLAND AVE	400 KINGSLAND AVE	BROOKLYN	9201553	5/8/1992	5/8/1992	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL GREENPOINT	400 KINGSLAND AVE	BROOKLYN	9407397	9/1/1994	9/1/1994	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	161 VARICK AVE	BROOKLYN	204630	8/1/2002	2/13/2003	Separate	NCB-629, ST-60	DA-ST-60/629
BROOKLYN TERMINAL	400 KINGSLAND AVE	BROOKLYN	308617	11/14/2003	8/31/2007	Separate	ST-90, NCB633	DA-NCB-633/90
TOWN HOUSE RESTORATIONS	58-15 49TH ST	MASPETH	8739	10/27/2000	9/15/2003	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BCF OIL	360 MASPETH AVENUE	BROOKLYN	9700680	4/15/1997	4/16/1997	Separate	ST-22	DA-ST-22
301 GREENPOINT AVE	301 GREENPOINT AVENUE	BROOKLYN	9302991	6/5/1993	6/5/1993	Separate	ST-90, NCB633	DA-NCB-633/90
KEYSPAN ENERGY	287 MASPETH AVENUE	BROOKLYN	9211562	1/7/1993	2/6/2007	Separate	ST-22	DA-ST-22
287 MASPETH AVE	287 MASPETH AVENUE	BROOKLYN	9301329	4/28/1993	12/23/2002	Separate	ST-22	DA-ST-22
MOBIL GREENPOINT	300 NORTH HENRY STREET	BROOKLYN	8801000	5/2/1988	12/3/2003	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL TERMINAL	300 NORTH HENRY STREET	BROOKLYN	9605875	8/7/1996	8/7/1996	Separate	ST-90, NCB633	DA-NCB-633/90
MENDON TRUCK LEASING	362 KINGSLAND AVE	BROOKLYN	9927	12/1/2000	12/14/2000	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK WPCP	301 GREENPOINT AVENUE	BROOKLYN	9614108	3/4/1997	7/22/2005	Separate	ST-90, NCB633	DA-NCB-633/90
362 KINGSLAND AVENUE	362 KINGSLAND AVENUE	BROOKLYN	9409862	10/24/1994	10/24/1994	Separate	ST-90, NCB633	DA-NCB-633/90
1101 METROPOLITAN AVE	1101 METROPOLITAN AVE	BROOKLYN	9800642	4/15/1998	5/17/2006	Separate	ST-56	DA-ST-56
BROOKLYN UNION GAS	287 MASPETH AVENUE	BROOKLYN	9606233	8/13/1996	10/27/1997	Separate	ST-22	DA-ST-22
CONTAINMENT DYKE	125 APOLLO STREET	BROOKLYN	9512507	1/7/1996	2/11/1996	Separate	ST-90, NCB633	DA-NCB-633/90
KEY SPAN	287 MASPETH AVENUE	BROOKLYN	4653	7/18/2000	2/24/2003	Separate	ST-22	DA-ST-22
BROOKLYN UNION	287 MASPETH AVENUE	BROOKLYN	9714234	3/24/1998	3/31/1998	Separate	ST-22	DA-ST-22
58-60 PAGE PLACE	58-60 PAGE PLACE	MASPETH	9204038	7/8/1992	7/8/1992	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BORO LUMBER COMPANY	57-57 47TH ST	MASPETH	9812248	1/4/1999	7/12/2006	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BCF OIL REFINING	360 MASPETH AVENUE	BROOKLYN	9112627	3/11/1992	9/2/2003	Separate	ST-22	DA-ST-22
DEPT OF SANITATION	459 N HENRY ST	BROOKLYN	12519	2/22/2001	NULL	Separate	ST-90, NCB633	DA-NCB-633/90
BROWNING FERRIS INDUSTRIE	72 SCOTT AVENUE	BROOKLYN	9709681	11/20/1997	11/20/1997	Separate	NCB-629, ST-60	DA-ST-60/629
GREENPOINT KEY SPAN	287 MASPETH AVENUE	BROOKLYN	303442	7/2/2003	7/9/2003	Separate	ST-22	DA-ST-22
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9907560	9/23/1999	NULL	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL CO	125 APOLLO STREET	BROOKLYN	9908169	10/5/1999	6/4/2004	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL CORP	125 APOLLO STREET	BROOKLYN	9912470	1/31/2000	2/4/2000	Separate	ST-90, NCB633	DA-NCB-633/90
BP AMOCO TERMINAL	125 APOLLO STREET	BROOKLYN	200819	4/21/2002	10/21/2003	Separate	ST-90, NCB633	DA-NCB-633/90
55-05 MASPETH AVE.	55-05 MASPETH AVE.	MASPETH	9214173	3/25/1993	10/24/1997	Separate	ST-60NC, ST-54	DA-ST-60NC/54
VS9909	IFO 55-15 GRAND AV	GLENDALE	9813240	1/28/1999	6/20/2001	Separate	ST-60NC, ST-54	DA-ST-60NC/54
S&S WAREHOUSE	57-10 49TH PLACE	MASPETH	313743	3/16/2004	4/14/2004	Separate	ST-60NC, ST-54	DA-ST-60NC/54
UNNAMED	58-77 57TH ST	MASPETH	13097	3/14/2001	8/31/2001	Separate	ST-60NC, ST-54	DA-ST-60NC/54

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Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
SB 55893	200 STEWART AVE	BROOKLYN	403838	7/10/2004	10/4/2004	Separate	NCB-629, ST-60	DA-ST-60/629
NEWTOWN CREEK SEWER PLANT	301 GREENPOINT AVENUE	BROOKLYN	9700433	4/9/1997	4/9/1997	Separate	ST-90, NCB633	DA-NCB-633/90
ST. JOHN'S BERRY TRUCKING	55-90 47TH STREET	MASPETH	8909238	12/20/1989	12/29/2005	Separate	ST-60NC, ST-54	DA-ST-60NC/54
55-04 MASPETH AVE.	55-04 MASPETH AVE.	MASPETH	9208440	10/22/1992	10/23/1992	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEW PENN MOTOR EXPRESS	58-60 PAGE PLACE	MASPETH	9404838	7/8/1994	11/22/2005	Separate	ST-60NC, ST-54	DA-ST-60NC/54
CIBRO TERMINALS	1100 GRAND STREET	BROOKLYN	9007551	10/10/1990	3/25/2009	Separate	ST-56	DA-ST-56
57-00 47TH ST	57-00 47TH ST	MASPETH	9411004	11/17/1994	11/17/1994	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9211551	12/30/1992	1/8/1993	Separate	ST-90, NCB633	DA-NCB-633/90
GREENPOINT FACILITIES	MASPETH AVE	MASPETH	400976	4/28/2004	4/29/2004	Separate	ST-60NC, ST-54	DA-ST-60NC/54
AMOCO TERMINAL	125 APOLLO STREET	BROOKLYN	9710726	12/19/1997	12/19/1997	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO	125 APOLLO STREET	BROOKLYN	9814813	3/13/1999	3/4/2003	Separate	ST-90, NCB633	DA-NCB-633/90
AMOCO OIL COMPANY	125 APOLLO STREET	BROOKLYN	9909542	11/5/1999	12/2/1999	Separate	ST-90, NCB633	DA-NCB-633/90
VAULT 4492	71 GARDNER AVENUE	BROOKLYN	201920	5/22/2002	1/12/2004	Separate	NCB-629, ST-60	DA-ST-60/629
BP	125 APOLLO STREET	BROOKLYN	7620	9/28/2000	10/28/2003	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	125 APOLLO STREET	BROOKLYN	10286	12/13/2000	11/25/2002	Separate	ST-90, NCB633	DA-NCB-633/90
369 KINGSLAND AVE/BKLYN	369 KINGSLAND AVE	BROOKLYN	8710667	3/22/1988	9/2/1988	Separate	ST-90, NCB633	DA-NCB-633/90
4929 MASPETH AVE	4929 MASPETH AVE	MASPETH	9609180	10/22/1996	2/22/2007	Separate	ST-60NC, ST-54	DA-ST-60NC/54
575 SCHOLES ST/B'KLYN/JLJ	575 SCHOLES ST	BROOKLYN	8707214	11/21/1987	11/21/1987	Separate	NCB-629, ST-60	DA-ST-60/629
CASILINO CONTRACTING	160 STEWART AVE	BROOKLYN	9705382	8/4/1997	8/4/1997	Separate	NCB-629, ST-60	DA-ST-60/629
56-05 GRAND AVENUE	56-05 GRAND AVENUE	MASPETH	9404494	6/30/1994	10/23/1995	Separate	ST-60NC, ST-54	DA-ST-60NC/54
KEY SPAN GREENPOINT OPER	287 MASPETH AVENUE	BROOKLYN	202908	6/19/2002	3/13/2003	Separate	ST-22	DA-ST-22
57-48 49TH AVE	57-48 49TH AVE	MASPETH	9212198	1/26/1993	1/26/1993	Separate	ST-60NC, ST-54	DA-ST-60NC/54
METRO DEMOLISSION	55-14 GRAND AV	MASPETH	9814262	12/1/1998	7/18/2003	Separate	ST-60NC, ST-54	DA-ST-60NC/54
49-40 MASPETH AVE/PRESTON	49-40 MASPETH AVE/PRESTON	MASPETH	9104393	7/23/1991	8/2/1991	Separate	ST-60NC, ST-54	DA-ST-60NC/54
RICHTER & RATNER	55-05 FLUSHING AVE	MASPETH	202592	6/11/2002	2/13/2003	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEW PENN MOTOR EXPRESS	4050 PAGE PLACE	MASPETH	9603517	6/13/1996	6/13/1996	Separate	ST-60NC, ST-54	DA-ST-60NC/54
430 MASPETH AVE.	430 MASPETH AVE	BROOKLYN	9206929	9/9/1992	7/3/1997	Separate	ST-22	DA-ST-22
UNNAMED	57-01 49TH ST	MASPETH	8710202	3/5/1988	9/3/2003	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MASPETH AVE & VANDERVOORT	MASPETH AVE & VANDERVOORT	BROOKLYN	9313045	2/3/1994	2/3/1994	Separate	ST-22	DA-ST-22
UNNAMED	333 N. HENRY ST	BROOKLYN	202567	6/10/2002	12/30/2003	Separate	ST-90, NCB633	DA-NCB-633/90
FLEET AUTO CARE CTR	56-20 GRAND AVE	MASPETH	9708060	10/8/1997	NULL	Separate	ST-60NC, ST-54	DA-ST-60NC/54
59-01 55TH ST	59-01 55TH STREET	MASPETH	300078	4/2/2003	8/21/2006	Separate	ST-60NC, ST-54	DA-ST-60NC/54
287 MASPETH AVE/GREENPOINT	287 MASPETH AVE/GREENPT	BROOKLYN	9111530	2/6/1992	11/22/1994	Separate	ST-22	DA-ST-22
57-47 47TH STREET	57-47 47TH ST	MASPETH	8803169	7/12/1988	10/2/1992	Separate	ST-60NC, ST-54	DA-ST-60NC/54
330 CALYER ST.	330 CALYER STREET	BROOKLYN	9401962	5/10/1994	4/30/1998	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	1049 GRAND STREET	BROOKLYN	9904857	7/23/1999	8/29/2003	Separate	ST-56	DA-ST-56
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	304007	7/16/2003	7/17/2003	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	329 GREENPORT AVE	BROOKLYN	206432	9/20/2002	12/8/2003	Separate	ST-90, NCB633	DA-NCB-633/90
FEDEX	300 MASPETH AVE	BROOKLYN	202804	6/17/2002	12/22/2005	Separate	ST-22	DA-ST-22
GASETERIA OIL CORP.	1049 GRAND STREET	BROOKLYN	9904871	7/23/1999	1/17/2006	Separate	ST-56	DA-ST-56
METRO AUTO SALVAGE	4600 METROPOLITAN AVE	RIDGEWOOD	330014	6/17/2003	1/5/2006	Separate	NCB-629, ST-60	DA-ST-60/629
58-51 PAGE PLACE	58-51 PAGE PLACE	MASPETH	9309803	11/12/1993	11/12/1993	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BCF OIL REFINING INC	360 MASPETH AVENUE	BROOKLYN	8910891	2/14/1990	2/16/1990	Separate	ST-22	DA-ST-22
125 APOLLO ST	125 APOLLO STREET	BROOKLYN	9710891	12/27/1997	2/25/2003	Separate	ST-90, NCB633	DA-NCB-633/90
56-25 56TH STREET	56025 56TH STREET	MASPETH	9405758	6/6/1994	8/9/1995	Separate	ST-60NC, ST-54	DA-ST-60NC/54
IN MANHOLE #71429	N HENRY ST/GREENPOINT AV	BROOKLYN	9601584	5/1/1996	2/8/2005	Separate	ST-90, NCB633	DA-NCB-633/90
59-36 56TH STREET	59-36 56TH STREET	MASPETH	9512182	12/28/1995	12/28/1995	Separate	ST-60NC, ST-54	DA-ST-60NC/54
WALLACE PACKAGING CORP	57-01 49TH ST	MASPETH	8904556	8/7/1989	3/25/1991	Separate	ST-60NC, ST-54	DA-ST-60NC/54

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Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
AMOCO GASOLINE TERMINAL	125 APOLLO STREET	BROOKLYN	9800161	4/3/1998	4/6/1998	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	301 GREENPOINT AVENUE	BROOKLYN	9809941	11/6/1998	2/13/2003	Separate	ST-90, NCB633	DA-NCB-633/90
MOBIL TERMINAL	300 NORTH HENRY STREET	BROOKLYN	9103174	6/19/1991	3/30/1995	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	8602874	8/31/1986	7/31/1986	Separate	ST-90, NCB633	DA-NCB-633/90
TONY MUGNO RES.	71-70 56TH ROAD	MASPETH	9411821	12/5/1994	12/5/1994	Separate	ST-48, ST-72	DA-ST-48/72
MOBIL TERMINAL	300 NORTH HENRY STREET	BROOKLYN	308199	11/3/2003	9/9/2009	Separate	ST-90, NCB633	DA-NCB-633/90
240-246 RANDOLPH ST	240-246 RANDOLPH ST	BROOKLYN	111503	3/3/2002	5/5/2009	Separate	NCB-629, ST-60	DA-ST-60/629
UNNAMED	42-02 56TH RD	MASPETH	302512	6/9/2003	9/27/2004	Separate	ST-48, ST-72	DA-ST-48/72
BCF OIL	360 MASPETH AVENUE	BROOKLYN	9700679	4/15/1997	9/2/2003	Separate	ST-22	DA-ST-22
FEDEX	300 MASPETH AVE	BROOKLYN	204002	7/15/2002	12/22/2005	Separate	ST-22	DA-ST-22
YELLOW FREIGHT SYSTEMS /	57-54 PAGE PLACE	MASPETH	8700031	4/1/1987	4/1/1987	Separate	ST-60NC, ST-54	DA-ST-60NC/54
UNNAMED	123 VARICK AVE	BROOKLYN	204059	7/18/2002	7/30/2002	Separate	NCB-629, ST-60	DA-ST-60/629
55-15 GRAND AVENUE	55-15 GRAND AVENUE	MASPETH	9311610	12/27/1993	9/29/1994	Separate	ST-60NC, ST-54	DA-ST-60NC/54
2 GALASSO PLACE	2 GALASSO PLACE	MASPETH	9911008	12/16/1999	12/17/1999	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MANHOLE 3800	55-15 GRAND AVE	MASPETH	107298	10/16/2001	12/28/2001	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NORAMPAC NYC / STAR CORRUGATED BOX COMP	55-15 GRAND AVE	MASPETH	8801503	5/18/1988	NULL	Separate	ST-60NC, ST-54	DA-ST-60NC/54
1 RAILROAD PL AKA	2 GALASSO PLACE	MASPETH	9713776	12/1/1996	4/8/2004	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEWTOWN CREEK, STP	301 GREENPOINT AVENUE	BROOKLYN	9411493	11/29/1994	12/2/1994	Separate	ST-90, NCB633	DA-NCB-633/90
WASTE MANAGMENT OF NY	123 VARICK AVE	BROOKLYN	9805562	8/4/1998	NULL	Separate	NCB-629, ST-60	DA-ST-60/629
NYC DEP - WPCP	329 GREENPOINT AVENUE	BROOKLYN	106038	9/5/2001	12/1/2003	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK WATER PLAN	329 GREENPOINT AVENUE	BROOKLYN	307871	10/26/2003	10/27/2003	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WPCP DEP -DDC	301 GREENPOINT AVENUE	BROOKLYN	9504909	7/21/1995	5/5/2005	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	329 GREENPOINT AVENUE	BROOKLYN	108649	11/28/2001	11/29/2001	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK TREATMENT	329 GREENPOINT AVENUE	BROOKLYN	307763	10/22/2003	10/23/2003	Separate	ST-90, NCB633	DA-NCB-633/90
FUTURE NYCT DEPOT & CMF-NYCT	48-05 GRAND AVE	MASPETH	402830	6/15/2004	6/23/2005	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MANHOLE 1080	75 ONDERDONK AVE	BROOKLYN	11822	2/1/2001	3/4/2010	Separate	NCB-629, ST-60	DA-ST-60/629
GREENPOINT	460 KINGSLAND AVENUE	BROOKLYN	9402812	5/19/1994	3/27/2009	Separate	ST-90, NCB633	DA-NCB-633/90
YELLOW FREIGHT LINE	460 KINGSLAND AVENUE	BROOKLYN	9403747	6/16/1994	12/26/2002	Separate	ST-90, NCB633	DA-NCB-633/90
100 VARICK/ENEQUIST CHEM	100 VARICK ST	BROOKLYN	9202219	5/22/1992	11/23/1994	Separate	NCB-629, ST-60	DA-ST-60/629
UNNAMED	1049 GRAND STREET	BROOKLYN	9905126	7/29/1999	8/11/2003	Separate	ST-56	DA-ST-56
125 APOLLO STREET	125 APOLLO STREET	BROOKLYN	9416525	3/21/1995	3/22/1995	Separate	ST-90, NCB633	DA-NCB-633/90
KINGSLAND AVE	GREENPOINT AVENUE	BROOKLYN	9705141	7/29/1997	1/5/2006	Separate	ST-90, NCB633	DA-NCB-633/90
369 KINGSLAND AVE/KRIEGER	369 KINGSLAND AVE/KRIEGER	BROOKLYN	9103489	6/28/1991	6/7/1995	Separate	ST-90, NCB633	DA-NCB-633/90
PHOENIX BEVERAGE	37088 REVIEW AVENUE	LONG ISLAND CITY	9412567	12/19/1994	2/28/2003	Separate	ST-48, ST-72	DA-ST-48/72
414 MASPETH	414 MASPETH	BROOKLYN	9307925	9/29/1993	9/28/1993	Separate	ST-22	DA-ST-22
WASTE MANAGEMENT	101 VARICK AVE	BROOKLYN	12799	3/3/2001	3/5/2001	Separate	NCB-629, ST-60	DA-ST-60/629
NYC TRANSIT	4805 GRAND AVE	MASSPET	411080	1/12/2005	2/22/2005	Separate	ST-60NC, ST-54	DA-ST-60NC/54
KEYSPAN COMPLEX	287 MASPETH AVENUE	BROOKLYN	413650	3/31/2005	4/4/2005	Separate	ST-22	DA-ST-22
NYC DEPT OF CONSUMER AFFA	245 MESEROLE AVE	BROOKLYN	500891	4/21/2005	8/22/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK WPCP	329 GREENPOINT AVENUE	BROOKLYN	407841	10/15/2004	1/28/2005	Separate	ST-90, NCB633	DA-NCB-633/90
BP LOADING TERMINAL	145 APOLLO STREET	BROOKLYN	410690	12/28/2004	1/25/2005	Separate	ST-90, NCB633	DA-NCB-633/90
BP - MOSF FACILITY	125 APOLLO STREET	BROOKLYN	410427	12/20/2004	1/25/2004	Separate	ST-90, NCB633	DA-NCB-633/90
STORAGE TERMINAL	125 APOLLO STREET	BROOKLYN	411426	1/21/2005	9/28/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	500990	4/23/2005	4/25/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	508162	10/8/2005	10/11/2005	Separate	ST-90, NCB633	DA-NCB-633/90
POLLUTION PLANT	329 GREENPOINT AVENUE	BROOKLYN	511797	12/6/2005	2/6/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WATER POLLU	301 GREENPOINT AVENUE	BROOKLYN	511857	1/4/2006	1/17/2006	Separate	ST-90, NCB633	DA-NCB-633/90
PEGNO/TULLY JOINT VENTURE	329 GREENPOINT AVENUE	BROOKLYN	513124	1/19/2006	2/17/2006	Separate	ST-90, NCB633	DA-NCB-633/90

Table B-4
Spills and Releases Within Newtown Creek Drainage Area

Spill Name	Spill Street	Spill City	Spill No.	Spill Date	Close Date	Type	Outfall	Drainage ID
IN PARKING LOT	364 MASPETH AVENUE	BROOKLYN	514281	3/14/2006	4/24/2006	Separate	ST-22	DA-ST-22
CONSUMER AFFAIRS	245 MESERVILL AVE	BROOKLYN	407937	10/18/2004	10/19/2004	Separate	ST-90, NCB633	DA-NCB-633/90
COMMERCIAL WAREHOUSE	51-18 GRAND AVE	MASPETH	501968	5/18/2005	NULL	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEW TOWN CREEK	329 GREENPOINT AVENUE	BROOKLYN	502697	6/6/2005	10/18/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	504567	7/17/2005	7/18/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	510252	11/29/2005	11/30/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	511191	12/25/2005	12/27/2005	Separate	ST-90, NCB633	DA-NCB-633/90
LUMBER BUSINESS	300 NORTH HENRY STREET	BROOKLYN	512276	1/23/2006	8/8/2006	Separate	ST-90, NCB633	DA-NCB-633/90
CONSTRUCTION SITE	329 GREENPOINT AVENUE	BROOKLYN	512289	1/24/2006	1/27/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK PLANT	301 GREENPOINT AVENUE	BROOKLYN	502107	5/21/2005	5/25/2005	Separate	ST-90, NCB633	DA-NCB-633/90
EMEQUIFT CHEMICAL CORP - MISC	100 VARICK AVE	BROOKLYN	502445	5/31/2005	5/31/2006	Separate	NCB-629, ST-60	DA-ST-60/629
NEWTOWN CREEK	329 GREENPOINT AVENUE	BROOKLYN	509056	10/28/2005	10/28/2005	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	600869	4/22/2006	4/24/2006	Separate	ST-90, NCB633	DA-NCB-633/90
LAURELHILL SITE	4202 56 ROAD	MASPETH	505661	8/8/2005	8/9/2005	Separate	ST-48, ST-72	DA-ST-48/72
13TH ST PUMP STATION	301 GREENPOINT AVENUE	BROOKLYN	508779	10/22/2005	10/25/2005	Separate	ST-90, NCB633	DA-NCB-633/90
WHALECREEK CANAL	329 GREENPOINT AVENUE	BROOKLYN	510498	12/7/2005	12/9/2005	Separate	ST-90, NCB633	DA-NCB-633/90
MINOR SPILL	329 GREENPOINT AVENUE	BROOKLYN	512231	1/4/2006	1/27/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK	301 GREENPOINT AVENUE	BROOKLYN	514208	3/12/2006	3/13/2006	Separate	ST-90, NCB633	DA-NCB-633/90
WASTE MANAG.	123 VARICK AVE	BROOKLYN	512331	1/24/2006	3/28/2006	Separate	NCB-629, ST-60	DA-ST-60/629
TULLY CONSTRUCTION	329 GREENPOINT AVENUE	BROOKLYN	513123	1/18/2006	2/17/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK PLANT	301 GREENPOINT AVENUE	BROOKLYN	600090	4/3/2006	4/4/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEWTOWN CREEK WPCP	329 GREENPOINT AVENUE	BROOKLYN	650058	10/13/2005	4/13/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK WPCP	301 GREENPOINT AVENUE	BROOKLYN	510010	11/21/2005	11/23/2005	Separate	ST-90, NCB633	DA-NCB-633/90
DEP WASTEWATER	329 GREENPOINT AVENUE	BROOKLYN	512132	1/6/2006	1/24/2006	Separate	ST-90, NCB633	DA-NCB-633/90
NEW TOWN CREEK WPCP	301 GREENPOINT AVENUE	BROOKLYN	510055	11/23/2005	11/23/2005	Separate	ST-90, NCB633	DA-NCB-633/90
DEP WASTEWATER	329 GREENPOINT AVENUE	BROOKLYN	512133	12/8/2005	1/24/2006	Separate	ST-90, NCB633	DA-NCB-633/90
BFI WASTE MANAGEMENT	598 SCHOLES ST	BROOKLYN	601636	5/12/2006	5/15/2006	Separate	NCB-629, ST-60	DA-ST-60/629
55-15 GRAND AVENUE	55-15 GRAND AVENUE	MASPETH	9313195	2/7/1994	9/10/2001	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEWTON CREEK PLANT	329 GREENPOINT AVENUE	BROOKLYN	601593	5/11/2006	5/12/2006	Separate	ST-90, NCB633	DA-NCB-633/90
CONSTRUCTION SITE	329 GREENPOINT AVENUE	BROOKLYN	513125	1/4/2006	2/17/2006	Separate	ST-90, NCB633	DA-NCB-633/90
DEP WASTE WATER TREATMENT	329 GREENPOINT AVENUE	BROOKLYN	514457	3/17/2006	3/17/2006	Separate	ST-90, NCB633	DA-NCB-633/90
ON THE ROAD	329 GREENPOINT AVENUE	BROOKLYN	514375	3/16/2006	3/16/2006	Separate	ST-90, NCB633	DA-NCB-633/90
CATCH BASIN	46-45 METROPOLITAN AVE	RIDGEWOOD	9608137	9/30/1996	10/16/1997	Separate	NCB-629, ST-60	DA-ST-60/629
DEP FACILITY	329 GREENPOINT AVENUE	BROOKLYN	514090	3/9/2006	3/13/2006	Separate	ST-90, NCB633	DA-NCB-633/90
UNNAMED	55-15 GRAND AVE	MASPETH	12802	3/3/2001	3/5/2001	Separate	ST-60NC, ST-54	DA-ST-60NC/54
250 MASPETH AVE	250 MASPETH AVE	BROOKLYN	9301340	4/28/1993	4/28/1993	Separate	ST-22	DA-ST-22
NEW TOWN CREEK WATER POLL	329 GREENPOINT AVENUE	BROOKLYN	407835	10/14/2004	10/19/2004	Separate	ST-90, NCB633	DA-NCB-633/90
ROADWAY	287 MASPETH AVENUE	BROOKLYN	506134	8/18/2005	8/18/2005	Separate	ST-22	DA-ST-22
DEP WASTEWATER	329 GREENPOINT AVENUE	BROOKLYN	512131	12/20/2005	1/24/2006	Separate	ST-90, NCB633	DA-NCB-633/90
MINOR SPILL	329 GREENPOINT AVENUE	BROOKLYN	512232	1/3/2006	1/27/2006	Separate	ST-90, NCB633	DA-NCB-633/90

Notes:
NA - not applicable
NULL - no close date is listed
Combined - combined sewer
Separate - separate storm sewer
Other - drainage type other than combined or separate storm sewer

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
ROEHR CHEMICALS INC. (DIV. OF ACETO CORP.)	2-000014	CBS	Long Island City	Unregulated	NA	Combined	BB-026	DA-BB-026
GRAND CHROMIUM PLATING CORP.	2-000040	CBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
RONBAR LABORATORIES INC.	2-000069	CBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-004	DA-BB-004
COCA COLA BOTTLING COMPANY OF NEW YORK, INC.	2-000095	CBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
BARKER BROS. INC.	2-000125	CBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
BUCKINGHAM WAX CO., INC.	2-000154	CBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
ANTHONY CONCRETE	2-000181	CBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-040	DA-BB-040
MOTIVA ENTERPRISES LLC	2-000209	CBS	BROOKLYN	Active	2010/11/30	Combined	NCB-021	DA-NCB-021
LIBERTY BRASS TURNING CO INC	2-000226	CBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
BASIC ADHESIVES INC	2-000228	CBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
FRESH POND DEPOT	2-000285	CBS	QUEENS	Active	2011/08/11	Combined	NC-077	DA-NC-077
COCA-COLA BOTTLING CO. OF NEW YORK, INC.	2-000299	CBS	MASPETH	Active	2012/03/07	Combined	NC-077	DA-NC-077
DUANE READE DISTRIBUTION CENTER	2-000392	CBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
PARTS ARE US D/B/A A & G USED AUTO PARTS	2-000427	CBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
AFFORDABLE USED AUTO PARTS, INC.	2-000440	CBS	BROOKLYN	Unregistered	NA	Combined	NC-083	DA-NC-083
NUHART & COMPANY	2-000444	CBS	BROOKLYN	Unregulated	NA	Combined	NCB-023	DA-NCB-023
NYC DEPT CENTRAL REPAIR FACILITY	2-000459	CBS	LONG ISLAND CITY	Active	2011/07/03	Combined	BB-010	DA-BB-010
MORGAN OIL TERMINALS CORP.	2-1500	MOSF	BROOKLYN	Inactive	NA	Combined	NC-015	DA-NC-015
QUANTA RESOURCES	2-1920	MOSF	LONG ISLAND CITY	Inactive	NA	Combined	BB-010	DA-BB-010
DITMAS OIL-LONG ISLAND CITY	2-2020	MOSF	LONG ISLAND CITY	Inactive	NA	Combined	BB-013	DA-BB-013
GEORGES CARRIERS, INC	2-000744	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
CROWN FINISHING	2-004421	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
F & M AUTO REPAIRS, INC.	2-004537	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
PATENT CONSTRUCTION SYSTEMS	2-005347	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-040	DA-BB-040
ROEHR CHEMICALS INC	2-005398	PBS	Long Island City	Unregulated	NA	Combined	BB-011	DA-BB-011
UNIVERSAL ELECTRIC SIGN CO INC	2-007587	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
37-16 QUEENS BLVD	2-010634	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
NATIONAL COMPRESSOR EXCHANGE	2-010685	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
FORBEE BROS CORP	2-010723	PBS	BROOKLYN	Unregulated	NA	Combined	NC-083	DA-NC-083
DIALIGHT CORPORATION	2-010804	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
CIRCULINE FABRICS	2-010847	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
F & I TRUCKING CORP	2-016055	PBS	BROOKLYN	Active	2007/10/23	Combined	NC-015	DA-NC-015
MASPETH CONCRETE LOADING CORP	2-016160	PBS	RIDGEWOOD	Active	2015/01/11	Combined	NC-077	DA-NC-077
BARKER BROS	2-016209	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
BULL CONSULTING INC D/B/A SHELL-VAN DAM	2-017485	PBS	LONG ISLAND CITY	Active	2009/08/10	Combined	BB-009	DA-BB-009
FRAZIER BROS.INC	2-017531	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
T & A AUTO REPAIRS	2-017612	PBS	LONG ISLAND CITY	Active	2012/10/23	Combined	BB-013	DA-BB-013
62-52 METROPOLITAN AVE GAS CORP	2-032514	PBS	MIDDLE VILLAGE	Active	2012/10/29	Combined	NC-077	DA-NC-077
MACK TRUCKS, INC	2-032719	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
L.K. COMSTOCK & COMPANY INC	2-032832	PBS	MASPETH	Unregulated	NA	Combined	NC-029	DA-NC-029
THE MUSEUM OF MODERN ART	2-032905	PBS	LONG ISLAND CITY	Active	2015/02/01	Combined	BB-026	DA-BB-026
ACCO USA,INC.	2-032913	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
PORTER AVENUE TRANSITIONAL RESIDENCE	2-032921	PBS	Brooklyn	Administratively Closed	NA	Combined	NC-015	DA-NC-015
TRU-TONE METAL PRODUCTS INC	2-034517	PBS	BROOKLYN	Active	2012/08/28	Combined	NC-015	DA-NC-015
43-22 54TH AVE	2-034533	PBS	MASPETH	Unregulated	NA	Combined	NC-029	DA-NC-029
JAMAICA GARAGE CORP.	2-035068	PBS	GLENDALE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
GIMBELS L I C WAREHOUSE	2-043796	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-026	DA-BB-026
COCA-COLA BOTTLING CO. OF N.Y.	2-044172	PBS	MASPETH	Active	2011/12/30	Combined	NC-077	DA-NC-077
WYCKOFF REALTY	2-044350	PBS	BROOKLYN	Active	2011/12/30	Combined	NC-015	DA-NC-015
IDEAL TRADING CO.	2-045128	PBS	LONG ISLAND CITY	Active	2011/12/30	Combined	BB-026	DA-BB-026
TRIBORO PLATERS INC	2-045403	PBS	MASPETH	Active	1996/12/02	Combined	NC-029	DA-NC-029
NATIONAL COMPRESSOR EXCHANGE	2-045411	PBS	RIDGEWOOD	Active	2006/12/02	Combined	NC-083	DA-NC-083
1209 BUSHWICK AVENUE	2-046205	PBS	BROOKLYN	Active	2006/12/02	Combined	NC-015	DA-NC-015
PLAZA HUNTER REALTY CO	2-046736	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
1615 PUTNAM AVE	2-046841	PBS	RIDGEWOOD	Active	2011/12/02	Combined	NC-083	DA-NC-083
GREENPOINT APT. CORP.	2-047090	PBS	SUNNYSIDE	Active	2011/12/02	Combined	BB-009	DA-BB-009
J K SERVICE STATION	2-047198	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
SLATERRY SKANSKA, INC.	2-047244	PBS	MASPETH	Active	2011/12/02	Combined	NC-029	DA-NC-029
A M KNITWEAR CORP	2-047430	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
SKILLMAN SERVICE STATION	2-054925	PBS	NEW YORK	Unregulated	NA	Combined	BB-026	DA-BB-026
41-07 CONDOMINIUM	2-061271	PBS	SUNNYSIDE	Active	2014/04/01	Combined	BB-026	DA-BB-026
HILLS TRADING CORP.	2-061301	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
WALDNER'S BUSINESS ENVIRONMENTS, INC	2-061395	PBS	LONG ISLAND CITY	Active	2012/01/14	Combined	BB-009	DA-BB-009
1230-1332 HALSEY ST	2-061514	PBS	BROOKLYN	Active	2014/02/23	Combined	NC-015	DA-NC-015
KARL EHMER PORK STORES	2-062103	PBS	RIDGEWOOD	Active	2013/09/29	Combined	NC-077	DA-NC-077
NATIONAL BRAID MANUFACTURING CORP.	2-062871	PBS	LONG ISLAND CITY	Active	2012/01/14	Combined	BB-009	DA-BB-009
MANHATTAN WIRE GOODS CO INC	2-064238	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
ADS METAL PRODUCTS CO INC	2-065099	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
47-17 39TH STREET	2-069434	PBS	SUNNYSIDE	Active	2011/11/26	Combined	BB-026	DA-BB-026
CORNELL BEVERAGES INC	2-069787	PBS	BROOKLYN	Active	2012/01/14	Combined	NC-015	DA-NC-015
45-26 39TH PLACE	2-069914	PBS	SUNNYSIDE	Unregulated	NA	Combined	BB-026	DA-BB-026
MEAD TRUCK RENTING CORP	2-070785	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
M & S SHILLMAN INC	2-080543	PBS	NEW YORK	Administratively Closed	NA	Combined	NC-015	DA-NC-015
EARL REALTY CORP	2-081922	PBS	LONG ISLAND CITY	Active	2007/03/24	Combined	BB-026	DA-BB-026
EARL REALTY CORP	2-081930	PBS	LONG ISLAND CITY	Active	2007/03/24	Combined	BB-026	DA-BB-026
EARL REALTY CORP	2-081949	PBS	LONG ISLAND CITY	Active	2007/03/24	Combined	BB-026	DA-BB-026
TREK REALTY L.L.C.	2-081957	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
TREK REALTY LLC	2-081965	PBS	LONG ISLAND CITY	Active	2012/03/24	Combined	BB-026	DA-BB-026
JERRILINE HOLDING CORP	2-081973	PBS	LONG ISLAND CITY	Active	2012/03/24	Combined	BB-026	DA-BB-026
JERRILINE HOLDING CORP	2-082007	PBS	LONG ISLAND CITY	Active	2012/03/24	Combined	BB-026	DA-BB-026
BRUNTEL REALTY CORP	2-082015	PBS	LONG ISLAND CITY	Active	2007/03/24	Combined	BB-026	DA-BB-026
BRUNTEL REALTY CORP	2-082023	PBS	LONG ISLAND CITY	Active	2007/03/24	Combined	BB-026	DA-BB-026
30-40 48TH AVE	2-082120	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
PRESIDENT PARK INC	2-082252	PBS	BROOKLYN	Active	2015/05/19	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
GLENLU REALTY CORP INC	2-082333	PBS	GLENDALE	Active	2007/03/24	Combined	NC-083	DA-NC-083
29-05 REVIEW AVE	2-082627	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-010	DA-BB-010
BUSHWICK IRON & STEEL CO INC	2-082686	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
GREENPOINT HOTEL	2-083526	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
40 INGRAHAM ST	2-083879	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
ACCESS SELF STORAGE	2-083887	PBS	LONG ISLAND CITY	Active	2012/10/22	Combined	BB-010	DA-BB-010
45-06 39TH PLACE REALTY CORP.	2-085154	PBS	LONG ISLAND CITY	Active	2011/04/03	Combined	BB-026	DA-BB-026
GLEN BAY REALTY CORP	2-085170	PBS	GLENDALE	Active	2012/03/24	Combined	NC-083	DA-NC-083
NEO-RAY PRODUCTS INC	2-085308	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
F & M AUTO REPAIRS, INC.	2-085588	PBS	GLENDALE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
45-54 39TH PL	2-089699	PBS	SUNNYSIDE	Active	2011/12/26	Combined	BB-026	DA-BB-026
45-55 39TH STREET	2-089966	PBS	SUNNYSIDE	Active	2012/03/24	Combined	BB-026	DA-BB-026
NONE	2-089974	PBS	RIDGEWOOD	Administratively Closed	NA	Combined	NC-083	DA-NC-083
KEYSTONE IRON & WIRE WORKS, INC.	2-090190	PBS	LONG ISLAND CITY	Active	2012/03/24	Combined	BB-014	DA-BB-014
21-07 BORDEN AVE	2-090212	PBS	LONG ISLAND CITY	Active	2012/03/24	Combined	BB-010	DA-BB-010
MOUNT CARMEL CEMETERY ASSOCIATES	2-090441	PBS	GLENDALE	Active	2012/07/20	Combined	NC-083	DA-NC-083
STATE REALTY CO	2-090581	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
RIDGEWOOD GARDENS BLDG. 4	2-091081	PBS	MASPETH	Active	2012/03/24	Combined	NC-077	DA-NC-077
METAL COLORS CORP	2-091103	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
X NOROC REALTY INC	2-091995	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
FREED TRANSFORMER CO INC	2-092029	PBS	RIDGEWOOD	Active	1992/07/07	Combined	NC-083	DA-NC-083
VPG AUTO REPAIRS, INC.	2-092517	PBS	QUEENS VILLAGE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
WILLOUGHBY REHAB AND HEALTH CARE CENTER	2-093874	PBS	BROOKLYN	Active	2012/05/07	Combined	NC-015	DA-NC-015
DUANE READE DISTRIBUTION CENTER	2-094080	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
476 INDUSTRIES	2-095206	PBS	BROOKLYN	Active	2007/05/07	Combined	NC-015	DA-NC-015
SIMSMETAL EAST LLC	2-095354	PBS	LONG ISLAND CITY	Active	2012/01/04	Combined	BB-011	DA-BB-011
41-09 41ST ST	2-095974	PBS	SUNNYSIDE	Active	2012/05/07	Combined	BB-026	DA-BB-026
47-51 40TH STREET	2-096091	PBS	SUNNYSIDE	Active	2012/05/07	Combined	BB-009	DA-BB-009
RIDGEWOOD GARDENS, BLDG. 2	2-096229	PBS	MASPETH	Active	2012/05/07	Combined	NC-077	DA-NC-077
RIDGEWOOD GARDENS ASSOCIATION, INC.	2-096237	PBS	MASPETH	Active	2012/05/07	Combined	NC-077	DA-NC-077
41-42 40TH ST	2-096784	PBS	LONG ISLAND CITY	Active	2012/05/07	Combined	BB-026	DA-BB-026
RIDGEWOOD GARDENS	2-097136	PBS	MASPETH	Active	2012/05/07	Combined	NC-077	DA-NC-077
KOREA CENTRAL DAILY NEWS INC	2-097233	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
41-48 40TH ST	2-097365	PBS	LONG ISLAND CITY	Active	2012/05/07	Combined	BB-026	DA-BB-026
JOYVA CORP.	2-098043	PBS	BROOKLYN	Active	2012/05/07	Combined	NC-015	DA-NC-015
575 HANOCK STREET	2-098957	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
NEW YORK PUBLIC LIBRARY	2-100560	PBS	LONG ISLAND CITY	Active	2011/12/27	Combined	BB-026	DA-BB-026
INTERNATIONAL FINE FOODS INC	2-106836	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-009	DA-BB-009
SUREWAY WORLDWIDE	2-106844	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
60-40 MADISON ST	2-107425	PBS	RIDGEWOOD	Active	2012/03/24	Combined	NC-077	DA-NC-077
60-30 MADISON ST	2-107433	PBS	RIDGEWOOD	Active	2012/03/24	Combined	NC-077	DA-NC-077
95 EVERGREEN ASSOCIATES	2-108480	PBS	BROOKLYN	Active	2012/06/05	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
416 HIMROD ST	2-108642	PBS	BROOKLYN	Active	2007/06/05	Combined	NC-083	DA-NC-083
BROCHO V'HATZLOCHO COMPANY	2-108693	PBS	BROOKLYN	Active	2013/09/25	Combined	NC-015	DA-NC-015
1451 ASSOC	2-110213	PBS	BROOKLYN	Active	2012/05/07	Combined	NC-015	DA-NC-015
DANIEL HALE WILLIAMS ASSOC	2-110256	PBS	BROOKLYN	Active	2012/05/07	Combined	NC-015	DA-NC-015
JOE VEE CONTRACTING CO	2-113832	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
OUR LADY OF MIRACULOUS MEDAL SCHOOL	2-114839	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
OUR LADY OF MIRACULOUS MEDAL	2-114847	PBS	RIDGEWOOD	Active	1997/08/28	Combined	NC-077	DA-NC-077
GREENWICH LEASING LTD LIABILITY COMP	2-115207	PBS	LONG ISLAND	Active	2012/05/07	Combined	BB-009	DA-BB-009
FORD LEASING PROPERTY LLC	2-115258	PBS	QUEENS	Active	2012/05/07	Combined	BB-009	DA-BB-009
CAMBRIDGE LEASING PROPERTY LLC	2-115371	PBS	LONG ISLAND CITY	Active	2012/05/07	Combined	BB-009	DA-BB-009
MBA LONG ISLAND CITY	2-116211	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
MATSIL BROS INC	2-116882	PBS	LONG ISLAND CITY	Active	2012/06/05	Combined	BB-009	DA-BB-009
356 SUMPTER STREET	2-117099	PBS	BROOKLYN	Active	2006/08/21	Combined	NC-015	DA-NC-015
ANOROC REALTY, LLC	2-117277	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-015	DA-BB-015
MILAHM KNITTING MILL INC	2-117404	PBS	RIDGEWOOD	Active	2002/06/05	Combined	NC-083	DA-NC-083
MATLOG REALTY CORP.	2-130559	PBS	BROOKLYN	Active	2012/05/07	Combined	NC-015	DA-NC-015
HUNTINGTON DENTAL	2-145157	PBS	LONG ISLAND CITY	Active	2003/07/13	Combined	BB-010	DA-BB-010
1544 PARK PLACE	2-145262	PBS	BROOKLYN	Active	2012/04/29	Combined	NC-015	DA-NC-015
DELIA FEGUEROA	2-145327	PBS	RIDGEWOOD	Active	2007/05/07	Combined	NC-083	DA-NC-083
GETTY SERVICE STATION #342	2-145882	PBS	GLENDALE	Active	2014/04/08	Combined	NC-083	DA-NC-083
GETTY 564	2-147001	PBS	BROOKLYN	Active	2007/05/06	Combined	NC-015	DA-NC-015
432 SUYDAM STREET	2-147818	PBS	BROOKLYN	Active	2014/11/01	Combined	NC-015	DA-NC-015
41-19 41 STREET	2-149721	PBS	SUNNYSIDE	Active	2012/08/17	Combined	BB-026	DA-BB-026
47 AVENUE REALTY CORPORATION	2-149748	PBS	SUNNYSIDE	Active	2012/10/24	Combined	BB-026	DA-BB-026
OBHA REALTY CORP.	2-149756	PBS	LONG ISLAND CITY	Active	2007/06/18	Combined	BB-013	DA-BB-013
BORDEN INDUSTRIAL LLC	2-149780	PBS	LONG ISLAND CITY	Active	2011/01/13	Combined	BB-043	DA-BB-043
H & G REALTY CO	2-150371	PBS	SUNNYSIDE	Active	2012/06/18	Combined	BB-026	DA-BB-026
CARLDAN APTS II	2-150428	PBS	WOODSIDE	Active	2013/06/27	Combined	BB-009	DA-BB-009
PROSPECT PL ASSOC	2-150800	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ST MARKS ASSOC	2-150819	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
J & N ASSOC	2-150827	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
J & N ASSOC	2-150835	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
DUPONT ASSOC	2-150843	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
GETTY 219	2-151424	PBS	LONG ISLAND CITY	Active	2014/06/08	Combined	BB-009	DA-BB-009
45-36 39TH PLACE	2-153060	PBS	SUNNYSIDE	Active	2012/08/26	Combined	BB-026	DA-BB-026
47-25 40TH ST	2-153079	PBS	SUNNYSIDE	Active	2012/08/26	Combined	BB-009	DA-BB-009
47-39 40TH STREET	2-153087	PBS	SUNNYSIDE	Active	2012/08/26	Combined	BB-009	DA-BB-009
60-52/72 MADISON ST	2-153516	PBS	RIDGEWOOD	Active	2012/08/24	Combined	NC-077	DA-NC-077
NOVELTY CRYSTALCORP	2-153613	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
CAMBRIDGE	2-154091	PBS	SUNNYSIDE	Active	2012/06/05	Combined	BB-026	DA-BB-026
OXFORD	2-154113	PBS	SUNNYSIDE	Active	2012/06/05	Combined	BB-026	DA-BB-026
GETTY NO. 58007	2-154776	PBS	GLENDALE	Active	2014/04/01	Combined	NC-083	DA-NC-083

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
45-44 42ND STREET	2-155187	PBS	SUNNYSIDE	Active	2012/08/28	Combined	BB-026	DA-BB-026
33-02/20 48TH AVE OWNERS	2-155330	PBS	LONG ISLAND CITY	Active	2007/10/15	Combined	BB-026	DA-BB-026
MOBIL R/S #10678	2-156612	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
MOBIL S/S 17-GGJ AL'S S/S	2-156620	PBS	MIDDLE VILLAGE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
MOBIL R/S #11553	2-156647	PBS	LONG ISLAND CITY	Active	2012/10/29	Combined	BB-026	DA-BB-026
VINGIELLO & VINGIELLO SERVICE STATION	2-156787	PBS	GLENDALE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
MOBIL R/S #11198	2-157015	PBS	MASPETH	Active	2012/10/29	Combined	NC-077	DA-NC-077
NORTHSIDE HOLDINGS LLC	2-158569	PBS	BROOKLYN	Active	2009/05/24	Combined	NC-015	DA-NC-015
STIVANELLO COSTUME CO INC	2-158593	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
JOSEPH CRACHHIOLO	2-158860	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-083	DA-NC-083
CROYDON MANOR APT. CORP.	2-159018	PBS	SUNNYSIDE	Active	2012/06/05	Combined	BB-026	DA-BB-026
42-05 48TH AVE	2-159107	PBS	WOODSIDE	Active	2012/08/26	Combined	BB-009	DA-BB-009
ALLIED BRONZE CORP	2-159360	PBS	LONG ISLAND CITY	Active	2007/08/26	Combined	BB-040	DA-BB-040
41-08 43 ST	2-159735	PBS	SUNNYSIDE	Active	2012/07/10	Combined	BB-026	DA-BB-026
47 AVENUE MANOR, INC.	2-159743	PBS	SUNNYSIDE	Active	2012/11/16	Combined	BB-026	DA-BB-026
47-37 45 ST	2-187585	PBS	WOODSIDE	Active	2012/06/05	Combined	BB-009	DA-BB-009
TIGERS PLACE INC 7379	2-188786	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
CROSSTOWN BUS DEPOT	2-190306	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-023	DA-NCB-023
SHELL SERVICE STATION	2-190411	PBS	BROOKLYN	Active	2013/09/20	Combined	NC-015	DA-NC-015
BROTHERS SHELL STA	2-190535	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
BOARS HEAD PROVISION CO,INC.	2-192902	PBS	BROOKLYN	Active	1997/07/07	Combined	NC-015	DA-NC-015
ADVERTISING CRAFTSMAN CO	2-193003	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
LIC SERVICE STATION	2-194581	PBS	LONG ISLAND CITY	Active	2014/11/22	Combined	BB-009	DA-BB-009
25-19 BORDEN AVE	2-194786	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-004	DA-BB-004
48-05 VAN DAM ST	2-199370	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
SPRINT	2-199389	PBS	LONG ISLAND CITY	Active	2012/06/17	Combined	BB-009	DA-BB-009
831 MADISON STREET	2-199818	PBS	BROOKLYN	Active	2011/07/11	Combined	NC-015	DA-NC-015
ST MATTHIAS R. C. CHURCH	2-200441	PBS	RIDGEWOOD	Active	2012/10/23	Combined	NC-083	DA-NC-083
ERNEST SCHEMITSCH	2-200603	PBS	RIDGEWOOD	Active	2012/10/23	Combined	NC-083	DA-NC-083
F. M. BRUSH CO. INC.	2-201057	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
18-25 SUMMERFIELD ST	2-201936	PBS	RIDGEWOOD	Active	2013/08/11	Combined	NC-083	DA-NC-083
ERNEST BROWN	2-202983	PBS	BROOKLYN	Active	2012/07/10	Combined	NC-015	DA-NC-015
CONSOLIDATED MTA REVENUE FACILITY	2-204846	PBS	RIDGEWOOD	Active	2013/11/21	Combined	NC-077	DA-NC-077
47-05 45TH ST	2-206296	PBS	WOODSIDE	Active	2011/10/18	Combined	BB-009	DA-BB-009
QPI-XLLC	2-206423	PBS	WOODSIDE	Active	2011/10/18	Combined	BB-009	DA-BB-009
47-60 39TH PLACE	2-206563	PBS	SUNNYSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
47-36 36TH ST	2-206806	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
SHELL SERVICE STATION	2-207594	PBS	BROOKLYN	Active	2012/06/30	Combined	NC-015	DA-NC-015
KMK AUTO SERVICE INC	2-208507	PBS	QUEENS	Active	2012/08/19	Combined	NC-077	DA-NC-077
YANI REALTY	2-208914	PBS	SUNNYSIDE	Unregulated	NA	Combined	BB-026	DA-BB-026
MYRTLE 57-37 LLC	2-209910	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
ATLANTIC FEATHER & FOAM	2-210412	PBS	BROOKLYN	Active	2012/08/24	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
MYRTLE COOPER SERVICE STATION	2-213195	PBS	GLENDALE	Active	2012/08/24	Combined	NC-083	DA-NC-083
C.J. TWO BROTHERS, INC.	2-214353	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
RFX ENVELOPE	2-214884	PBS	LONG ISLAND CITY	Active	2008/01/07	Combined	BB-026	DA-BB-026
ST. MARYS HOSPITAL	2-216690	PBS	BROOKLYN	Active	2008/10/14	Combined	NC-015	DA-NC-015
104 PCT	2-217549	PBS	QUEENS	Active	2012/10/15	Combined	NC-077	DA-NC-077
NYPD 83RD PRECINCT	2-217654	PBS	BROOKLYN	Active	2012/10/15	Combined	NC-015	DA-NC-015
81ST PCT	2-217700	PBS	BROOKLYN	Active	2012/10/15	Combined	NC-015	DA-NC-015
77TH PCT	2-217719	PBS	BROOKLYN	Active	2012/10/15	Combined	NC-015	DA-NC-015
GENERAL MOTOR & TRUCK REPAIR, INC.	2-218472	PBS	LONG ISLAND CITY	Active	2015/01/01	Combined	BB-012	DA-BB-012
NEIGHBORHOOD RESTORE HDFC	2-218715	PBS	BROOKLYN	Active	2013/04/04	Combined	NC-015	DA-NC-015
AROMA CHEM INC	2-218766	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
NYC HEALTH DEPARTMENT GARAGE	2-218871	PBS	QUEENS	Administratively Closed	NA	Combined	NC-077	DA-NC-077
BUSHWICK DISTRIBUTION HEALTH CENTER	2-218928	PBS	BROOKLYN	Active	2003/01/07	Combined	NC-015	DA-NC-015
FORMER GETTY # 58073	2-219215	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
GRAND CHROMIUM PLATING CORP.	2-219258	PBS	BROOKLYN	Active	2008/03/12	Combined	NC-015	DA-NC-015
MORGO FLORIST INC	2-219479	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
BESTFORM BUILDING	2-219649	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
BRIDGEDALE, LLC	2-233404	PBS	LONG ISLAND CITY	Active	2007/07/07	Combined	BB-043	DA-BB-043
NOLL ST REALTY	2-234850	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
LINDEN HILL UNITED METHODIST CEMETERY	2-235458	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
34-02 QUEENS BLVD	2-236179	PBS	LONG ISLAND CITY	Active	2011/10/23	Combined	BB-026	DA-BB-026
KINGSBORO ADDICTION TREATMENT CENTER	2-236969	PBS	BROOKLYN	Active	2012/07/20	Combined	NC-015	DA-NC-015
SERVICE PARTY RENTAL CO INC	2-237396	PBS	BROOKLYN	Unregulated	NA	Combined	NC-083	DA-NC-083
QPII-48-16 46TH STREET LLC	2-237434	PBS	WOODSIDE	Active	2013/01/31	Combined	BB-009	DA-BB-009
18-19 SUMMERFIELD STREET	2-238783	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
SUPER II	2-240109	PBS	BROOKLYN	Active	2012/05/14	Combined	NC-015	DA-NC-015
NYS DEPT. OF TRANSPORTATION	2-241067	PBS	LONG ISLAND CITY	Active	2012/12/24	Combined	BB-042	DA-BB-042
ST NICHOLAS R C CHURCH	2-241253	PBS	BROOKLYN	Active	2007/06/30	Combined	NC-015	DA-NC-015
ST NICHOLAS H S BUILDING	2-241261	PBS	BROOKLYN	Active	2007/06/30	Combined	NC-015	DA-NC-015
EMPIRE OFFICE EQUIPMENT, INC.	2-241385	PBS	WOODSIDE	Active	2002/07/14	Combined	BB-009	DA-BB-009
43-09 47TH AVE	2-241776	PBS	SUNNYSIDE	Active	2011/10/18	Combined	BB-009	DA-BB-009
HOLY ROSARY DEVELOPER, LLC	2-242373	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
OLIVET CRESCENT S/C INC	2-242802	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
CAROL HALL	2-246034	PBS	SUNNYSIDE	Administratively Closed	NA	Combined	BB-026	DA-BB-026
EMS HEADQUARTERS	2-246131	PBS	MASPETH	Active	2013/02/03	Combined	NC-077	DA-NC-077
ST FRANCES CABRINI SCHOOL	2-246786	PBS	BROOKLYN	Active	2007/07/10	Combined	NC-015	DA-NC-015
21-21 LINDEN ST	2-246905	PBS	RIDGEWOOD	Active	2012/07/07	Combined	NC-077	DA-NC-077
HORIZON MANAGEMENT LLC	2-247049	PBS	MASPETH	Active	2012/07/07	Combined	NC-077	DA-NC-077
SUNPLACE REALTY	2-247774	PBS	LONG ISLAND CITY	Active	2012/07/07	Combined	BB-026	DA-BB-026
ST MARGARET R.C. CHURCH	2-248517	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-083	DA-NC-083
J & R ELECTRONICS INC	2-251186	PBS	MASPETH	Active	2012/06/17	Combined	NC-077	DA-NC-077
47-20 OWNERS CORPORATION	2-253642	PBS	SUNNYSIDE	Active	2012/08/24	Combined	BB-009	DA-BB-009

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
ACME CAKE CO INC	2-253782	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
CELTIC PARK	2-255114	PBS	WOODSIDE	Active	2012/07/10	Combined	BB-009	DA-BB-009
CELTIC PARK	2-255122	PBS	WOODSIDE	Active	2012/07/10	Combined	BB-009	DA-BB-009
CELTIC PARK	2-255130	PBS	WOODSIDE	Active	2012/07/10	Combined	BB-009	DA-BB-009
CELTIC PARK	2-255149	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
RIDGEWOOD YMCA	2-255572	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
GOLDEN GATE REALTY CO, LLC.	2-255823	PBS	SUNNYSIDE	Active	2013/03/31	Combined	BB-026	DA-BB-026
THE ERWIN TSCHINKEL CREDIT SHELTER TRUST	2-258008	PBS	RIDGEWOOD	Active	2008/06/24	Combined	NC-077	DA-NC-077
SHARIFA MGMT CO	2-258792	PBS	BROOKLYN	Active	2012/08/17	Combined	NC-015	DA-NC-015
JANGLA REALTY	2-258989	PBS	MASPETH	Active	2012/08/17	Combined	NC-077	DA-NC-077
72-06 69 ST	2-259403	PBS	GLENDALE	Active	2012/08/17	Combined	NC-083	DA-NC-083
ST PANCRAS R C CHURCH-SCHOOL	2-259748	PBS	GLENDALE	Active	2012/08/17	Combined	NC-083	DA-NC-083
TEXACO SERVICE STA.(14-18 FULTON SERV.INC.)	2-259799	PBS	BROOKLYN	Active	2008/08/22	Combined	NC-015	DA-NC-015
JUNIPER ELBOW CO BLDG	2-260525	PBS	MIDDLE VILLAGE	Active	2012/07/10	Combined		
HUNTERS POINT REALTY CO	2-267155	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
ECLAIR INC	2-269263	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
34-09 QUEENS BLVD	2-269484	PBS	NEW YORK	Unregulated	NA	Combined	BB-026	DA-BB-026
CAPITOL DISTRIBUTORS CORP	2-269506	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
MARK DIAGNOSTIC CENTER # 3-7080	2-269603	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
420 STOCKHOLM STREET APARTMENTS	2-270504	PBS	BROOKLYN	Active	2010/09/07	Combined	NC-083	DA-NC-083
45-25 42ND ST	2-270555	PBS	SUNNYSIDE	Active	2012/06/18	Combined	BB-026	DA-BB-026
THE ROBERT LEWIS GROUP	2-270660	PBS	GLENDALE	Active	2012/10/29	Combined	NC-077	DA-NC-077
NEW CENTURY CONSTRUCTION CORP.	2-270784	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
O C S	2-270792	PBS	LONG ISLAND CITY	Active	1992/06/18	Combined	BB-026	DA-BB-026
47-31 35 ST	2-270806	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
MODE 3	2-270814	PBS	LONG ISLAND CITY	Active	1992/06/18	Combined	BB-026	DA-BB-026
FRANK M. DEBONO CONSTRUCTION CORP.	2-270822	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
JIWON INTERNATIONAL CO.	2-270830	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
ST ALOYSIUS SCHOOL	2-271055	PBS	RIDGEWOOD	Active	2012/06/18	Combined	NC-083	DA-NC-083
MENORAH HOME AND HOSPITAL	2-271187	PBS	BROOKLYN	Active	2007/06/18	Combined	NC-015	DA-NC-015
32-69 GALE AVE	2-271993	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
ST MARGARET R.C. CHURCH	2-272175	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-083	DA-NC-083
STRAUSS DISCOUNT AUTO 424	2-273953	PBS	MIDDLE VILLAGE	Active	2014/01/22	Combined	NC-077	DA-NC-077
ST JOHN THE BAPTIST SCHOOL	2-273996	PBS	BROOKLYN	Active	2007/06/18	Combined	NC-015	DA-NC-015
47-20 40TH STREET	2-274356	PBS	SUNNYSIDE	Active	2012/06/18	Combined	BB-009	DA-BB-009
S&F SERVICE STATION INC	2-275522	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
GREENPOINT MANAGEMENT, LLC	2-275689	PBS	LONG ISLAND CITY	Active	2012/07/10	Combined	BB-009	DA-BB-009
BARBON STATION, INC.	2-275921	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
F&R HOLDING CORP	2-276065	PBS	LONG ISLAND CITY	Active	2007/07/10	Combined	BB-010	DA-BB-010
SCHWARTZ BROS REALTY	2-276170	PBS	BROOKLYN	Active	2012/07/10	Combined	NC-015	DA-NC-015
REDSTONE BLDG	2-276596	PBS	LONG ISLAND CITY	Active	2012/07/10	Combined	BB-026	DA-BB-026
21-05 LINDEN ST	2-276618	PBS	RIDGEWOOD	Active	2012/07/10	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
PEPSI-COLA/CANADA DRY	2-277010	PBS	MASPETH	Active	2011/06/29	Combined	NC-077	DA-NC-077
FRESH DIRECT PROPERTY HOLDINGS, INC.	2-277894	PBS	LONG ISLAND CITY	Active	2012/07/14	Combined	BB-013	DA-BB-013
SUNNY SIDE 47-21, LLC	2-279323	PBS	SUNNYSIDE	Active	2012/03/01	Combined	BB-009	DA-BB-009
SUNNYSIDE 45-42 LLC	2-279463	PBS	SUNNYSIDE	Active	2012/03/01	Combined	BB-026	DA-BB-026
651 MADISON	2-279544	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
BK PROPERTY THREE, LLC	2-279994	PBS	SUNNYSIDE	Active	2012/02/16	Combined	BB-026	DA-BB-026
48-53 44TH STREET	2-280321	PBS	QUEENS	Active	2012/03/01	Combined	BB-009	DA-BB-009
43-23 40TH ST	2-280968	PBS	SUNNYSIDE	Active	2011/10/18	Combined	BB-026	DA-BB-026
MASPETH SIGN SHOP	2-281409	PBS	MASPETH	Active	2014/02/28	Combined	NC-077	DA-NC-077
OUR LADY OF LOURDES RECTORY	2-281999	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
SRENIK INC.	2-282545	PBS	BROOKLYN	Active	2015/01/01	Combined	NC-015	DA-NC-015
60-29 CATALPA AVE	2-282685	PBS	RIDGEWOOD	Active	2012/07/14	Combined	NC-083	DA-NC-083
613 GRANDVIEW AVE	2-282693	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
42 STREET REALTY LLC	2-284351	PBS	SUNNYSIDE	Active	2012/07/14	Combined	BB-026	DA-BB-026
SAUL NIXON	2-285846	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
ST RAPHAEL SCHOOL	2-286443	PBS	LONG ISLAND CITY	Active	2012/07/20	Combined	BB-009	DA-BB-009
60-73 GATES AVE	2-286672	PBS	RIDGEWOOD	Active	2012/07/20	Combined	NC-077	DA-NC-077
ZEV BAUM LLC	2-287318	PBS	BROOKLYN	Active	2013/12/10	Combined	NC-015	DA-NC-015
COOPER AVENUE GAS CORP.	2-287334	PBS	GLENDALE	Active	2015/02/03	Combined	NC-083	DA-NC-083
JULIA GRAY LTD	2-287415	PBS	LONG ISLAND CITY	Active	2013/09/05	Combined	BB-026	DA-BB-026
PELLA REALTY CORP.	2-287466	PBS	BROOKLYN	Active	2008/09/02	Combined	NC-015	DA-NC-015
CAVALIER REALTY LLC	2-287776	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
EMKAY REALTY CO., LLC.	2-289094	PBS	SUNNYSIDE	Active	2013/01/07	Combined	BB-009	DA-BB-009
SITA FINISHING	2-289663	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
LYNN-GREEN CORP	2-289671	PBS	BROOKLYN	Active	1992/08/24	Combined	NC-015	DA-NC-015
BMF ASSOCIATES, L.L.C.	2-289701	PBS	SUNNYSIDE	Active	2012/08/24	Combined	BB-026	DA-BB-026
43-39 41 ST	2-294853	PBS	SUNNYSIDE	Active	2007/07/14	Combined	BB-026	DA-BB-026
RIDGEWOOD CHAPELS INC	2-296465	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
CO-STAR CONSTRUCTION, INC.	2-296996	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
364 SUMPTER STREET	2-297216	PBS	BROOKLYN	Active	2006/08/21	Combined	NC-015	DA-NC-015
HESS 32522	2-297410	PBS	BROOKLYN	Active	2015/05/23	Combined	NC-015	DA-NC-015
HESS 32528	2-297569	PBS	BROOKLYN	Active	2015/05/23	Combined	NC-015	DA-NC-015
HESS 32512	2-297690	PBS	LONG ISLAND CITY	Active	2015/05/23	Combined	BB-026	DA-BB-026
45-54 41ST ST	2-303429	PBS	LONG ISLAND CITY	Active	2012/08/24	Combined	BB-026	DA-BB-026
47-50 41ST ST	2-303763	PBS	LONG ISLAND CITY	Active	2012/07/14	Combined	BB-009	DA-BB-009
29-01 BORDEN REALTY CO. LLC	2-304263	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-010	DA-BB-010
GIUSEPPE DIMAGGIO	2-305405	PBS	RIDGEWOOD	Active	2014/02/11	Combined	NC-077	DA-NC-077
CORMEN ENTERPRISES INC.	2-305596	PBS	WILLIAMSBURG	Active	2012/11/18	Combined	NC-015	DA-NC-015
HANDY BUTTON MACHINE CO	2-305774	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
48-21 OWNERS CORP	2-305960	PBS	SUNNYSIDE	Active	2012/07/14	Combined	BB-009	DA-BB-009
1417 PROSPECT PLACE	2-306312	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
40 STREET LLC	2-309621	PBS	SUNNYSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
GETTY 58073	2-309788	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
COSMOPOLITAN ASSOC LLC HOUSE 6	2-310743	PBS	WOODSIDE	Active	2012/08/17	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 5	2-310751	PBS	WOODSIDE	Active	2012/08/17	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC - HOUSE 26	2-310956	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC- HOUSE 25	2-310964	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC - HOUSE 24	2-310972	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOCIATES LLC - HOUSE 23	2-310980	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 16	2-310999	PBS	WOODSIDE	Active	2012/10/29	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 15	2-311006	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN-HOUSE 14	2-311014	PBS	WOODSIDE	Active	2013/08/23	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 13	2-311022	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOCIATES LLC HOUSE 12	2-311030	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 11	2-311049	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 10	2-311057	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN AASOC LLC HOUSE 9	2-311065	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 8	2-311073	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 7	2-311081	PBS	WOODSIDE	Active	2012/10/15	Combined	BB-009	DA-BB-009
GP-UHAB HDFC	2-312037	PBS	BROOKLYN	Active	2015/07/19	Combined	NC-015	DA-NC-015
CHARLES LEONARD INC	2-316105	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
WYCKOFF HEIGHTS MEDICAL CENTER	2-316113	PBS	BROOKLYN	Active	2012/07/10	Combined	NC-015	DA-NC-015
AVA MINA LLC	2-316679	PBS	RIDGEWOOD, QUEEN	Active	2010/07/15	Combined	NC-077	DA-NC-077
72-15 67TH STREET	2-316814	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
225 STARR ST. REALTY CORP	2-316822	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
LEE'S SERVICE STATION INC.	2-316911	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
EHRENBELL REALTY CORP	2-317160	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
HOLY ROSARY DEVELOPER, LLC	2-317519	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
HONEY FASHIONS, LTD.	2-318159	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
ST ALOYSIUS R C CHURCH	2-318272	PBS	RIDGEWOOD	Active	2007/10/02	Combined	NC-083	DA-NC-083
41-43 37TH STREET	2-318345	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
VIT REALTY	2-318353	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
LEWIS FLUSHING CORP	2-318493	PBS	FLUSHING	Unregulated	NA	Combined	NC-083	DA-NC-083
SUNNYSIDE 41, LLC	2-319007	PBS	SUNNYSIDE	Active	2013/02/28	Combined	BB-026	DA-BB-026
SUNNYSIDE 41, LLC	2-319015	PBS	SUNNYSIDE	Active	2013/02/28	Combined	BB-026	DA-BB-026
LOCAL 804 D & W EMPLOYEES	2-319430	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-010	DA-BB-010
GEBS REALTY	2-319473	PBS	SUNNYSIDE	Active	2012/10/23	Combined	BB-026	DA-BB-026
SYLVEEN REALTY CO.	2-319740	PBS	SUNNYSIDE	Active	2012/10/23	Combined	BB-009	DA-BB-009
O CRESCENT S/S/GETTY 98256	2-320862	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
SAFEGUARD SELF STORAGE	2-321257	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
STAR CANDLE COMPANY	2-321303	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
47-52 44TH ST	2-321869	PBS	WOODSIDE	Active	2013/02/03	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 30	2-321877	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 29	2-321885	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
COSMOPOLITAN ASSOCI LLC HOUSE 28	2-321893	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 27	2-321907	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
COYNE FAMILY SERV STA INC	2-321974	PBS	MASPETH	Active	2012/08/28	Combined	NC-077	DA-NC-077
JIMMY'S ECONOMY AUTO SVC INC	2-322806	PBS	MIDDLE VILLAGE	Administratively Closed	NA	Combined	NC-077	DA-NC-077
AMERICAN WOOD COLUMN CORP	2-325546	PBS	BROOKLYN	Active	2012/10/23	Combined	NC-015	DA-NC-015
JIM BASE	2-326062	PBS	SUNNYSIDE	Active	2007/10/23	Combined	BB-026	DA-BB-026
EVA-LIC REALTY ASSOC., LLC.	2-326178	PBS	LONG ISLAND CITY	Active	2009/08/25	Combined	BB-009	DA-BB-009
LA FRES FORD, INC.	2-326410	PBS	RIDGEWOOD	Active	2002/10/23	Combined	NC-083	DA-NC-083
RR DONNELLEY & SONS COMPANY	2-327085	PBS	LONG ISLAND CITY	Active	2013/01/07	Combined	BB-026	DA-BB-026
COSMOPOLITAN ASSOC LLC HOUSE 31	2-327123	PBS	WOODSIDE	Active	2012/10/02	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 32	2-327131	PBS	WOODSIDE	Active	2012/10/02	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 33	2-327158	PBS	WOODSIDE	Active	2012/10/02	Combined	BB-009	DA-BB-009
COSOMPOLITAN ASSO LLC HOUSE 34	2-327166	PBS	WOODSIDE	Active	2012/10/02	Combined	BB-009	DA-BB-009
J9-14 GATES AVE	2-327573	PBS	RIDGEWOOD	Active	2008/05/15	Combined	NC-077	DA-NC-077
JULIE ART LAMP MFG CO	2-327891	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
WEINSTOCK LAMP CO. INC.	2-327948	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
MIVIC STATION INC	2-327999	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
COSMOPOLITAN ASSOC LLC HOUSE 4	2-328030	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLCHOUSE 3	2-328049	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC - HOUSE #2	2-328057	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
COSMOPOLITAN ASSOC LLC HOUSE 1	2-328065	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
CHRIST TABERNACLE CHURCH	2-328154	PBS	GLENDALE	Active	2011/04/10	Combined	NC-083	DA-NC-083
SLAVIA STOPANJAC	2-328251	PBS	RIDGEWOOD	Active	2013/06/18	Combined	NC-077	DA-NC-077
HOUSING DEVELOPMENT FUND CORP	2-329495	PBS	BROOKLYN	Active	2012/10/23	Combined	NC-015	DA-NC-015
PROVIDENCE REALTY	2-329975	PBS	WOODSIDE	Active	2012/08/28	Combined	BB-009	DA-BB-009
116\120 GROVE STREET HDFC	2-331031	PBS	BROOKLYN	Active	2005/05/10	Combined	NC-015	DA-NC-015
946 BUSHWICK AVE	2-331147	PBS	BROOKLYN	Active	2015/04/11	Combined	NC-015	DA-NC-015
69-20 80TH ST. REALTY CO., LLC	2-332666	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-083	DA-NC-083
WILSON HAN ASSOC. INC.	2-333190	PBS	BROOKLYN	Active	2015/06/07	Combined	NC-015	DA-NC-015
FIRST NIGERIAN SEVENTH-DAY ADVENTIST CHURCH	2-333344	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
QUEENSBORO FARM PRODUCTS INC	2-333670	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
146 CLAY LLC	2-333824	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-021	DA-NCB-021
GARME EQUITIES CORP.	2-335053	PBS	RIDGEWOOD	Active	2013/10/23	Combined	NC-083	DA-NC-083
HOLY CROSS CHURCH	2-335843	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
43-15/27 33RD STREET	2-335908	PBS	LONG ISLAND CITY	Active	2011/03/29	Combined	BB-026	DA-BB-026
ST RAPHAELS CHURCH	2-336459	PBS	LONG ISLAND CITY	Active	2012/10/29	Combined	BB-009	DA-BB-009
ST RAPHAELS RECTORY	2-336467	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-009	DA-BB-009
1512 PARK PLACE REALTY	2-336564	PBS	BROOKLYN	Active	2013/10/14	Combined	NC-015	DA-NC-015
C&D SERVICE CENTER	2-336610	PBS	MASPETH	Active	2014/11/16	Combined	NC-077	DA-NC-077
CITGO GASOLINE STATION	2-336882	PBS	MASPETH	Active	2012/10/29	Combined	NC-077	DA-NC-077
AMOCO SERVICE STA #2107	2-337447	PBS	MASPETH	Active	2011/02/01	Combined	NC-077	DA-NC-077
1702 WOODBINE ST	2-338052	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
45-39 42ND STREET	2-338109	PBS	SUNNYSIDE	Active	2012/10/29	Combined	BB-026	DA-BB-026
43-16 53RD ST	2-338125	PBS	WOODSIDE	Active	2012/10/29	Combined	BB-009	DA-BB-009
41-40 40TH STREET	2-338494	PBS	SUNNYSIDE	Active	2007/10/29	Combined	BB-026	DA-BB-026
ALMAY REALTY CORP	2-339121	PBS	BROOKLYN	Active	2013/02/03	Combined	NC-015	DA-NC-015
SUNOCO #0368-2812	2-339733	PBS	LONG ISLAND CITY	Active	2012/11/16	Combined	BB-026	DA-BB-026
SUNOCO 0013-8552	2-339741	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
SUNNYSIDE CITGO #172	2-340138	PBS	LONG ISLAND CITY	Active	2014/11/22	Combined	BB-026	DA-BB-026
LEROS REALTY CORP	2-340804	PBS	BROOKLYN	Active	2003/10/14	Combined	NC-015	DA-NC-015
IDC INC.	2-340901	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-042	DA-BB-042
CYPRESS STATION, INC.	2-341967	PBS	RIDGEWOOD	Active	2012/11/16	Combined	NC-083	DA-NC-083
ST STANISLAUS CATHOLIC CHURCH/KOSTKA SCHOOL	2-342769	PBS	MASPETH	Active	2013/08/23	Combined	NC-077	DA-NC-077
PROPERTY CLERK WAREHOUSE	2-343420	PBS	LONG ISLAND CITY	Active	2009/04/21	Combined	BB-026	DA-BB-026
VERIZON NEW YORK INC.	2-344141	PBS	BROOKLYN	Unregulated	NA	Combined	NC-083	DA-NC-083
ANMAC HOLDING CORP % WOODCREST MGMT CORP	2-344184	PBS	BROOKLYN	Active	2008/12/17	Combined	NC-015	DA-NC-015
Verizon New York Inc-NY-35307	2-344400	PBS	BROOKLYN	Active	2012/12/14	Combined	NC-015	DA-NC-015
Verizon New York Inc-NY-35306	2-344435	PBS	BROOKLYN	Active	2012/12/14	Combined	NC-077	DA-NC-077
WASHINGTON IRVING	2-345091	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
DEKALB BRANCH	2-345237	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
1618 JEFFERSON AVENUE	2-346802	PBS	RIDGEWOOD	Active	2011/01/18	Combined	NC-083	DA-NC-083
ADDICTION RESEARCH AND TREATMENT CORP.	2-347507	PBS	BROOKLYN	Active	2013/02/17	Combined	NC-015	DA-NC-015
GOOD COUNSEL SRO RESIDENCE	2-347787	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
DECATUR QUEENS PROPERTIES LLC	2-347868	PBS	RIDGEWOOD	Active	2010/10/25	Combined	NC-083	DA-NC-083
OLYMPIC FLAME OIL CO	2-348201	PBS	MASPETH	Active	2013/04/19	Combined	NC-077	DA-NC-077
SATT REALTY CORP.	2-349429	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
NEW YORK WINE DISTRIBUTION INC	2-350222	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-004	DA-BB-004
EFF & ZEE COMPANY	2-350257	PBS	LONG ISLAND CITY	Active	1993/05/19	Combined	BB-026	DA-BB-026
MERRILL-COOPER TOOLS	2-350435	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
QUEENSBORO CORRECTIONAL FACILITY	2-350591	PBS	LONG ISLAND CITY	Active	2013/06/28	Combined	BB-026	DA-BB-026
AMBOY BUS CO, INC	2-350761	PBS	RIDGEWOOD	Active	2013/06/28	Combined	NC-077	DA-NC-077
AVIATION H S - (Q610)	2-352985	PBS	LONG ISLAND CITY	Active	2014/06/09	Combined	BB-026	DA-BB-026
PUBLIC SCHOOL 75 - QUEENS	2-353086	PBS	RIDGEWOOD	Active	2013/06/28	Combined	NC-083	DA-NC-083
PUBLIC SCHOOL 199 - QUEENS	2-353272	PBS	LONG ISLAND CITY	Active	2013/06/28	Combined	BB-009	DA-BB-009
PUBLIC SCHOOL 262 - BROOKLYN	2-354325	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
JUNIOR HIGH SCHOOL 57 - BROOKLYN	2-354376	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
INTERMEDIATE SCHOOL 271 - BROOKLYN	2-354384	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 274 - BROOKLYN	2-354414	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
J.H.S. 291	2-354538	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
JUNION HIGH SCHOOL 296 - BROOKLYN	2-354562	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 308 - BROOKLYN	2-354643	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 309 - BROOKLYN	2-354651	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
P.S. 274 ANNEX	2-354708	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
JUNIOR HIGH SCHOOL 93 - QUEENS	2-355127	PBS	RIDGEWOOD	Active	2013/06/28	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
INTERMEDIATE SCHOOL - 383 - BROOKLYN	2-355429	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 384 - BROOKLYN	2-355437	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
BUSHWICK HIGH SCHOOL	2-355577	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
EASTERN DISTRICT HIGH SCHOOL	2-355623	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
JUNIOR HIGH SCHOOL 324 - BROOKLYN	2-355704	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 335 - BROOKLYN	2-355755	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 377 (K)	2-355801	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 116 - BROOKLYN	2-355925	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 5 - BROOKLYN	2-356034	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 21 - BROOKLYN	2-356085	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 26 - BROOKLYN	2-356115	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 40 - BROOKLYN	2-356174	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 45 - BROOKLYN	2-356212	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 81	2-356352	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
INTERMEDIATE SCHOOL 111 - BROOKLYN	2-356425	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 299 - BROOKLYN	2-356662	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
UNITED PARCEL SERVICE	2-356735	PBS	MASPETH	Active	2013/06/28	Combined	NC-029	DA-NC-029
ENGINE COMPANY 233	2-357170	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
FDNY ENGINE 222	2-357200	PBS	BROOKLYN	Active	2013/06/28	Combined	NC-015	DA-NC-015
ENGINE COMPANY 277	2-357316	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ENGINE COMPANY 252	2-357421	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ENGINE COMPANY 237	2-357502	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
FLEET SERVICES DIVISION	2-357936	PBS	LONG ISLAND CITY	Active	2013/06/28	Combined	BB-009	DA-BB-009
ENGINE CO 286 / LADDER 135	2-357995	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
ENGINE COMPANY 259	2-358053	PBS	QUEENS	Unregulated	NA	Combined	BB-011	DA-BB-011
ENGINE COMPANY 288	2-358134	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
ENGINE COMPANY 319	2-358185	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-083	DA-NC-083
ALJO REALTY	2-359440	PBS	SUNNYSIDE	Active	2012/08/28	Combined	BB-026	DA-BB-026
NEWSDAY DIST. SYSTEMS OF AMERICA	2-359831	PBS	GLENDALE	Unregulated	NA	Combined	NC-077	DA-NC-077
1831 STARR STREET REALTY, LLC	2-360244	PBS	RIDGEWOOD	Active	2014/04/29	Combined	NC-083	DA-NC-083
STS CYRIL & METHODIOS RC SCH	2-360686	PBS	BROOKLYN	Active	2007/10/23	Combined	NCB-023	DA-NCB-023
BUCKINGHAM WAX CO INC	2-360716	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-010	DA-BB-010
45-29 42ND STREET	2-360732	PBS	SUNNYSIDE	Active	2008/01/07	Combined	BB-026	DA-BB-026
FACTORY BLDG	2-360821	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
HOLY CROSS RC SCHOOL	2-360953	PBS	MASPETH	Active	2012/10/23	Combined	NC-077	DA-NC-077
ST. BRIGID SCHOOL	2-361097	PBS	BROOKLYN	Unregulated	NA	Combined	NC-083	DA-NC-083
ST BRIGID EXTENSION SCHOOL	2-361100	PBS	BROOKLYN	Active	2012/10/23	Combined	NC-083	DA-NC-083
L I C SERVICE STATION	2-361410	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-042	DA-BB-042
ROBERT HON WING SHUM/HUI FANG SHUM	2-361593	PBS	RIDGEWOOD	Active	2014/06/28	Combined	NC-083	DA-NC-083
MILLER BAKENES CORP	2-365319	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-083	DA-NC-083
J MANHEIMER INC	2-369810	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
EMCO WOODWORKING	2-369950	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
DANO OIL INC.	2-369993	PBS	RIDGEWOOD	Administratively Closed	NA	Combined	NC-083	DA-NC-083
VAVILI REALTY LLC	2-370398	PBS	WOODSIDE	Active	2012/10/06	Combined	BB-009	DA-BB-009
BRODY TRUCK RENTAL INC	2-373281	PBS	MASPETH	Active	2014/12/07	Combined	NC-029	DA-NC-029
41-12 41TH ST OWNERS CORP.	2-373710	PBS	SUNNYSIDE	Active	2012/10/23	Combined	BB-026	DA-BB-026
CONTINENTAL BAKING CO	2-374857	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
BUCKINGHAM EQUITIES	2-374873	PBS	SUNNYSIDE	Active	2012/10/02	Combined	BB-009	DA-BB-009
JULES GOTTLIEB & G. MONCHER	2-395315	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
PILGRIM CHURCH	2-398691	PBS	BROOKLYN	Active	1992/10/06	Combined	NC-015	DA-NC-015
NORTH SHORE NEON SIGN CO.	2-399213	PBS	MASPETH	Unregulated	NA	Combined	NC-029	DA-NC-029
G C M IRON WORKS INC	2-399418	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ST ELIZABETH SETON SCHOOL	2-399590	PBS	BROOKLYN	Active	1992/10/06	Combined	NC-015	DA-NC-015
47-44 31ST STREET	2-400300	PBS	LONG ISLAND CITY	Active	2006/02/12	Combined	BB-026	DA-BB-026
32-02 QUEENS BLVD	2-401544	PBS	LONG ISLAND CITY	Active	2012/10/06	Combined	BB-026	DA-BB-026
43-29 39TH PLACE	2-402079	PBS	LONG ISLAND CITY	Active	2012/12/14	Combined	BB-026	DA-BB-026
LAGUARDIA COMMUNITY COLLEGE	2-402389	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-026	DA-BB-026
FAITH ENERGY, INC	2-402516	PBS	BROOKLYN	Active	2012/10/15	Combined	NC-015	DA-NC-015
C & M SERVICE CENTER, INC.	2-402591	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
STEVES SERVICE STATION INC.	2-402869	PBS	RIDGEWOOD	Active	2013/04/17	Combined	NC-077	DA-NC-077
CARLO COCO	2-403660	PBS	SUNNYSIDE	Active	2012/12/14	Combined	BB-026	DA-BB-026
JOSEPH A FELLE	2-403822	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
PAGE REALTY, LLC	2-404608	PBS	WOODSIDE	Active	2013/05/06	Combined	BB-009	DA-BB-009
56-72 BOGART ST	2-404764	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
24 FAMILY BLDG	2-405221	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
SORA VALJAN	2-406376	PBS	GLENDALE	Active	2008/01/07	Combined	NC-083	DA-NC-083
MORGAN & BROTHER MANHATTN STORAGE	2-421065	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-013	DA-BB-013
L.I.C.PASSENGER YARD	2-433861	PBS	LONG ISLAND CITY	Active	2013/04/19	Combined	BB-043	DA-BB-043
LIRR FACILITY	2-433950	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-013	DA-BB-013
US POSTAL SERVICE - STUYVESANT STATION	2-453145	PBS	BROOKLYN	Active	2008/10/14	Combined	NC-015	DA-NC-015
CHARM FURNITURE	2-453250	PBS	JACKSON HEIGHTS	Unregulated	NA	Combined	BB-009	DA-BB-009
939 HORT STREET REALTY INC	2-454346	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
QUEENS MIDTOWN TUNNEL SERVICE BUILDING	2-454559	PBS	LONG ISLAND CITY	Active	2013/12/06	Combined	BB-013	DA-BB-013
45-45 46TH STREET	2-454583	PBS	WOODSIDE	Active	2013/10/08	Combined	BB-009	DA-BB-009
DSNY BK DISTRICT 8 GARAGE	2-456047	PBS	BROOKLYN	Active	2013/12/06	Combined	NC-015	DA-NC-015
DSNY BK DISTRICT 3 GARAGE	2-456055	PBS	BROOKLYN	Active	2013/12/06	Combined	NC-015	DA-NC-015
49-29 30TH PLACE REALTY, LLC.	2-456764	PBS	LONG ISLAND CITY	Active	2009/08/25	Combined	BB-009	DA-BB-009
ELLA MC QUEEN CENTER	2-465593	PBS	BROOKLYN	Active	2014/01/18	Combined	NC-015	DA-NC-015
680 JEFFERSON AVENUE	2-466433	PBS	BROOKLYN	Active	1994/02/15	Combined	NC-015	DA-NC-015
789 MCDONOUGH STREET HDFC	2-466468	PBS	BROOKLYN	Active	2014/05/31	Combined	NC-015	DA-NC-015
12 BLEEKER STREET	2-466506	PBS	BROOKLYN	Active	1994/02/15	Combined	NC-015	DA-NC-015
651 MADISON STREET HDFC	2-466735	PBS	BROOKLYN	Active	2014/02/15	Combined	NC-015	DA-NC-015
295 STANHOPE ST HDFC	2-466794	PBS	BROOKLYN	Active	2013/12/23	Combined	NC-015	DA-NC-015
APEXX OMNI GRAPHICS INC	2-472751	PBS	MASPETH	Active	2014/03/28	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
SARATOGA SQUARE HOUSES - OCEAN HILL APARTMENTS	2-474266	PBS	BROOKLYN	Active	2014/03/28	Combined	NC-015	DA-NC-015
KINGSBOROUGH HOUSES	2-474304	PBS	BROOKLYN	Active	2014/03/28	Combined	NC-015	DA-NC-015
HOPE GARDENS	2-474363	PBS	BROOKLYN	Active	2014/03/28	Combined	NC-015	DA-NC-015
PALMETTO GARDENS (HOPE GARDENS)	2-474371	PBS	BROOKLYN	Active	2014/03/28	Combined	NC-015	DA-NC-015
BREVOORT HOUSES	2-474444	PBS	BROOKLYN	Active	2014/03/28	Combined	NC-015	DA-NC-015
STUYVESANT GARDENS	2-474541	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
G.P. NORTHEN BLVD SERVICE CENTRE INC.	2-476382	PBS	BROOKLYN	Active	2014/06/22	Combined	NC-015	DA-NC-015
TRANSPORTATION HOUSE	2-476889	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
31-36 QUEENS BLVD	2-476943	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
STRUCTURAL PROCESSING CORP	2-476978	PBS	MASPETH	Active	2014/07/10	Combined	NC-077	DA-NC-077
VERTICAL INDUSTRIAL PARK ASSOC.	2-477125	PBS	MIDDLE VILLAGE	Active	2014/09/01	Combined	NC-077	DA-NC-077
ST JOHNS CEMETERY	2-477249	PBS	MIDDLE VILLAGE	Active	2014/09/12	Combined	NC-083	DA-NC-083
PRESIDIO REALTY CORP.	2-477516	PBS	LONG ISLAND CITY	Active	2014/09/25	Combined	BB-043	DA-BB-043
FEDERAL EXPRESS	2-477613	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
50-21 OWNERS LTD.	2-477818	PBS	SUNNYSIDE	Active	2014/11/16	Combined	BB-009	DA-BB-009
MACK TRUCKS, INC.	2-477834	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
DERBY TEXTILE CORPORATION	2-477982	PBS	BROOKLYN	Active	2009/11/27	Combined	NC-015	DA-NC-015
885 GRAND STREET CORP	2-478075	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 91 - QUEENS (Q091)	2-478237	PBS	GLENDALE	Active	2014/11/30	Combined	NC-083	DA-NC-083
INTERMEDIATE SCHOOL 210 - BROOKLYN(NEW K394) (K210)	2-478245	PBS	BROOKLYN	Active	2014/11/30	Combined	NC-015	DA-NC-015
CONSOLIDATED LAUNDRIES, INC	2-478814	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
VNP SERVICE STATION	2-479136	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-013	DA-BB-013
343 HOWARD AVENUE	2-479691	PBS	BROOKLYN	Active	2013/06/02	Combined	NC-015	DA-NC-015
METAL COLORS CORPORATION	2-479810	PBS	BROOKLYN	Active	2000/02/03	Combined	NC-015	DA-NC-015
J.T.L.I.E. REALTY	2-480045	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
MAURICE PETROLEUM, LLC	2-480487	PBS	MASPETH	Active	2013/10/22	Combined	NC-077	DA-NC-077
LINCO PRINTING INC	2-480908	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-043	DA-BB-043
BARGOLD STORAGE SYSTEMS, LLC	2-480924	PBS	LONG ISLAND CITY	Active	2006/01/05	Combined	BB-026	DA-BB-026
BOBCAT, DELI, N.E.M (TENANTS)	2-480932	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
GASETERIA ELIOT	2-481475	PBS	MIDDLE VILLAGE	Administratively Closed	NA	Combined	NC-077	DA-NC-077
THE GREENPOINT BANK	2-481564	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
MANUEL IDROVO SERVICE STATION	2-481580	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
TULLO OIL CO INC	2-481599	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
VOILA BAKERIES, INC	2-481726	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
KENCO RETAIL SHOPS OF BUSHWICK INC.	2-482137	PBS	BROOKLYN	Active	2010/12/21	Combined	NC-015	DA-NC-015
HANSEL-N-GRETEL BRAND INC.	2-482145	PBS	GLENDALE	Unregulated	NA	Combined	NC-083	DA-NC-083
FLUSH METALS	2-482218	PBS	MASPETH	Unregulated	NA	Combined	NC-029	DA-NC-029
MEYER AUTO LEASING	2-482331	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
PRESIDIO REALTY	2-482374	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
PUBLIC SERVICE TRUCK RENTING	2-482536	PBS	LONG ISLAND CITY	Active	2010/10/23	Combined	BB-040	DA-BB-040
SUPER	2-482854	PBS	BROOKLYN	Active	2010/11/06	Combined	NC-015	DA-NC-015
SHELL SERVICE STATION	2-483117	PBS	BROOKLYN	Active	2010/11/19	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
MOBIL R/S #13037	2-508535	PBS	LONG ISLAND CITY	Active	2011/01/07	Combined	BB-009	DA-BB-009
HOULIAS AUTO CENTER (VACANT)	2-510033	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
39-30 47TH AVENUE	2-510416	PBS	SUNNYSIDE	Active	2011/02/05	Combined	BB-026	DA-BB-026
47-10 LAUREL HILL BOULEVARD	2-510661	PBS	WOODSIDE	Active	2011/02/05	Combined	BB-009	DA-BB-009
957 GREENE AVENUE	2-511390	PBS	BROOKLYN	Active	2011/02/06	Combined	NC-015	DA-NC-015
GLENRIDGE SENIOR CITIZEN'S CEN	2-511668	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
UPS	2-511803	PBS	MASPETH	Active	2012/03/28	Combined	NC-029	DA-NC-029
VOILA BAKERY	2-511897	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
FRITO-LAY, INC.	2-600093	PBS	MASPETH	Unregulated	NA	Combined	NC-083	DA-NC-083
ACME SKILLMAN CONCRETE CO. INC.	2-600199	PBS	MASPETH	Active	2011/07/03	Combined	NC-077	DA-NC-077
47-25 34TH ST	2-600221	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
G.K.R. SUPER SERVICENTER, INC.	2-600261	PBS	GLENDALE	Active	2011/08/08	Combined	NC-083	DA-NC-083
NONE (CLOSED)	2-600274	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-012	DA-BB-012
PETROLEUM INC.	2-600276	PBS	BROOKLYN	Active	2010/03/03	Combined	NC-015	DA-NC-015
MECHOSHADE SYSTEMS INC.	2-600288	PBS	LONG ISLAND CITY	Active	2011/08/21	Combined	BB-026	DA-BB-026
IDAL REALTY	2-600292	PBS	BROOKLYN	Active	2011/08/29	Combined	NC-015	DA-NC-015
NEW YORK CITY DEPT OF HEALTH	2-600304	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
DELEK BH INC.	2-600324	PBS	BROOKLYN	Active	2012/04/24	Combined	NC-015	DA-NC-015
TIRE STORE/PARCEL #32	2-600345	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
NABISCO	2-600351	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
FRAZIER BROS INC	2-600353	PBS	BROOKLYN	Administratively Closed	NA	Combined	NC-015	DA-NC-015
ATLANTIC PARATRANS OF NYC, INC.	2-600360	PBS	MASPETH	Active	2012/06/07	Combined	NC-077	DA-NC-077
G&A AUTO CENTER INC.	2-600381	PBS	LONG ISLAND CITY	Active	2011/10/09	Combined	BB-026	DA-BB-026
PETER DOT INC.	2-600417	PBS	BROOKLYN	Active	2012/04/30	Combined	NC-015	DA-NC-015
60-15 FRESH POND ROAD	2-600435	PBS	MASPETH	Active	2011/11/14	Combined	NC-077	DA-NC-077
BORO KITCHEN CABINETS,INC	2-600446	PBS	RIDGEWOOD	Active	2006/12/04	Combined	NC-083	DA-NC-083
11-15 50TH AVENUE LLC	2-600455	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-013	DA-BB-013
ENGINE COMPANY 271	2-600501	PBS	BROOKLYN	Unregulated	NA	Combined	NC-083	DA-NC-083
ENGINE COMPANY 218	2-600506	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ENGINE COMPANY 227	2-600509	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ENGINE COMPANY 291	2-600532	PBS	QUEENS	Unregulated	NA	Combined	NC-077	DA-NC-077
SILVER STAR AUTO EXPRESS, INC.	2-600588	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-013	DA-BB-013
GEIS SERVICE STATION CORP	2-600627	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
MASSIS AUTO REPAIR SERVICE INC.	2-600657	PBS	LONG ISLAND CITY	Active	2011/10/25	Combined	BB-009	DA-BB-009
K J M REALTY CORP	2-600737	PBS	LONG ISLAND CITY	Active	1997/05/06	Combined	BB-026	DA-BB-026
PLATING ON PLASTIC INC	2-600797	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
AMSON AUTO PETRO CORP.	2-600859	PBS	BROOKLYN	Active	2014/05/14	Combined	NC-015	DA-NC-015
JASPE MART, INC.	2-600863	PBS	BROOKLYN	Active	2012/08/11	Combined	NC-015	DA-NC-015
1075 GREENE AVE	2-600917	PBS	BROOKLYN	Active	2010/08/02	Combined	NC-015	DA-NC-015
50-22 OWNERS LTD	2-601198	PBS	SUNNYSIDE	Active	2012/11/03	Combined	BB-009	DA-BB-009
GP PETRO	2-601200	PBS	BROOKLYN	Active	2013/09/29	Combined	NC-015	DA-NC-015
PACE TIRE COMPANY	2-601349	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
QP II 43-28 39 PLACE LLC	2-601363	PBS	SUNNYSIDE	Active	2013/01/31	Combined	BB-026	DA-BB-026
QPII-43-38 39 PLACE LLC	2-601364	PBS	SUNNYSIDE	Active	2013/01/31	Combined	BB-026	DA-BB-026
BULOVA CLOCK DIVISION	2-601397	PBS	BROOKLYN	Active	2008/11/04	Combined	NCB-023	DA-NCB-023
1551 PARK PLACE HDFC % DEBORAH ELLERBEE	2-601404	PBS	BROOKLYN	Active	2008/02/20	Combined	NC-015	DA-NC-015
JUNIOR HIGH SCHOOL 162 - BROOKLYN	2-601447	PBS	BROOKLYN	Active	2013/04/16	Combined	NC-015	DA-NC-015
GREENPOINT MANUFACTURING & DESIGN CENTER	2-601464	PBS	BROOKLYN	Active	1998/04/29	Combined	NCB-022	DA-NCB-022
RJK ATLANTIC,	2-601470	PBS	BROOKLYN	Active	2014/03/25	Combined	NC-015	DA-NC-015
P & V KNIT GOODS PROCESSING CO. INC.	2-601522	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
METROPOLITAN GAS, INC.	2-601560	PBS	MIDDLE VILLAGE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
LIC BUSSINESS CENTER 2	2-601626	PBS	LONG ISLAND CITY	Active	2007/05/08	Combined	BB-026	DA-BB-026
34-21 GREENPOINT AVE. SERVICE STATION INC.	2-601642	PBS	LONG ISLAND CITY	Active	1998/11/10	Combined	BB-011	DA-BB-011
THREE HARBOR WAY REALTY	2-601649	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-026	DA-BB-026
58-55 QUEENS MIDTOWN EXPRESSWAY CORP.	2-601650	PBS	MASPETH	Active	2014/06/20	Combined	NC-077	DA-NC-077
GROVER CLEVELAND HS	2-601653	PBS	RIDGEWOOD	Active	2013/11/24	Combined	NC-077	DA-NC-077
EMA REALTY, LLC	2-601669	PBS	SUNNYSIDE	Active	2013/12/22	Combined	BB-026	DA-BB-026
BORDEN AVE. VETERANS SHELTER	2-601676	PBS	QUEENS	Unregulated	NA	Combined	BB-010	DA-BB-010
ALLMANDINGER PROPERTIES, INC.	2-601714	PBS	MASPETH	Unregulated	NA	Combined	NC-029	DA-NC-029
MARIO & LUCIA MILEVOI	2-601722	PBS	SUNNYSIDE	Active	2014/01/27	Combined	BB-026	DA-BB-026
CHEMICAL BANK	2-601740	PBS	BROOKLYN	Active	1999/02/04	Combined	NC-083	DA-NC-083
73-13 GLENDALE AUTO CARE	2-601750	PBS	GLENDALE	Active	2014/02/14	Combined	NC-083	DA-NC-083
JP MORGAN CHASE AND COMPANY	2-601809	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
GETTY 98447	2-601844	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
STUYVESANT GARDENS	2-601880	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
STUYVESANT GARDENS	2-601881	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
LOCAL 1 REALTY CORP.	2-601903	PBS	LONG ISLAND CITY	Active	2015/02/09	Combined	BB-026	DA-BB-026
HOPE GARDENS	2-601966	PBS	BROOKLYN	Active	2014/09/19	Combined	NC-015	DA-NC-015
47-55 39TH PLACE CONDO	2-601991	PBS	SUNNYSIDE	Active	2009/10/07	Combined	BB-009	DA-BB-009
MAX SERVICE STATION	2-602001	PBS	MASPETH	Active	2014/10/27	Combined	NC-077	DA-NC-077
L + H VITAMIN	2-602008	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
QUEENS VOCATIONAL HS (Q600)	2-602022	PBS	QUEENS	Active	2014/11/18	Combined	BB-026	DA-BB-026
64-40 MYRTLE & CYPRESS, INC.	2-602067	PBS	GLENDALE	Active	2012/06/26	Combined	NC-083	DA-NC-083
43-08 40TH STREET	2-602085	PBS	SUNNYSIDE	Active	2011/10/18	Combined	BB-026	DA-BB-026
UNITED STATES POSTAL SERVICE	2-602101	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ERIKA WAREHOUSE CORPORATION	2-602119	PBS	BROOKLYN	Active	2000/03/09	Combined	NC-015	DA-NC-015
1948 TROUTMAN STREET LLC	2-602153	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
SCHREIBER PROCESSING	2-602156	PBS	MASPETH	Active	2015/01/26	Combined	NC-077	DA-NC-077
MANUFACTURERS CORUGATED BOX CO.	2-602160	PBS	MASPETH	Administratively Closed	NA	Combined	NC-077	DA-NC-077
DEO REALTY MANAGEMENT CORPORATION	2-602162	PBS	MASPETH	Active	2015/04/17	Combined	NC-077	DA-NC-077
48-11 45TH ST. REALTY LP	2-602173	PBS	WOODSIDE	Active	2012/05/07	Combined	BB-009	DA-BB-009
45-80 48TH STREET	2-602186	PBS	WOODSIDE	Active	2015/04/25	Combined	BB-009	DA-BB-009
CY & RY CORPORATION	2-602187	PBS	GLENDALE	Active	2005/05/01	Combined	NC-083	DA-NC-083
48-10 45TH STREET OWNERS CORP.	2-602188	PBS	WOODSIDE	Active	2015/05/01	Combined	BB-009	DA-BB-009

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
47-02 METROPOLITAN REALTY LLC	2-602212	PBS	RIDGEWOOD	Active	2008/07/15	Combined	NC-077	DA-NC-077
50-15 OWNERS CORPORATION	2-602224	PBS	SUNNYSIDE	Active	2010/05/15	Combined	BB-009	DA-BB-009
HANSEL 'N GRETEL BRAND, INC.	2-602229	PBS	GLENDALE	Active	2010/05/17	Combined	NC-083	DA-NC-083
EGON SCHIMMECK	2-602231	PBS	GLENDALE	Active	2010/05/17	Combined	NC-083	DA-NC-083
DOUBLE G (1999) LTD. PATERNERSHIP	2-602262	PBS	BROOKLYN	Active	2006/12/03	Combined	NC-015	DA-NC-015
BROOKLYN CHILDRENS PSHC CENT	2-602393	PBS	BROOKLYN	Active	2015/08/09	Combined	NC-015	DA-NC-015
PUTNAM RIDGE, LLC.	2-602417	PBS	RIDGEWOOD	Active	2014/11/01	Combined	NC-083	DA-NC-083
BENGRO REALTY	2-602418	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
NEW YORK CITY INDUSTRIAL DEVELOPMENT	2-602461	PBS	GLENDALE	Unregulated	NA	Combined	NC-077	DA-NC-077
COMPUDYE INCORPORATED	2-602464	PBS	MASPETH	Active	2010/10/03	Combined	NC-077	DA-NC-077
CANAJ 48-56 REALTY CORP.	2-602485	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
MARIO & LUCIA MILEVOI	2-602509	PBS	SUNNYSIDE	Active	2010/09/25	Combined	BB-026	DA-BB-026
FRESH DIRECT	2-602517	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-010	DA-BB-010
WEATHER WISE CONDITIONING	2-602530	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC STORAGE	2-602562	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-009	DA-BB-009
GCS SERVICE INC.	2-602621	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 88 - QUEENS (Q088)	2-602642	PBS	RIDGEWOOD	Active	2011/03/27	Combined	NC-077	DA-NC-077
39-01 QUEENS BOULEVARD	2-602656	PBS	LONG ISLAND CITY	Active	2009/10/20	Combined	BB-026	DA-BB-026
COSTARELLI FUNERAL	2-602685	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
APRIA HEALTH CARE	2-602696	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-077	DA-NC-077
POPULAR UNIFORM	2-602710	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
EMMY ENTERPRISES LLC	2-602754	PBS	RIDGEWOOD	Active	2013/07/25	Combined	NC-083	DA-NC-083
56-01 MASPETH AVENUE	2-602775	PBS	MASPETH	Active	2011/09/13	Combined	NC-077	DA-NC-077
BUSINESS	2-602798	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 75 - BROOKLYN	2-602903	PBS	BROOKLYN	Active	2012/01/14	Combined	NC-015	DA-NC-015
9TH AVENUE EQUITIES CO., INC.	2-602906	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
59-21 QUEENS MIDTOWN EXPRESSWAY	2-602921	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
MOUNT OLIVET CEMETARY	2-602942	PBS	MASPETH	Active	2012/02/28	Combined	NC-077	DA-NC-077
214 CENTRAL AVE. REALTY CORP.	2-602952	PBS	BROOKLYN	Active	2012/03/17	Combined	NC-015	DA-NC-015
A. BORDEN LLC	2-602971	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-004	DA-BB-004
SASO MANAGEMENT CO	2-603069	PBS	SUNNYSIDE	Unregulated	NA	Combined	BB-026	DA-BB-026
SUYDAM INC.	2-603073	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
STEEL LOS	2-603123	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
34-21 GREENPOINT AVE SERVICE STATION INC	2-603129	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-011	DA-BB-011
PEP BOYS #453	2-603163	PBS	RIDGEWOOD	Active	2012/10/28	Combined	NC-077	DA-NC-077
104-110 GROVE STREET HOFC	2-603235	PBS	BROOKLYN	Active	2007/12/02	Combined	NC-015	DA-NC-015
104-110 GROVE STREET HDFC	2-603236	PBS	BROOKLYN	Active	2007/12/02	Combined	NC-015	DA-NC-015
PAJ REALTY INC.	2-603278	PBS	QUEENS	Unregulated	NA	Combined	NC-083	DA-NC-083
PAJ REALTY INC.	2-603279	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
UNITED PARCEL SERVICE	2-603346	PBS	LONG ISLAND CITY	Active	2013/02/24	Combined	BB-040	DA-BB-040
38-11 SKILLMAN AVENUE	2-603430	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
38-11 SKILLMAN AVENUE	2-603493	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
1151-1155 DEAN STREET	2-603496	PBS	BROOKLYN	Active	2008/04/28	Combined	NC-015	DA-NC-015
GREENHILL MGMT, LLC	2-603516	PBS	WOODSIDE	Active	2013/04/15	Combined	BB-009	DA-BB-009
MILHAW REALTY CORPORATION	2-603519	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
HILLS TRADING CORPORATION	2-603552	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
THE FACTORY	2-603673	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
132 HARRISON PLACE	2-603715	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 81 - QUEENS	2-603719	PBS	RIDGEWOOD	Active	2013/11/04	Combined	NC-083	DA-NC-083
ULTRA REALTY CORPORATION	2-603733	PBS	BROOKLYN	Active	2008/11/06	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 151 - BROOKLYN	2-603799	PBS	BROOKLYN	Active	2013/12/04	Combined	NC-015	DA-NC-015
UNIVERSAL ELECTRIC SIGN CO., INC.	2-603846	PBS	MASPETH	Active	2003/12/18	Combined	NC-077	DA-NC-077
% EUJOY REALTY CORP	2-603847	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
CONTINENTAL TRUCK INDUSTRIES, INC.	2-603925	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
CALVARY CEMETERY / FOURTH GARAGE	2-603943	PBS	MASPETH	Active	2014/02/25	Combined	NC-077	DA-NC-077
PREUSS INC.	2-603946	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
CARGAS, INC.	2-603983	PBS	RIDGEWOOD	Active	2014/03/10	Combined	NC-083	DA-NC-083
PUBLIC SCHOOL 150 - QUEENS	2-604016	PBS	LONG ISLAND CITY	Active	2014/03/25	Combined	BB-026	DA-BB-026
SACCO AUTO SALES & PARTS	2-604067	PBS	RIDGEWOOD	Active	2009/12/22	Combined	NC-083	DA-NC-083
DIME SAVINGS BANK, FSB	2-604150	PBS	SUNNYSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
PUBLIC SCHOOL 274 ANNEX - BROOKLYN(K718)	2-604164	PBS	BROOKLYN	Active	2014/07/20	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 145	2-604179	PBS	BROOKLYN	Active	2014/07/27	Combined	NC-015	DA-NC-015
KFC #11-4816	2-604248	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
VIKING CRITERION	2-604380	PBS	MASPETH	Unregulated	NA	Combined	NC-029	DA-NC-029
ALETA INDUSTRIES INC	2-604405	PBS	BROOKLYN	Active	2005/01/27	Combined	NCB-022	DA-NCB-022
VACAN LOT	2-604436	PBS	BROOKLYN	Unregulated	NA	Combined	NC-083	DA-NC-083
BEDFORD/STUYESANT MULTI-SERVICE CENTER	2-604477	PBS	BROOKLYN	Active	2010/03/31	Combined	NC-015	DA-NC-015
QPII-47-07 39 STREET LLC	2-604496	PBS	LONG ISLAND CITY	Active	2013/01/31	Combined	BB-026	DA-BB-026
CRANES, INC.	2-604497	PBS	MASPETH	Active	2015/05/08	Combined	NC-029	DA-NC-029
S. S. AUTO REPAIR	2-604617	PBS	GLENDALE	Administratively Closed	NA	Combined	NC-083	DA-NC-083
PUBLIC SCHOOL 86 - BROOKLYN (K086)	2-604618	PBS	BROOKLYN	Active	2015/07/12	Combined	NC-015	DA-NC-015
62 LEWIS PROPERTIES LLC	2-604668	PBS	BROOKLYN	Active	2013/05/08	Combined	NC-015	DA-NC-015
33 CENTRAL AVE	2-604673	PBS	BROOKLYN	Active	2010/08/25	Combined	NC-015	DA-NC-015
NEW YORK APPLE TOURS MAINTENANCE CORP.	2-604694	PBS	LONG ISLAND CITY	Active	2005/09/18	Combined	BB-004	DA-BB-004
PUBLIC SCHOOL 137-BROOKLYN (K137)	2-604695	PBS	BROOKLYN	Active	2015/09/18	Combined	NC-015	DA-NC-015
JUNIOR HIGH SCHOOL 119 - QUEENS (Q119)	2-604719	PBS	GLENDALE	Active	2015/10/10	Combined	NC-083	DA-NC-083
A&D PRESTIGE AUTO REPAIR	2-604794	PBS	LONG ISLAND CITY	Active	2014/05/07	Combined	BB-012	DA-BB-012
81 ANNEX (Q848)	2-604860	PBS	RIDGEWOOD	Active	2010/12/04	Combined	NC-083	DA-NC-083
41-21 CONDOMINIUM	2-604870	PBS	SUNNYSIDE	Active	2010/12/04	Combined	BB-026	DA-BB-026
SAINT NICHOLAS AVENUE INDUSTRIAL CENTER	2-604883	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
CARDINAL INDUSTRIES, INC.	2-604887	PBS	LONG ISLAND CITY	Active	2010/12/13	Combined	BB-043	DA-BB-043
60-45 ELLIOT AVE	2-604891	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
NEIL & DAVE REALTY CORP.	2-604927	PBS	RIDGEWOOD	Active	2005/12/22	Combined	NC-077	DA-NC-077
RIDGE POND AUTO REP. INC DBA RIDGEWOOD	2-604939	PBS	RIDGEWOOD	Active	2010/12/26	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
LEO'S AUTO REPAIR SHOP	2-605244	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
49 WYCKOFF AVENUE	2-605545	PBS	BROOKLYN	Active	2006/04/02	Combined	NC-015	DA-NC-015
WORLD COM	2-605624	PBS	LONG ISLAND CITY	Active	2006/04/10	Combined	BB-026	DA-BB-026
REPAIR SHOP	2-605842	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
INFINITI AUTO REPAIRS	2-605845	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
VNA AUTO	2-605873	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
PUBLIC SCHOOL 77 - QUEENS (Q077)	2-605897	PBS	RIDGEWOOD	Active	2011/05/23	Combined	NC-083	DA-NC-083
449/465 TROUTMAN STREET	2-605971	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
783 HANCOCK STREET HDFC	2-606070	PBS	BROOKLYN	Active	2011/06/25	Combined	NC-015	DA-NC-015
RAM ASSOCIATES REALTY, LLC	2-606128	PBS	BROOKLYN	Active	2011/06/27	Combined	NC-083	DA-NC-083
RAM ASSOCIATES REALTY LLC	2-606135	PBS	BROOKLYN	Active	2011/06/27	Combined	NC-015	DA-NC-015
ST. THOMAS EPISCOPAL	2-606179	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
2023 PACIFIC STREET	2-606194	PBS	BROOKLYN	Active	2011/07/05	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 73-BROOKLYN	2-606280	PBS	BROOKLYN	Active	2011/07/11	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 106-BROOKLYN	2-606286	PBS	BROOKLYN	Active	2011/07/11	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 376-BROOKLYN	2-606318	PBS	BROOKLYN	Active	2011/07/12	Combined	NC-015	DA-NC-015
43-33 41 ST.	2-606346	PBS	SUNNYSIDE	Active	2011/07/13	Combined	BB-026	DA-BB-026
BRIDGE ST AWME	2-606409	PBS	BROOKLYN	Active	2011/07/17	Combined	NC-015	DA-NC-015
ST. BARBARA'S R.C. SCHOOL	2-606451	PBS	BROOKLYN	Active	2011/07/23	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 71-QUEENS	2-606473	PBS	RIDGEWOOD	Active	2011/07/24	Combined	NC-077	DA-NC-077
DISTRICT THREE YOUTH & ADULT INC.	2-606531	PBS	BROOKLYN	Active	2011/07/26	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 125-QUEENS	2-606570	PBS	WOODSIDE	Active	2011/07/30	Combined	BB-009	DA-BB-009
47 THAMES STREET	2-606741	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
1050 HANCOCK STREET	2-606810	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
OUR LADY OF LOURDES	2-606897	PBS	BROOKLYN	Active	2006/08/30	Combined	NC-015	DA-NC-015
46-20 27TH STREET LLC	2-606925	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
FACTORY	2-606957	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
VACANT LOT	2-607013	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
MZM AUTO TRANSMISSION INC.	2-607035	PBS	LONG ISLAND CITY	Active	2006/09/28	Combined	BB-011	DA-BB-011
GREENPOINT LIC AUTO REPAIR CO.	2-607036	PBS	LONG ISLAND CITY	Active	2011/09/28	Combined	BB-011	DA-BB-011
M Z M AUTO TRANSMISSION INC	2-607142	PBS	LONG ISLAND CITY	Active	2011/11/05	Combined	BB-011	DA-BB-011
PUBLIC SCHOOL 87 - QUEENS	2-607186	PBS	MIDDLE VILLAGE	Active	2011/11/20	Combined	NC-083	DA-NC-083
PUBLIC SCHOOL 123 - BROOKLYN	2-607197	PBS	BROOKLYN	Active	2011/11/20	Combined	NC-015	DA-NC-015
REVIEW AVE PROPERTIES, INC.	2-607245	PBS	NEW YORK	Unregulated	NA	Combined	BB-011	DA-BB-011
SEVEN ASSOCIATES	2-607328	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
MARTIN LUTHER HIGH SCHOOL	2-607451	PBS	MASPETH	Active	2012/02/25	Combined	NC-077	DA-NC-077
GOLDSTONE HOSIERY 48-25 LLC	2-607461	PBS	QUEENS	Unregulated	NA	Combined	NC-083	DA-NC-083
REDEEMER LUTHERAN SCHOOL	2-607469	PBS	GLENDALE	Active	2012/03/06	Combined	NC-083	DA-NC-083
TRINTIY ST ANDREWS LUTHERAN CHURCH	2-607471	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
MR. COOPER AUTO REPAIRS	2-607487	PBS	GLENDALE	Active	2012/03/13	Combined	NC-083	DA-NC-083
JANUSZ SYPIEN	2-607531	PBS	RIDGEWOOD	Active	2012/03/26	Combined	NC-083	DA-NC-083
68-43 FRESH POND	2-607548	PBS	GLENDALE	Active	2007/03/29	Combined	NC-077	DA-NC-077

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
55-26 69 STREET	2-607595	PBS	MASPETH	Active	2013/05/02	Combined	NC-077	DA-NC-077
RIDGEWOOD ART WOODCRAFT INC	2-607614	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
36-01 QUEENS BLVD	2-607615	PBS	LONG ISLAND CITY	Active	2012/04/12	Combined	BB-026	DA-BB-026
GENERAL COATINGS TECHNOLOGIES NIC	2-607616	PBS	FLUSHING	Active	2012/04/12	Combined	NC-083	DA-NC-083
ESS & VEE ACOUSTICAL	2-607618	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-043	DA-BB-043
5911 MADISON STREET	2-607620	PBS	RIDGEWOOD	Active	2012/04/15	Combined	NC-077	DA-NC-077
34-01 STARR STREET	2-607626	PBS	LONG ISLAND CITY	Active	2007/04/16	Combined	BB-004	DA-BB-004
22-07 HARMAN ST	2-607628	PBS	RIDGEWOOD	Active	2007/04/16	Combined	NC-077	DA-NC-077
PUBLIC SCHOOL 68 - QUEENS	2-607648	PBS	RIDGEWOOD	Active	2012/04/17	Combined	NC-083	DA-NC-083
3002 48 EQUITIES, LLC	2-607649	PBS	LONG ISLAND CITY	Active	2007/08/20	Combined	BB-026	DA-BB-026
48-50 41ST STREET	2-607655	PBS	SUNNYSIDE	Active	2012/04/18	Combined	BB-009	DA-BB-009
QUALITY LAB INC	2-607656	PBS	RIDGEWOOD	Active	2007/04/18	Combined	NC-083	DA-NC-083
69-01 62ND STREET	2-607674	PBS	GLENDALE	Active	2012/04/22	Combined	NC-077	DA-NC-077
69-30 62ND STREET	2-607675	PBS	GLENDALE	Active	2012/04/22	Combined	NC-077	DA-NC-077
71-02 FOREST AVE.	2-607699	PBS	RIDGEWOOD	Active	2007/04/26	Combined	NC-083	DA-NC-083
1635 PUTNAM AVENUE	2-607722	PBS	RIDGEWOOD	Active	2007/04/30	Combined	NC-083	DA-NC-083
1625 PUTNAM AVE	2-607723	PBS	RIDGEWOOD	Active	2007/04/30	Combined	NC-083	DA-NC-083
BRICK & BALLERSTEIN INC	2-607748	PBS	RIDGEWOOD	Active	2012/05/06	Combined	NC-083	DA-NC-083
70-20 67TH PLACE	2-607775	PBS	GLENDALE	Active	2007/05/15	Combined	NC-083	DA-NC-083
12 FAMILY APARTMENT HOUSE	2-607780	PBS	NEW YORK	Active	2012/05/17	Combined	NC-083	DA-NC-083
STRONGHOLD WAREHOUSE	2-607786	PBS	MASPETH	Active	2012/05/23	Combined	NC-077	DA-NC-077
GRIMALDI'S HOME OF BREAD INC	2-607799	PBS	RIDGEWOOD	Active	2012/05/30	Combined	NC-077	DA-NC-077
108 CENTRAL ASSOCIATES LLC	2-607852	PBS	BROOKLYN	Active	2012/06/19	Combined	NC-015	DA-NC-015
36-01 43RD AVE	2-607872	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
S & N DEVELOPMENT LLC	2-607880	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
GLADIATOR REALTY CORP	2-607893	PBS	RIDGEWOOD	Active	2007/06/27	Combined	NC-083	DA-NC-083
PORTER AVENUE TRANSITIONAL RESIDENCE	2-607895	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
1708 SUMMERFIELD STREET	2-607931	PBS	RIDGEWOOD	Active	2012/07/19	Combined	NC-083	DA-NC-083
FULTON PARK PLAZA	2-607933	PBS	BROOKLYN	Active	2007/07/19	Combined	NC-015	DA-NC-015
E.D. REALTY, LLC	2-608001	PBS	BROOKLYN	Active	2010/12/29	Combined	NC-015	DA-NC-015
JOSEPH HORODECKI	2-608002	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
1001 GAMES LLC	2-608032	PBS	QUEENS	Active	2012/09/18	Combined	BB-026	DA-BB-026
Verizon New York Inc-NY-35554	2-608051	PBS	BROOKLYN	Active	2012/10/01	Combined	NC-015	DA-NC-015
27 KNICKERBOCKER REALTY LLC	2-608076	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
KNITZOKE CORP	2-608157	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
HERNANDEZ AUTO REPAIR	2-608186	PBS	BROOKLYN	Active	2008/01/22	Combined	NC-015	DA-NC-015
MAZEL MANAGEMENT INC.	2-608194	PBS	RIDGEWOOD	Active	2008/01/27	Combined	NC-083	DA-NC-083
WOODMOTIF	2-608257	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
M. HILLER & SON INC.	2-608268	PBS	BROOKLYN	Active	2013/02/12	Combined	NCB-022	DA-NCB-022
CASA DE ORACION	2-608296	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
GOAL REALTY CORP.	2-608316	PBS	BROOKLYN	Active	2013/02/20	Combined	NC-015	DA-NC-015
442 DECATUR STREET	2-608318	PBS	BROOKLYN	Active	2013/02/20	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
DUNRITE FINISHINGS	2-608334	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
J & R AFFILIATES	2-608335	PBS	BROOKLYN	Active	2008/02/21	Combined	NC-015	DA-NC-015
WEACTH REALTY INC	2-608347	PBS	BROOKLYN	Active	2008/02/21	Combined	NC-015	DA-NC-015
BORO REALTY LLC	2-608349	PBS	BROOKLYN	Active	2013/02/24	Combined	NC-015	DA-NC-015
1027 METROPOLITAN AVENUE	2-608360	PBS	BROOKLYN	Active	2008/02/25	Combined	NC-015	DA-NC-015
IGLESIA HISPANA PENT. EL CALVARIO	2-608362	PBS	BROOKLYN	Active	2013/02/25	Combined	NC-015	DA-NC-015
IRAIDA LOPEZ	2-608367	PBS	BROOKLYN	Active	2013/02/25	Combined	NC-015	DA-NC-015
ASSOCIATED SUPERMARKET	2-608382	PBS	BROOKLYN	Active	2008/02/25	Combined	NC-015	DA-NC-015
HYMEL PORTER REALTY	2-608390	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
LINDEN HOLDING LLC	2-608404	PBS	BROOKLYN	Active	2008/02/26	Combined	NC-015	DA-NC-015
CBS FOOD PROD	2-608405	PBS	BROOKLYN	Active	2013/02/26	Combined	NC-015	DA-NC-015
351 HOWARD AVE	2-608446	PBS	BROOKLYN	Active	2008/02/27	Combined	NC-015	DA-NC-015
GOOD SAMARITAN DCC	2-608457	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
1091 BUSHWICK AVENUE HDFC	2-608465	PBS	BROOKLYN	Active	2013/02/28	Combined	NC-015	DA-NC-015
ROSE TREE MANAGEMENT & DEVELOPMENT CORP.	2-608502	PBS	BROOKLYN	Active	2008/03/05	Combined	NC-015	DA-NC-015
BISHOP HENRY B. HUCLES EPISCOPAL NURSING HOME	2-608544	PBS	BROOKLYN	Active	2008/03/12	Combined	NC-015	DA-NC-015
1405 PROSPECT PLACE H.D.F.C.	2-608561	PBS	BROOKLYN	Active	2008/03/13	Combined	NC-015	DA-NC-015
138 HOPKINSON ASSOCIATES LLC	2-608581	PBS	BROOKLYN	Active	2013/03/14	Combined	NC-015	DA-NC-015
PUTNAM LADDER CO.	2-608617	PBS	BROOKLYN	Active	2008/03/18	Combined	NC-015	DA-NC-015
JFC INTERNATIONAL INC.	2-608636	PBS	BROOKLYN	Active	2013/03/19	Combined	NC-015	DA-NC-015
1552 BERGEN ST	2-608660	PBS	BROOKLYN	Active	2013/03/26	Combined	NC-015	DA-NC-015
CLOSED S/S	2-608672	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
MORGAN SCHOLES PROPERTIES	2-608698	PBS	BROOKLYN	Active	2008/03/31	Combined	NC-015	DA-NC-015
1149 PUTNAM AVE	2-608726	PBS	BROOKLYN	Active	2008/03/31	Combined	NC-015	DA-NC-015
RALPH'S AUTO CENTER INC.	2-608757	PBS	BROOKLYN	Active	2013/04/02	Combined	NC-015	DA-NC-015
ST. PAUL'S EVANGELICAL LUTHERAN CHURCH	2-608794	PBS	BROOKLYN	Active	2008/04/07	Combined	NC-015	DA-NC-015
IGLESIA DE CRISTO MISIONERA	2-608815	PBS	BROOKLYN	Active	2008/04/10	Combined	NC-015	DA-NC-015
NUHART & CO., INC.	2-608875	PBS	Brooklyn	Unregulated	NA	Combined	NCB-023	DA-NCB-023
349 SCHOLES ST.	2-608900	PBS	BROOKLYN	Active	2008/04/22	Combined	NC-015	DA-NC-015
BROWNSTEIN REALTY CORP.	2-608914	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ABERDEEN REALTY LLC	2-608966	PBS	BROOKLYN	Active	2013/05/20	Combined	NC-015	DA-NC-015
1-800-MATTRESS	2-608967	PBS	LONG ISLAND CITY	Active	2013/05/20	Combined	BB-026	DA-BB-026
ALL BORO MANAGEMENT CO., LLC	2-608976	PBS	BROOKLYN	Active	2013/06/03	Combined	NC-015	DA-NC-015
JENNINGS HALLL HDFC	2-608986	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
M. GOLDSMITH CO. INC.	2-608992	PBS	BROOKLYN	Active	2008/05/27	Combined	NC-015	DA-NC-015
43-23 35TH STREET	2-608996	PBS	LONG ISLAND CITY	Active	2009/12/22	Combined	BB-026	DA-BB-026
33-01 HUNTERS POINT AVENUE ASSOCIATES	2-609020	PBS	LONG ISLAND CITY	Active	2008/06/03	Combined	BB-009	DA-BB-009
RITE AID	2-609048	PBS	RIDGEWOOD	Active	2013/06/24	Combined	NC-083	DA-NC-083
WESTERN BEEF SUPERMARKET	2-609052	PBS	RIDGEWOOD	Active	2008/06/25	Combined	NC-083	DA-NC-083
COMPLETE AUTO REPAIR	2-609061	PBS	RIDGEWOOD	Active	2008/06/30	Combined	NC-083	DA-NC-083
A&G AUTO DISMANTLING INC.	2-609097	PBS	RIDGEWOOD	Active	2008/07/10	Combined	NC-083	DA-NC-083
480 JOHNSON LLC	2-609098	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
43-39 39 PLACE	2-609116	PBS	LONG ISLAND CITY	Active	2013/07/18	Combined	BB-026	DA-BB-026
JEFF RON KOM AUTO REPAIR	2-609146	PBS	LONG ISLAND CITY	Active	2008/07/24	Combined	BB-011	DA-BB-011
BO-AN INDUSTRIES CORPORATION	2-609172	PBS	MIDDLE VILLAGE	Unregulated	NA	Combined	NC-077	DA-NC-077
A TEAM AUTO CENTER	2-609214	PBS	BROOKLYN	Active	2008/08/27	Combined	NC-015	DA-NC-015
651 ONDERDONK AVE	2-609262	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
1160 MANHATTAN AVE	2-609279	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
SKYLINE AUTO REPAIR	2-609291	PBS	LONG ISLAND CITY	Active	2008/10/10	Combined	BB-004	DA-BB-004
TROPICAL AUTO, INC.	2-609314	PBS	BROOKLYN	Active	2008/10/24	Combined	NC-015	DA-NC-015
MTD AUTO REPAIR INC.	2-609361	PBS	WOODSIDE	Active	2014/05/08	Combined	BB-009	DA-BB-009
KG3 REALTY LLC	2-609404	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
66-78 KNICKERBOCKER AVE	2-609421	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
EDY'S AUTO MECHNIC INC.	2-609479	PBS	LONG ISLAND CITY	Active	2014/03/17	Combined	BB-012	DA-BB-012
YAT-YAR EQUITIES	2-609487	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
2185 PACIFIC STREET	2-609501	PBS	BROOKLYN	Active	2009/03/26	Combined	NC-015	DA-NC-015
HARRISON KNIKERBOCKER REALTY CORP.	2-609504	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PUBLIC SCHOOL 239 - QUEENS	2-609526	PBS	RIDGEWOOD	Active	2014/04/14	Combined	NC-083	DA-NC-083
M & W INC.	2-609534	PBS	BROOKLYN	Unregulated	NA	Combined	NCB-022	DA-NCB-022
CADDY & LINCOLN CORNER AUTO REPAIR LTD.	2-609545	PBS	LONG ISLAND CITY	Active	2009/05/13	Combined	BB-004	DA-BB-004
ACCUTECH FOREIN CAR SERVICES	2-609603	PBS	BROOKLYN	Active	2009/06/10	Combined	NC-015	DA-NC-015
1050 LAFAYETTE AVE. CORP.	2-609616	PBS	BROOKLYN	Active	2014/06/17	Combined	NC-015	DA-NC-015
WARREN FASTENINGS CORP.	2-609628	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
WYCKOFF AUTO REPAIR CORP.	2-609632	PBS	BROOKLYN	Active	2014/06/29	Combined	NC-083	DA-NC-083
EXCELLENCE CHARTER SCHOOL	2-609644	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
O&M AUTOMOTIVE REPAIR, INC.	2-609653	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
LAGUARDIA COMMUNITY COLLEGE	2-609674	PBS	LONG ISLAND CITY	Active	2015/04/13	Combined	BB-026	DA-BB-026
2170 ATLANTIC AVE	2-609714	PBS	BROOKLYN	Active	2009/09/30	Combined	NC-015	DA-NC-015
PRIMO AUTOBODY REPAIRS & SALES INC.	2-609769	PBS	RIDGEWOOD	Active	2009/11/10	Combined	NC-083	DA-NC-083
OSMOND AUTO REPAIRS	2-609854	PBS	BROOKLYN	Active	2010/02/17	Combined	NC-015	DA-NC-015
JEFFREY CRAIG, LTD.	2-609904	PBS	LONG ISLAND CITY	Active	2015/04/06	Combined	BB-026	DA-BB-026
LAGUARDIA COMMUNITY COLLEGE	2-609905	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
FIVE STAR TRANSMISSION, INC.	2-609951	PBS	BROOKLYN	Active	2010/05/27	Combined	NC-015	DA-NC-015
2027 PACIFIC STREET	2-609971	PBS	BROOKLYN	Active	2015/06/28	Combined	NC-015	DA-NC-015
209 MORGAN AVE. CORP.	2-609985	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
ROSENTHOL WINE	2-609990	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
J&A AUTO REPAIR	2-609994	PBS	BROOKLYN	Active	2010/07/28	Combined	NC-015	DA-NC-015
900 GRAND ST. MILK LLC	2-610024	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
GALAPAGOS AUTO REPAIR	2-610032	PBS	MASPETH	Active	2010/10/17	Combined	NC-077	DA-NC-077
D'ANGELO'S AUTO SALES & PARTS CORP.	2-610045	PBS	BROOKLYN	Active	2010/10/24	Combined	NC-015	DA-NC-015
AFFORDABLE USED AUTO PARTS, INC.	2-610052	PBS	BROOKLYN	Active	2015/10/28	Combined	NC-083	DA-NC-083
NYC DEP CENTRAL REPAIR FACILITY	2-610058	PBS	LONG ISLAND CITY	Active	2014/06/01	Combined	BB-010	DA-BB-010
50-22 49TH STREET	2-610097	PBS	WOODSIDE	Unregulated	NA	Combined	BB-009	DA-BB-009
PREUSS INC.	2-610101	PBS	BROOKLYN	Active	2011/01/20	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
GOOD-WILL AUTO & TRUCK SERVICE CENTER	2-610107	PBS	BROOKLYN	Active	2011/02/01	Combined	NC-015	DA-NC-015
LIBERTY PALACE	2-610114	PBS	BROOKLYN	Active	2015/03/03	Combined	NC-015	DA-NC-015
MARMEL REALTY ASSOC. CORP.	2-610116	PBS	RIDGEWOOD	Unregulated	NA	Combined	NC-083	DA-NC-083
UNIVERSAL USED AUTO PARTS, INC.	2-610117	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
2006A FULTON STREET	2-610189	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
RICARDO GONZALEZ	2-610193	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
PARTS ARE US INC DBA A&G USED AUTO PARTS	2-610197	PBS	RIDGEWOOD	Active	2011/05/05	Combined	NC-083	DA-NC-083
GRAND AMBULETTE	2-610222	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
LBA AUTO REPAIR	2-610227	PBS	BROOKLYN	Active	2011/06/06	Combined	NC-015	DA-NC-015
DR. NICK'S TRANSMISSION	2-610228	PBS	RIDGEWOOD	Active	2011/06/06	Combined	NC-077	DA-NC-077
A&M AUTO REPAIR & BODY WORKS	2-610236	PBS	LONG ISLAND CITY	Active	2011/06/12	Combined	BB-013	DA-BB-013
AMBATO AUTO REPAIR	2-610257	PBS	BROOKLYN	Active	2011/06/20	Combined	NC-015	DA-NC-015
REVIEW REALTY	2-610272	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-010	DA-BB-010
TWINS AUTO REPAIR II	2-610278	PBS	BROOKLYN	Active	2011/07/14	Combined	NC-015	DA-NC-015
VIAMAX AUTO SERVICE	2-610285	PBS	RIDGEWOOD	Active	2011/07/28	Combined	NC-083	DA-NC-083
J.J. BINDERY, INC.	2-610289	PBS	BROOKLYN	Active	2006/12/27	Combined	NC-015	DA-NC-015
DOUBLE G (1999) LIMITED PARTNERSHIP	2-610308	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
D-TOP AUTO REPAIR INC.	2-610315	PBS	BROOKLYN	Active	2011/08/25	Combined	NC-015	DA-NC-015
1086-1098 LAFAYETTE AVE	2-610322	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
B&F AUTO CARE INC.	2-610326	PBS	LONG ISLAND CITY	Active	2015/03/18	Combined	BB-043	DA-BB-043
QAZI AUTO REPAIRS INC	2-610365	PBS	LONG ISLAND CITY	Active	2011/10/04	Combined	BB-013	DA-BB-013
PUBLIC SCHOOL 153 - QUEENS	2-610403	PBS	MASPETH	Active	2012/12/04	Combined	NC-077	DA-NC-077
MASPETH M&R SHOP	2-610414	PBS	MASPETH	Active	2011/11/30	Combined	NC-077	DA-NC-077
BARONA & MILLAN INC.	2-610457	PBS	BROOKLYN	Active	2012/01/26	Combined	NC-015	DA-NC-015
VAN DAM AUTO BODY & AUTO REPAIR INC.	2-610480	PBS	LONG ISLAND CITY	Active	2012/02/12	Combined	BB-026	DA-BB-026
CELINE TRADING INC.	2-610589	PBS	RIDGEWOOD	Active	2012/06/15	Combined	NC-083	DA-NC-083
MZM AUTO TRANSMISSION INC.	2-610621	PBS	LONG ISLAND CITY	Active	2012/07/31	Combined	BB-011	DA-BB-011
FORDHAM ROAD CONCRETE	2-610744	PBS	LONG ISLAND CITY	Active	2013/02/01	Combined	BB-040	DA-BB-040
(FORMER) ST MARY'S HOSPITAL	2-610783	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
RAPID READY MIX SUPPLY CORP	2-610837	PBS	BROOKLYN	Active	2013/05/20	Combined	NC-015	DA-NC-015
A&R AUTO REPAIR INC.	2-610862	PBS	RIDGEWOOD	Active	2013/06/13	Combined	NC-083	DA-NC-083
47 PLUS 40 41ST STREET REALTY CORP.	2-610879	PBS	SUNNYSIDE	Active	2011/12/12	Combined	BB-026	DA-BB-026
ONE-STOP TRANSMISSION, INC.	2-610905	PBS	RIDGEWOOD	Active	2013/09/03	Combined	NC-083	DA-NC-083
B J AUTO REPAIR, INC.	2-610920	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
822 LEXINGTON AVENUE	2-610966	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
192-194 MALCOLM X BLVD	2-610973	PBS	BROOKLYN	Active	2013/08/28	Combined	NC-015	DA-NC-015
MCDONALD'S RESTAURANT #031-0380	2-611007	PBS	LONG ISLAND CITY	Unregulated	NA	Combined	BB-026	DA-BB-026
589 JOHNSON AVENUE	2-611022	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
J.M.S. AUTO REPAIR INC.	2-611028	PBS	LONG ISLAND CITY	Active	2014/05/14	Combined	BB-026	DA-BB-026
71-13 60TH LANE	2-611051	PBS	RIDGEWOOD	Unregistered	NA	Combined	NC-083	DA-NC-083
1223 BUSHWICK LLC	2-611078	PBS	BROOKLYN	Unregistered	NA	Combined	NC-015	DA-NC-015
151-167 ROCHESTER AVE.	2-611135	PBS	BROOKLYN	Unregistered	NA	Combined	NC-015	DA-NC-015

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
SAG FRESH POND LLC	2-611149	PBS	RIDGEWOOD	Active	2011/02/16	Combined	NC-077	DA-NC-077
D TOP AUTO REPAIR	2-611157	PBS	BROOKLYN	Unregistered	NA	Combined	NC-015	DA-NC-015
MAYAB HAPPY TACOS, INC.	2-611162	PBS	BROOKLYN	Unregulated	NA	Combined	NC-015	DA-NC-015
1842 SUMMERFIELD ST.	2-611172	PBS	QUEENS	Active	2015/01/14	Combined	NC-083	DA-NC-083
QUEENS BLVD. 40TH OWNERS CORP	2-611181	PBS	SUNNYSIDE	Active	2011/12/27	Combined	BB-026	DA-BB-026
FLUSHING AUTO REPAIR CENTER INC.	2-611186	PBS	BROOKLYN	Active	2014/10/14	Combined	NC-015	DA-NC-015
B.B. BODY AND AUTO REPAIR	2-611253	PBS	BROOKLYN	Active	2015/02/18	Combined	NC-015	DA-NC-015
EDDIE HARRIS RESIDENTIAL FACILITY	2-611260	PBS	BROOKLYN	Active	2011/12/27	Combined	NC-015	DA-NC-015
NEW USA AUTO BODY SHOP INC.	2-611279	PBS	LONG ISLAND CITY	Active	2015/03/12	Combined	BB-013	DA-BB-013
POLICE SERVICE AREA #3 - NYPD HOUSING BUREAU	2-611293	PBS	BROOKLYN	Active	2015/03/19	Combined	NC-015	DA-NC-015
BLACK BEAR COMPANY	2-483192	PBS	LONG ISLAND CITY	Administratively Closed	NA	Combined	BB-040	DA-BB-040
MENDON LEASING CORP	2-032247	PBS	MASPETH	Unregulated	NA	Combined	NC-077	DA-NC-077
MANYA CORPORATION F.K.A. KALEX CHEMICAL PRODUCTS,	2-000022	CBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
CHLORAL GROUP	2-000036	CBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
EXXON COMPANY, U.S.A.	2-000218	CBS	BROOKLYN	Unregulated	NA	Direct Drainage	NC-002	DA-BB-002
NEWTOWN CREEK WATER POLLUTION CONTROL PLANT	2-000233	CBS	BROOKLYN	Active	2011/10/22	Direct Drainage	NC-002	DA-BB-002
GETTY TERMINALS CORP	2-000268	CBS	LONG ISLAND CITY	Active	2012/06/17	Direct Drainage		
MOTIVA ENTERPRISES, LLC	2-1540	MOSF	BROOKLYN	Active	2013/03/31	Direct Drainage	NA	
WILLIAMS MASPETH TERMINAL INC.	2-1820	MOSF	BROOKLYN	Inactive	NA	Direct Drainage	NA	
GETTY LONG ISLAND CITY TERMINAL	2-1840	MOSF	LONG ISLAND CITY	Active	2015/03/31	Direct Drainage		
CHARLES J. KING INC.	2-001074	PBS	BROOKLYN	Active	2011/04/15	Direct Drainage	NA	
UNION BEER DIST. L.L.C.	2-010863	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
PHOENIX BEVERAGE INC.	2-010871	PBS	LONG ISLAND CITY	Active	2012/10/29	Direct Drainage		
CON-WAY FREIGHT-XBY	2-032492	PBS	MASPETH	Active	2015/04/27	Direct Drainage	NA	
PORT DISTRIBUTING CORPORATION	2-034568	PBS	LONG ISLAND CITY	Active	2011/12/02	Direct Drainage		
P-I-E NATIONWIDE INC VACANT TRUCK TERM	2-034738	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
ROADWAY EXPRESS INC	2-043826	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
VIJAX CORPORATION	2-080454	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
8 REWE STREET, LLC	2-114308	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
BLINN DRUG CO	2-117501	PBS	BROOKLYN	Administratively Closed	NA	Direct Drainage	NA	
ROADWAY EXPRESS	2-157724	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
RIGHT-WAY DEALER WAREHOUSE	2-158445	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
DAVIS AND WARSHOW INC MSPETH	2-214264	PBS	MASPETH	Administratively Closed	NA	Direct Drainage	NA	
KOREAN TRADE & DISTRIBUTION CENTER OF NEW	2-233153	PBS	LONG ISLAND CITY	Unregulated	NA	Direct Drainage		
CONSOLIDATED CARPET TRADE WORKROOM INC.	2-233234	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
AA TRUCK RENTING CORP	2-238643	PBS	LONG ISLAND CITY	Active	2012/10/23	Direct Drainage		
SUNSHINE BISCUITS INC	2-245070	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
MANHATTAN POLY BAG CORP	2-248746	PBS	BROOKLYN	Active	2007/07/07	Direct Drainage	NA	
PINE BROS INC	2-259411	PBS	MASPETH	Active	1997/08/17	Direct Drainage	NA	
41-55 PROVOST CO	2-268704	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NC-002	DA-BB-002
NON FERROUS PROCESSING CORP	2-276138	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
307 VANDERVOORT AVE	2-297933	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
LEHIGH CARTING CO INC	2-310778	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
29-10 HUNTERS POINT AVE	2-311774	PBS	LONG ISLAND CITY	Active	2013/01/07	Direct Drainage		
TRUCK RITE CORP	2-349526	PBS	BROOKLYN	Active	2015/07/14	Direct Drainage	NA	
OLD DOMINION FREIGHT LINE, INC.	2-350095	PBS	BROOKLYN	Active	2013/05/19	Direct Drainage	NA	
PEERLESS IMPORTERS	2-350699	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
EMPIRE MERCHANTS, LLC	2-350702	PBS	BROOKLYN	Active	2011/07/21	Direct Drainage	NA	
Q. M. T. INC	2-412538	PBS	BROOKLYN	Active	1993/02/25	Direct Drainage	NA	
BLACK BEAR COMPANY	2-452335	PBS	LONG ISLAND CITY	Unregulated	NA	Direct Drainage		
QUEENS WEST 05/05A DOS-DDC	2-455393	PBS	MASPETH	Unregulated	NA	Direct Drainage	NA	
QUEENS WEST 5	2-455423	PBS	MASPETH	Unregulated	NA	Direct Drainage	NA	
DSNY GREENPOINT INCINERATOR	2-455946	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NC-002	DA-BB-002
MANYA CORPORATION F.K.A KALEX CORP	2-472689	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
ACME STEEL CORP.	2-477702	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
PEREZ INTERBORO ASPHALT CO INC & DIAMOND ASPHALT	2-600039	PBS	BROOKLYN	Active	2011/03/21	Direct Drainage	NC-002	DA-BB-002
ACME STEEL PARTITION CO., INC.	2-600073	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
NEW YORK PAVING,INC	2-600286	PBS	LONG ISLAND CITY	Active	2011/08/20	Direct Drainage		
NANCO CONTRACTING CORP	2-600363	PBS	LONG ISLAND CITY	Administratively Closed	NA	Direct Drainage		
EXXON COMPANY,USA	2-600882	PBS	BROOKLYN	Administratively Closed	NA	Direct Drainage	NC-002	DA-BB-002
OFF-SITE FREE PRODUCT RECOVERY	2-601227	PBS	BROOKLYN	Active	2012/11/03	Direct Drainage	NA	
OFF-SITE FREE PRODUCT RECOVERY	2-601228	PBS	BROOKLYN	Active	2012/11/03	Direct Drainage	NA	
OFF-SITE FREE PRODUCT RECOVERY	2-601229	PBS	BROOKLYN	Active	2012/11/03	Direct Drainage	NA	
GLOBAL MOVING ASTORAGE	2-601554	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
CIPICO CONSTRUCTION, INC.	2-601565	PBS	MASPETH	Active	2013/08/10	Direct Drainage	NA	
ENGINE COMPANY 206	2-601787	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
CANOVER INDUSTRIES, INC.	2-601894	PBS	MASPETH	Administratively Closed	NA	Direct Drainage	NA	
CANOVER INDASTIES , INC	2-601899	PBS	MASPETH	Administratively Closed	NA	Direct Drainage	NA	
PEERLESS IMPORTERS	2-602134	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
K-D FRAME & DOOR	2-602172	PBS	MASPETH	Unregulated	NA	Direct Drainage	NA	
FIBERDYE INC.	2-602204	PBS	MASPETH	Active	2005/05/02	Direct Drainage	NA	
METRO GARAGE INC	2-602411	PBS	BROOKLYN	Active	2015/08/17	Direct Drainage	NA	
SCHUMAN PROPERTIES	2-602467	PBS	LONG ISLAND CITY	Unregulated	NA	Direct Drainage		
WASTE MANAGEMENT OF NEW YORK,LLC	2-602602	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
WASTE MANAGEMENT OF NEW YORK/WM DIV. NY	2-602605	PBS	BROOKLYN	Administratively Closed	NA	Direct Drainage	NA	
MCSHANE MOVING & STORAGE	2-602805	PBS	LONG ISLAND CITY	Active	2008/04/23	Direct Drainage		
RECOVERY WELL G UST	2-602849	PBS	GREEN POINT	Unregulated	NA	Direct Drainage	NA	
PERFECT ART	2-603016	PBS	MASPETH	Active	2012/03/07	Direct Drainage	NA	
1131 GRAND ET IAC	2-603035	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
GEYSER REALTY LLC	2-603059	PBS	MASPETH	Unregulated	NA	Direct Drainage	NA	
GEYSER REALTY LLC	2-603060	PBS	MASPETH	Unregulated	NA	Direct Drainage	NA	
CAC INDUSTRIES, INC.	2-603068	PBS	LONG ISLAND CITY	Unregulated	NA	Direct Drainage		
1 REWE STREET	2-603289	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
MC ALEY ASSOCIATES, INC.	2-603741	PBS	BROOKLYN	Active	2003/11/10	Direct Drainage	NA	

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
BESTWAY CARTING INC.	2-604520	PBS	BROOKLYN	Active	2012/08/30	Direct Drainage	NA	
TIME WARNER SERVICE FACILTY	2-605251	PBS	BROOKLYN	Active	2011/06/12	Direct Drainage	NC-002	DA-BB-002
DSNY Q DISTRICT 5A GARAGE	2-605735	PBS	MASPETH	Active	2011/04/23	Direct Drainage	NA	
AMERICAN WAX CO. INC	2-607607	PBS	LONG ISLAND CITY	Active	2012/04/11	Direct Drainage		
EAST TERMINAL, LLC	2-608670	PBS	BROOKLYN	Active	2008/06/16	Direct Drainage	NA	
GREEN HILLS (USA), LLC	2-608764	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
PEERLESS IMPORTERS, INC.	2-609245	PBS	BROOKLYN	Unregulated	NA	Direct Drainage	NA	
LONG ISLAND CITY	2-609510	PBS	LONG ISLAND CITY	Unregulated	NA	Direct Drainage		
WASTE MANAGEMENT OF NEW YORK, LLC	2-600179	PBS	BROOKLYN	Active	2011/06/11	Direct Drainage	NA	
WASTE MANAGEMENT OF NEW YORK, LLC	2-605532	PBS	BROOKLYN	Active	2011/03/29	Direct Drainage	NA	
S & P AUTO REPAIR	2-000439	CBS	MIDDLE VILLAGE	Administratively Closed	NA	Other		
S & P AUTO REPAIR	4-000309	CBS	MIDDLE VILLAGE	Administratively Closed	NA	Other		
MENDON LEASING CORP	2-032328	PBS	GLENDALE	Unregulated	NA	Other	unknown	
LUTHERAN CEMETERY	2-070726	PBS	MIDDLE VILLAGE	Active	2012/03/10	Other	unknown	
NEWTOWN CREEK PLANT	2-206334	PBS	MASPETH	Active	2012/06/30	Other	unknown	
CLOSED SERVICE STATION	2-274801	PBS	MASPETH	Unregulated	NA	Other	unknown	
CARAVAN TRANSIT INC	2-310875	PBS	BROOKLYN	Unregulated	NA	Other	unknown	
VACANT	2-320730	PBS	GLENDALE	Active	2012/08/28	Other	unknown	
MIKES SERVICE STATION - OUT OF BUSINESS	2-420956	PBS	MIDDLE VILLAGE	Unregulated	NA	Other		
MAURICE AV GAS STATION	2-477850	PBS	MASPETH	Unregulated	NA	Other	unknown	
CENTRAL REPAIR	2-601695	PBS	WOODSIDE	Active	2014/01/10	Other	unknown	
236 MOFFAT STREET	2-606848	PBS	BROOKLYN	Unregulated	NA	Other	unknown	
CHRIST THE KING REGIONAL HIGH SCHOOL	2-607718	PBS	MIDDLE VILLAGE	Active	2012/04/29	Other	unknown	
EAST NEW YORK CMF	2-609106	PBS	BROOKLYN	Active	2013/07/16	Other	unknown	
PAUL CORNER AUTO INC.	2-609841	PBS	MASPETH	Active	2010/02/10	Other	unknown	
DRY ICE CORP	2-610126	PBS	MASPETH	Active	2011/12/27	Other	unknown	
SLS CAR WASH, INC.	2-610338	PBS	BROOKLYN	Active	2011/11/01	Other	unknown	
BJ'S WHOLESALE CLUB, INC.	2-611118	PBS	MIDDLE VILLAGE	Unregistered	NA	Other		
ALFRED CHEMICAL CORP.	2-000023	CBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
ENEQUIST CHEMICAL CO. INC.	2-000027	CBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
ALFRED CHEMICAL CORP.	2-000037	CBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
VIRGINIA K CORP	2-000070	CBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
L.T. HEAT TREATING D/B/A PRECISION HEAT TREATING	2-000093	CBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
BROOKLYN STEEL & TUBE CORPORATION	2-000150	CBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
EXXONMOBIL OIL CORPORATION BROOKLYN TERMINAL	2-000221	CBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
BP PRODUCTS NORTH AMERICA	2-000225	CBS	BROOKLYN	Active	2011/07/16	Separate	ST-90, NCB633	DA-NCB-633/90
METRO TERMINALS CORP	2-000275	CBS	BROOKLYN	Active	2011/07/11	Separate	ST-90, NCB633	DA-NCB-633/90
DITMAS OIL ASSOCIATES, INC.	2-000328	CBS	BROOKLYN	Unregulated	NA	Separate	ST-22	DA-ST-22
GRAND AVENUE DEPOT & MAINTENANCE FACILITY	2-000410	CBS	MASPETH	Active	2011/03/08	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BP PRODUCTS NORTH AMERICA, INC.	2-1200	MOSF	BROOKLYN	Active	2013/03/31	Separate	ST-90, NCB633	DA-NCB-633/90
BAYSIDE FUEL OIL DEPOT CORP.	2-1280	MOSF	BROOKLYN	Active	2013/03/31	Separate	ST-56	DA-ST-56
NEWTON CREEK WPCP	2-1300	MOSF	BROOKLYN	No Longer MOSF	NA	Separate	ST-90, NCB633	DA-NCB-633/90

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
DITMAS OIL ASSOCIATES, INC.	2-1340	MOSF	BROOKLYN	No Longer MOSF	NA	Separate	ST-22	DA-ST-22
METRO TERMINALS CORP.	2-1380	MOSF	BROOKLYN	Active	2014/03/31	Separate	ST-90, NCB633	DA-NCB-633/90
EXXON MOBIL OIL CORPORATION BROOKLYN TERMINAL	2-1420	MOSF	BROOKLYN	No Longer MOSF	NA	Separate	ST-90, NCB633	DA-NCB-633/90
GREENPOINT ENERGY FACILITY	2-2340	MOSF	BROOKLYN	No Longer MOSF	NA	Separate	ST-22	DA-ST-22
BCF OIL REFINING, INC	2-2600	MOSF	Brooklyn	Inactive	NA	Separate	ST-22	DA-ST-22
FORMER MOBIL GREENPOINT TERMINAL	2-2720	MOSF	BROOKLYN	No Longer MOSF	NA	Separate	ST-90, NCB633	DA-NCB-633/90
VIC CONSTRUCTION CORP	2-007536	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
ABF FREIGHT SYSTEM, INC.	2-015962	PBS	BROOKLYN	Unregulated	NA	Separate	ST-22	DA-ST-22
TRANSCON LINES	2-016071	PBS	BROOKLYN	Unregulated	NA	Separate	ST-22	DA-ST-22
ROADWAY PACKAGE SYSTEM, INC.	2-016241	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
ON TIME DEVELOPMENT, INC.	2-017302	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NEW PENN MOTOR EXPRESS, INC.	2-032069	PBS	MASPETH	Active	2013/01/05	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MENDON TRUCK LEASING CORP	2-032263	PBS	BROOKLYN	Active	2011/12/02	Separate	ST-90, NCB633	DA-NCB-633/90
PRESTON TRUCKING COMPANY	2-032808	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
ZAVAS REALTY CORP.	2-034509	PBS	MASPETH	Active	2013/01/27	Separate	ST-60NC, ST-54	DA-ST-60NC/54
KREGER TRUCK RENTING CO INC	2-034754	PBS	BROOKLYN	Active	2011/12/02	Separate	ST-90, NCB633	DA-NCB-633/90
VIRGINIA K CORP.	2-044946	PBS	BROOKLYN	Active	2010/06/09	Separate	ST-90, NCB633	DA-NCB-633/90
WENDI REALTY LLC	2-065145	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MICHELMAN IRON WORKS CORP	2-065188	PBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
THE CATALANO CO	2-069116	PBS	MASPETH	Active	2012/01/14	Separate	ST-48, ST-72	DA-ST-48/72
JANINE PAPER & BOX CORP	2-092681	PBS	MASPETH	Active	2012/05/07	Separate	ST-60NC, ST-54	DA-ST-60NC/54
L & H ASSOCIATES C/O TROON MGMT.	2-109932	PBS	BROOKLYN	Unregulated	NA	Separate	ST-56	DA-ST-56
NORTH PENN TRANSFER INC	2-110485	PBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
FLEET AUTO CARE CENTER	2-112429	PBS	MASPETH	Administratively Closed	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
NORAMPAC NEW YORK CITY INC.	2-117730	PBS	MASPETH	Active	2012/07/20	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BRADCO SUPPLY CORPORATION	2-130648	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
TRANSPORTATION DISPLAYS INC.	2-151122	PBS	MASPETH	Active	2012/08/26	Separate	ST-60NC, ST-54	DA-ST-60NC/54
SAFEWAY STEEL PRODUCTS	2-157716	PBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
SUPER TRUCK RENTAL CORP	2-188158	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MARYLU, LLC	2-189758	PBS	MASPETH	Active	2008/01/27	Separate	ST-60NC, ST-54	DA-ST-60NC/54
DISPLAY SYSTEMS, INC.	2-189766	PBS	MASPETH	Active	2012/06/05	Separate	ST-60NC, ST-54	DA-ST-60NC/54
MASPETH WAREHOUSE STOREROOM SS	2-190357	PBS	MASPETH	Active	2012/06/05	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BFI WASTE SYSTEMS OF NJ, INC.	2-212245	PBS	BROOKLYN	Active	2013/01/06	Separate	NCB-629, ST-60	DA-ST-60/629
ENEQUIST CHEMICAL	2-233072	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
ELDORADO COFFEE, LTD	2-243949	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
RANDOLPH ASSOCIATES	2-258296	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
RANDOLPH ASSOCIATES	2-267295	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
JEWEL STREET REALTY	2-269891	PBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
ROCKMILLS STEEL PROD CORP	2-270350	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BORO TIMBER CO	2-296007	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
GREENPOINT SERVICE CENTER	2-306398	PBS	BROOKLYN	Active	2012/07/14	Separate	ST-22	DA-ST-22
YELLOW TRANSPORTATION (QNS)	2-317071	PBS	MASPETH	Active	2012/07/07	Separate	ST-60NC, ST-54	DA-ST-60NC/54

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
YELLOW FREIGHT SYSTEM, INC	2-318035	PBS	BROOKLYN	Unregulated	NA	Separate	ST-90, NCB633	DA-NCB-633/90
ISLAND TRANS CORP	2-318744	PBS	MASPETH	Active	2013/12/16	Separate	ST-60NC, ST-54	DA-ST-60NC/54
AT LITE INC.	2-320943	PBS	MASPETH	Active	2008/05/27	Separate	ST-60NC, ST-54	DA-ST-60NC/54
J & J FARMS CREAMERY INC.	2-327646	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
FEDEX GROUND PACKAGE SYSTEM, INC.	2-336319	PBS	BROOKLYN	Unregulated	NA	Separate	ST-22	DA-ST-22
BEN-JO GENERAL TRUCKING, INC.	2-339067	PBS	MASPETH	Active	2012/10/29	Separate	ST-60NC, ST-54	DA-ST-60NC/54
106 STEWART AVE	2-344168	PBS	BROOKLYN	Administratively Closed	NA	Separate	NCB-629, ST-60	DA-ST-60/629
MASPETH 57-18 LLC	2-347418	PBS	MASPETH	Active	2008/04/19	Separate	ST-60NC, ST-54	DA-ST-60NC/54
A LAMANNA TRUCKING CO	2-350001	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
E GREENE & CO, INC	2-350230	PBS	MASPETH	Administratively Closed	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
A JOCHNOWITZ	2-361771	PBS	BROOKLYN	Active	2012/10/06	Separate	ST-90, NCB633	DA-NCB-633/90
GRAND AVENUE DEPOT.	2-364460	PBS	MASPETH	Active	2010/10/18	Separate	ST-60NC, ST-54	DA-ST-60NC/54
51-18 GRAND AVE.	2-370487	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
ABF FREIGHT SYSTEM	2-452300	PBS	BROOKLYN	Unregulated	NA	Separate	ST-22	DA-ST-22
NEWTOWN CREEK WPCP	2-456438	PBS	BROOKLYN	Active	2011/11/20	Separate	ST-90, NCB633	DA-NCB-633/90
GRAND PETROLEUM, LLC	2-456969	PBS	BROOKLYN	Active	2013/10/21	Separate	ST-56	DA-ST-56
S.B. THOMAS, INC	2-480894	PBS	MASPETH	Active	2015/07/09	Separate	ST-60NC, ST-54	DA-ST-60NC/54
57-00 49TH STREET	2-511404	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
THE LERMAN COMPANY, INCORPORATED	2-602000	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
STAR CORRUGATED BOX CO., INC.	2-602430	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
WASTE MANAGEMENT OF NEW YORK, LLC	2-602618	PBS	BROOKLYN	Active	2012/11/19	Separate	NCB-629, ST-60	DA-ST-60/629
GALASSO TRUCKING, INC.	2-602925	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
EXXONMOBIL OIL CORPORATION BROOKLYN TERMINAL	2-603027	PBS	BROOKLYN	Active	2012/06/03	Separate	ST-90, NCB633	DA-NCB-633/90
NEW STYLE WASTE REMOVAL CORP.	2-603855	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
HI-TECH RESOURCE RECOVERY INC	2-604389	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
BFI WASTE SERVICES OF NJ, INC.	2-604450	PBS	BROOKLYN	Active	2010/02/25	Separate	NCB-629, ST-60	DA-ST-60/629
G.T.S., INC.	2-604628	PBS	BROOKLYN	Active	2015/07/18	Separate	ST-90, NCB633	DA-NCB-633/90
M. FINE LUMBER CO. INC.	2-604641	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
PJL REALTY CORP.	2-604832	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
PUBLIC SCHOOL 9 - QUEENS (Q009)	2-605041	PBS	MASPETH	Active	2011/01/18	Separate	ST-60NC, ST-54	DA-ST-60NC/54
101 VARICK, WASTE MANAGEMENT OF NY, LLC	2-605608	PBS	BROOKLYN	Active	2011/04/10	Separate	NCB-629, ST-60	DA-ST-60/629
MODEL TRUCKING INC. DBA J. TUOMEY TRUCK REPAIR	2-607370	PBS	BROOKLYN	Active	2007/01/31	Separate	ST-90, NCB633	DA-NCB-633/90
41-25 49TH STREET	2-607539	PBS	WOODSIDE	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
METRO AUTO SALVAGE	2-608207	PBS	RIDGEWOOD	Active	2008/01/30	Separate	NCB-629, ST-60	DA-ST-60/629
PALM REALTY LLC	2-608675	PBS	BROOKLYN	Unregulated	NA	Separate	NCB-629, ST-60	DA-ST-60/629
FELDMAN LUMBER (TENENT)	2-609427	PBS	Maspeth	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
EMPIRE TRANSIT MIX INC	2-609891	PBS	BROOKLYN	Active	2014/08/09	Separate	ST-22	DA-ST-22
NEWTOWN USED AUTO PARTS/SCRAP METAL PROCESSOR	2-610198	PBS	BROOKLYN	Active	2011/05/05	Separate	ST-56	DA-ST-56
U.S. TOW, INC.	2-610223	PBS	BROOKLYN	Unregulated	NA	Separate	ST-22	DA-ST-22
UNICO TRUCK REPAIR CORNER, INC.	2-610287	PBS	BROOKLYN	Active	2011/08/01	Separate	NCB-629, ST-60	DA-ST-60/629
MASPETH	2-610335	PBS	MASPETH	Unregulated	NA	Separate	ST-60NC, ST-54	DA-ST-60NC/54
GASETERIA OIL CORP. OFFICE	2-610575	PBS	BROOKLYN	Active	2014/03/31	Separate	ST-22	DA-ST-22

Table B-5
Bulk Storage Locations Within Newtown Creek Drainage Area

Facility	No.	Facility Type	Location	Site Status	Expiration	Type	Outfall	Drainage ID
AMBROSINO CONSTRUCTION	2-610632	PBS	MASPETH	Active	2012/08/21	Separate	ST-60NC, ST-54	DA-ST-60NC/54
DSNY BK DISTRICT 1/4 GARAGE	2-610872	PBS	BROOKLYN	Active	2012/10/19	Separate	NCB-629, ST-60	DA-ST-60/629
ROCKAWAY PLAZA CORP	2-611056	PBS	MASPETH	Active	2012/09/12	Separate	ST-60NC, ST-54	DA-ST-60NC/54
I G FEDERAL ELECTRICAL SUPPLY	2-303658	PBS	LONG ISLAND CITY	Active	2012/07/14			

Notes:
NA - not applicable
Combined - combined sewer
Separate - separate storm sewer
Other - drainage type other than combined or separate storm sewer
CBS - chemical bulk storage
PBS - petroleum bulk storage
MOSF - major oil storage facility

AECOM

Table B-6
Toxic Release Inventory Reporting Facilities Within Newtown Creek Drainage Area

Facility Name	Location	TRI No.	Type	Outfall	Drainage ID
BROMANTE CORPORTION INC., SIRMOS DIVISION	LONG ISLAND CITY	11101BRMNT30004	Combined	BB-026	DA-BB-026
BROOKLYN PLANT SHELL OIL CO	BROOKLYN	11222MTVNT25PAI	Combined	NCB-021	DA-NCB-021
INDEPENDENT CHEMICAL CORP	GLENDALE	11385NDPND7951C	Combined	NC-083	DA-NC-083
COCA COLA BOTTLING CO	MASPETH	11378CCCLB5902B	Combined	NC-077	DA-NC-077
BASIC ADHESIVES INC - 25 KNICKERBOCKER A	BROOKLYN	11237BSCDH25KNI	Combined	NC-015	DA-NC-015
MANHEIMER J INC	LONG ISLAND CITY	11101JMNHM4722P	Combined	BB-026	DA-BB-026
FLUSH METAL PARTITION CORP	MASPETH	11378FLSHM54354	Combined	NC-029	DA-NC-029
BARKER BROS - RIDGEWOOD	RIDGEWOOD	11385BRKRB1666S	Combined	NC-083	DA-NC-083
ACCO USA	LONG ISLAND CITY	11101SWNGL45203	Combined	BB-026	DA-BB-026
JEFSTEEL BUSINESS EQUIPMENT	BROOKLYN	11237JFSTL1345H	Combined	NC-083	DA-NC-083
GRAND CHROMIUM PLATING	BROOKLYN	11237GRNDC209MO	Combined	NC-015	DA-NC-015
H S FINISHING PRODUCTS CORP	BROOKLYN	11233HSFNS17688	Combined	NC-015	DA-NC-015
FLORENTINE CRAFTSMEN - 46-24 28TH STREET	LONG ISLAND CITY	11101FLRNT46242	Combined	BB-026	DA-BB-026
ROEHR CHEMICALS INC	LONG ISLAND CITY	11101RHRCH52203	Combined	BB-011	DA-BB-011
HANDY BUTTON MACHINE COMPANY INCORPORATED	FLUSHING	11377HNDYB50054	Combined	BB-009	DA-BB-009
SHOPSIN PAPER - RIDGEWOOD	RIDGEWOOD	11385SHPSN5050M	Combined	NC-083	DA-NC-083
AMERICAN ALUMINUM & BRONZE FOUNDRY INC	LONG ISLAND CITY	11101MRCNL51253	Combined	BB-012	DA-BB-012
ANTON MACHINE WORKS INCORPORATED	BROOKLYN	11237NTNMC1226F	Combined	NC-015	DA-NC-015
PLATED PLASTIC INDUSTRIES INC.	BROOKLYN	11237PLTDP385TR	Combined	NC-015	DA-NC-015
LIQUIMARK	BROOKLYN	11222LQMRK19CLA	Combined	NCB-023	DA-NCB-023
KARP ASSOC INC -54-54 43RD ST	MASPETH	11368KRPSS54544	Combined	NC-029	DA-NC-029
ABLE STEEL EQUIPMENT CO INC	LONG ISLAND CITY	11101BLSTL50022	Combined	BB-043	DA-BB-043
STRUCTURAL PROCESSING CORP	MASPETH	11378STRCT59305	Combined	NC-077	DA-NC-077
COSMOPOLITON CHEMICAL CO	LONG ISLAND CITY	11101CSMPL50232	Combined	BB-043	DA-BB-043
TUDOR HANDLE CORPORATION	LONG ISLAND CITY	11101TDRHN43023	Combined	BB-026	DA-BB-026
ATLITE INC	BROOKLYN	11237NRYPR53754	Combined	NC-015	DA-NC-015
ELECTRONICS PLATING CORP	MASPETH	11378LCTRN58155	Combined	NC-077	DA-NC-077
METRO TERM-498 KINGSLAND AVE	BROOKLYN	11222MTRTR498KI	Direct Drainage	NC-002	DA-BB-002
NON FERROUS PROCESSING CO	BROOKLYN	11222NNFRR551ST	Direct Drainage	NA	
ACME STEEL CO-513 PORTER AVE	BROOKLYN	11222CMSTL513PO	Direct Drainage	NA	
KALEX CHEMICAL PRODUCTS INC.	BROOKLYN	11211KLXCH235GA	Direct Drainage	NA	
GETTY TERMINALS CORP	LONG ISLAND CITY	11101GTTYT3023G	Separate	ST-90, NCB633	DA-NCB-633/90
ENEQUIST CHEMICAL CO INC	BROOKLYN	11237NQSTC100VA	Separate	NCB-629, ST-60	DA-ST-60/629
GRAND BASKET-53-06 GRAND AVE	MASPETH	11378GRNDB5306G	Separate	ST-60NC, ST-54	DA-ST-60NC/54
DITMAS TERMINAL - 364 MASPETH AVE	BROOKLYN	11211DTMSL364MA	Separate	ST-22	DA-ST-22
LARIBEE WIRE MANUFACTURING CO. INC.	BROOKLYN	11222LRBWR208ME	Separate	ST-90, NCB633	DA-NCB-633/90
ALFRED CHEMICAL CORP	BROOKLYN	11237LFRDC111GA	Separate	NCB-629, ST-60	DA-ST-60/629
KINGS KINGSLEY CORPORATION	MASPETH	11378KNGSK58965	Separate	ST-60NC, ST-54	DA-ST-60NC/54

Table B-6
Toxic Release Inventory Reporting Facilities Within Newtown Creek Drainage Area

Facility Name	Location	TRI No.	Type	Outfall	Drainage ID
ARROW-BAKE ON CORP	MASPETH	11378RRWBK5208G	Separate	ST-60NC, ST-54	DA-ST-60NC/54
ATLITE LIGHTING EQUIPMENT INC-57-47 47ST	MASPETH	11378TLTNC57474	Separate	ST-60NC, ST-54	DA-ST-60NC/54
BROOKLYN STEEL & TUBE CORP	BROOKLYN	11237LTVST7288S	Separate	NCB-629, ST-60	DA-ST-60/629
AMERICAN CLEANING SOLUTIONS DIV AMERICAN WAX	LONG ISLAND CITY	11101MRCNW3930R	Separate	ST-48, ST-72	DA-ST-48/72

Notes:
NA - not applicable
Combined - combined sewer
Separate - separate storm sewer

Table B-7
Air Facility System Facilities Within Newtown Creek Drainage Area

Facility Name	City	Type	Outfall	DrainageID
ST MARYS HOSPITAL	BROOKLYN	Combined	NC-015	DA-NC-015
BARKER BROS - RIDGEWOOD	RIDGEWOOD	Combined	NC-083	DA-NC-083
WYCKOFF HEIGHTS MEDICAL CENTER	BROOKLYN	Combined	NC-015	DA-NC-015
BETTS AVE INCINERATOR	MASPETH	Combined	NC-029	DA-NC-029
BROOKLYN PLANT SHELL OIL CO	BROOKLYN	Combined	NCB-021	DA-NCB-021
FINK BAKING CORP LLC	LONG ISLAND CITY	Combined	BB-015	DA-BB-015
CONFORT & COMPANY INC	LONG ISLAND CITY	Combined	BB-026	DA-BB-026
AC PIANOCRAFT	LONG ISLAND CITY	Combined	BB-026	DA-BB-026
BROMANTE CORPORTION INC., SIRMOS DIVISION	LONG ISLAND CITY	Combined	BB-026	DA-BB-026
ACME STEEL CO-513 PORTER AVE	BROOKLYN	Direct Drainage	NA	
SIMSMETAL EAST LLC QUEENS PLANT	LONG ISLAND CITY	Direct Drainage		
EXXON CO USA BROOKLYN TERM	BROOKLYN	Direct Drainage	NC-002	DA-BB-002
WOOD-TEX PANELS INC-108 VARICK AV	BROOKLYN	Separate	NCB-629, ST-60	DA-ST-60/629
NYCDEP BWT - NEWTOWN CREEK WPCP	BROOKLYN	Separate	ST-90, NCB633	DA-NCB-633/90

Notes:
NA - not applicable
Combined - combined sewer
Separate - separate storm sewer

Appendix C

Screening Level Ecological Risk Assessment (SLERA) Approach

AECOM Environment

Prepared by:
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June 2011

Screening Level Ecological Risk Assessment (SLERA) Approach Newtown Creek

Environment

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Screening Level Ecological Risk Assessment (SLERA) Approach Newtown Creek

Prepared By Bjorn Bjorkman

Reviewed By Douglas E. Simmons

Contents

Figures

List of Acronyms

AE	Assessment Endpoint
ARAR	Applicable or Relevant and Appropriate Requirement
AUF	Area Use Factors
BAF	Bioaccumulation Factor
BCF	Bioconcentration Factor
BERA	Baseline Ecological Risk Assessment
BSAF	Biota-Sediment Accumulation Factor
BTAG	Biological Technical Assistance Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPEC	Constituents of Potential Ecological Concern
CSM	Conceptual Site Model
CSO	Combined Sewer Overflow
DDT	Dichlorodiphenyltrichloroethane
DQO	Data Quality Objective
ERA	Ecological Risk Assessment
ER-L	Effects Range-Low
ER-M	Effects Range Median
ESB	Equilibrium Partitioning Sediment Benchmarks
ESI	Expanded Site Inspection
FS	Feasibility Study
FWRIA	Fish and Wildlife Resources Impact Analysis
LOAEL	Lowest Observed Adverse Effect Level
MDC	Maximum Detected Concentration
ME	Measures of Effect
NOAA	National Oceanographic and Atmospheric Administration
NOAEL	No Observed Adverse Effect Level
NRWQC	National Recommended Water Quality Criteria
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OU6	Operable Unit 6
PAH	Polynuclear Aromatic Hydrocarbon

PCB	Polychlorinated Biphenyl
PEL	Probable Effect Level
RI	Remedial Investigation
SLERA	Screening Level Ecological Risk Assessment
SMDP	Scientific Management Decision Point
SQuiRT	Screening Quick reference Tables
TEL	Threshold Effect Levels
TOGS	Technical & Operational Guidance Series
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency

1.0 Introduction

This document presents the approach for conducting a SLERA within the overall Ecological Risk Assessment (ERA) process as part of the Newtown Creek Remedial Investigation and Feasibility Study (RI/FS). Figure 1 shows the location of the Study Area. The overall ERA process will follow the *Ecological Risk Assessment Guidance for Superfund* (United States Environmental Protection Agency [USEPA], 1997) guidance, which outlines an eight-step process for the ERA (Figure 2). The RI/FS, which will be conducted under the USEPA *Comprehensive Environmental Response, Compensation, and Liability Act* (*CERCLA*) program, will be detailed in a RI/FS Work Plan. This document, which focuses on procedures specific to the SLERA portion of the ERA, is an appendix to that RI/FS Work Plan.

As described by USEPA, "[a]n ERA evaluates the potential adverse effects that human activities have on the living organisms that make up ecosystems. The risk assessment process provides a way to develop, organize and present scientific information so that it is relevant to environmental decisions" (http://www.epa.gov). The first two[1] steps of an ERA are jointly referred to as a SLERA. The primary objectives of a SLERA are listed below.

(1) To determine if the information available is adequate to make risk management decisions. There are three possible decisions based on the SLERA: (i) there is adequate information to conclude that ecological risks are negligible and therefore there is no need for remediation on the basis of ecological risk; (ii) the information is not adequate to make a decision, and the ERA process needs to continue to baseline level evaluation; or (iii) the information indicates potential for adverse ecological effects, and a more thorough assessment is warranted.

(2) Define a preliminary ecological conceptual site model (CSM) that incorporates the ecological risk-related issues of concern in the context of the *CERCLA* process. The CSM will be updated during the RI/FS and ERA as additional information is gathered.

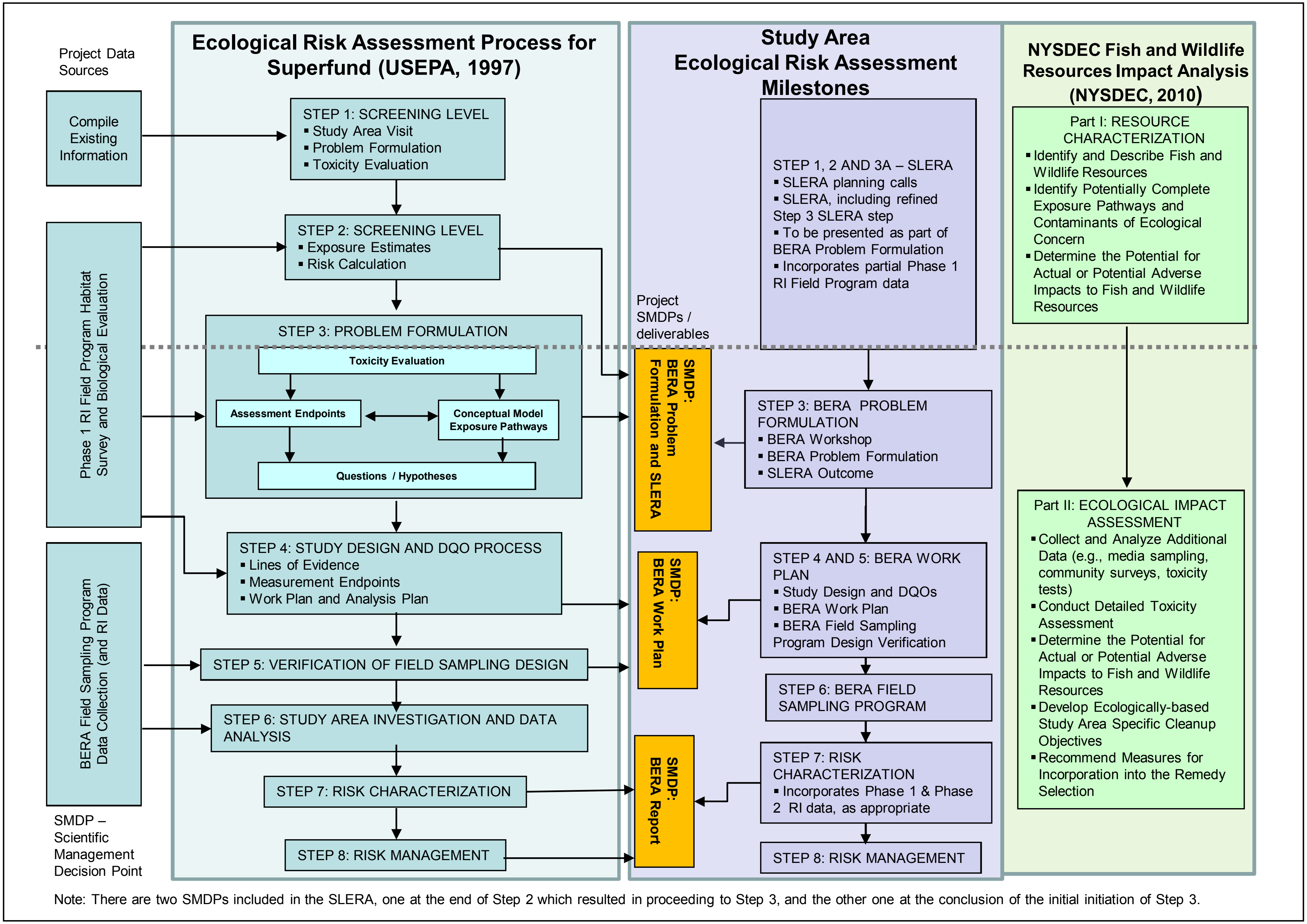
(3) Focus further evaluation on key receptors, pathways and constituents of potential ecological concern (COPECs) for evaluation in the Baseline Ecological Risk Assessment (BERA) which consists of the remaining steps of the ERA.

This document describes the approach for conducting the SLERA as part of the overall ERA process and within the framework of the ongoing RI/FS process. It includes brief discussions of: (1) the approach to the SLERA; (2) the components of the SLERA; and (3) the proposed SLERA process.

[1] As will be discussed further below, the third step of the ERA process also includes an iteration of the screening level assessment, the "refined" screening level evaluation that will be reported as part of the SLERA.

AECOM

Figure 1
Aerial Site Locus Map
SLERA Approach, Newtown Creek



AECOM

Figure 2
Tiered Ecological Risk Assessment Framework
SLERA Approach, Newtown Creek

M11039_Fig 2_AppC

2.0 Screening Level Ecological Risk Assessment

2.1 Approach to SLERA

In order to expedite the risk assessment process, while remaining compliant with the USEPA process for ecological risk assessment under *CERCLA* (USEPA, 1997), the proposed SLERA process will include the following activities.

- Preliminary meetings with USEPA to discuss the SLERA CSM, approach, and appropriate screening levels.
- A SLERA will be conducted using existing environmental (sediment, surface water, and biota) data from the USEPA *Expanded Site Inspection (ESI) Report* (Weston Solutions, 2009), data collected during the Laurel Hill Operable Unit 6 (OU6) investigation (Anchor, 2007), and New York City Department of Environmental Protection (NYCDEP) data collected in support of its proposed maintenance dredging of select portions of Newtown Creek and its tributaries (NYCDEP, 2009) and as part of ongoing water quality monitoring. The results of the SLERA analysis will be submitted to USEPA as a technical memorandum. The final SLERA will be presented as part of the BERA Problem Formulation process.
- Data from the habitat survey and biological evaluation tasks of the Phase 1 RI Field Program (Figure 2) will be incorporated into the SLERA (and the BERA Problem Formulation process) as appropriate and when available[2]. This approach allows the SLERA process to advance more or less independently of the Phase 1 RI Field Program and should not delay planning for the BERA. It is anticipated that existing environmental data from the sources listed in the previous bullet will be sufficient to broadly define Study Area conditions for the purpose of identifying BERA needs.
- The SLERA outcome (i.e., Steps 1 and 2 of the ERA process as shown in Figure 2), as well as the refinement of COPECs as outlined in USEPA (2001), will be reported to USEPA as part of a BERA Problem Formulation document, which is a Scientific Management Decision Point (SMDP) for presentation and approval of Step 3 of the ERA process, BERA Problem Formulation. Therefore, the BERA Problem Formulation document will present Steps 1 through 3 of the ERA process. The SMDP for Step 2, which typically would be the free-standing SLERA report, therefore, will be considered concurrently with the Step 3 SMDP. The Step 3 SMDP is intended to reach agreement on the CSM and approach to the BERA on the basis of the outcome of the SLERA.
- A BERA Problem Formulation workshop will be held with USEPA and stakeholders prior to finalizing the BERA Problem Formulation document. During this workshop data will be evaluated, including the SLERA results, to reach consensus on the preliminary ecological

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[2] While the ERA is framed in the context of a *CERCLA* process, and uses as its primary reference the USEPA (1997) ecological risk assessment guidance for Superfund, it is an objective of the process to also be able to meet, as far as possible, New York State Department of Environmental Conservation (NYSDEC) Fish and Wildlife Resources Impact Analysis (FWRIA) data needs, including the NYSDEC Resource Characterization task.

CSM and the objectives of the BERA. Prior to the BERA Problem Formulation workshop SLERA level results will be presented to the stakeholders in the form of pre-meeting materials and/or results summary documents.

The BERA (Steps 4 through 8) will proceed following the SLERA and BERA Problem Formulation SMDP. Following USEPA approval of the BERA Problem Formulation document, a BERA Work Plan (Step 4 of the ERA process) will be prepared and submitted to the USEPA. The BERA Work Plan will present the study design and Data Quality Objectives (DQOs) for the BERA field work. Following USEPA approval of the BERA Work Plan, the BERA Field Sampling Program will be implemented as Step 6 of the ERA process. The BERA Report constitutes the SMDP for Step 7.

2.2 Components of the SLERA

According to USEPA guidance (USEPA, 1997), the SLERA includes Step 1 and 2 of the ERA process. However, USEPA has recognized that the high level of conservativeness inherent in the default assumptions used in the original screening level process did not allow for much “screening out” even in simple cases. A modified or partial Step 3 analysis, “Refining of Contaminants of Concern,” and typically termed as “Refined Screening Level” (USEPA, 2001) will also be conducted as part of the SLERA. This refined screening analysis allows incorporation of Study Area-specific assumptions resulting in screening with more Study Area-specific applicability. On Figure 2, tasks above the dotted line are considered part of the SLERA. Therefore, the SLERA will consist of the following three main steps.

- Step 1: Preliminary CSM
- Step 2: Screening Level Ecological Risk Evaluation
- Step 3: Refined Screening Level Evaluation (and also BERA Problem Formulation)

The BERA Problem Formulation document will incorporate these three steps, with the understanding that a BERA will follow.

To be able to conduct a SLERA, for inclusion in the BERA Problem Formulation document, it is important to establish a process of interaction with USEPA and other stakeholders to ensure that screening is conducted using the appropriate endpoints, receptors, media, and screening levels.

2.2.1 Step 1: Preliminary CSM

A preliminary ecological exposure pathway figure has been prepared (Figure 3). The overall CSM for the Study Area is a work in progress and, as the ecological characteristics of the Study Area system are better understood and the inputs from stakeholders of the “end vision” for the Study Area emerge, the CSM will be refined.

The CSM is of critical importance to ensure that the appropriate components of the ecosystem are addressed. Early consensus with USEPA and stakeholders on the following issues will be sought prior to conducting the SLERA.

- An understanding of the role of overall RI/FS objectives in terms of the future ecological condition appropriate for the Study Area, in view of the often competing commercial, administrative, and community goals for this heavily commercial waterway within the largest urban area in the United States (the “end vision”).

- An understanding of the role of the interaction of ongoing loadings, impacts from constituents in Study Area sediments, and tidal and seasonal effects on the appropriate receptors and pathways evaluated.
- An understanding of the key receptors and constituent exposure pathways in the CSM that are appropriate drivers for the ERA, ensuring that they are appropriate to the stressors in the Study Area. While a screening level analysis often focuses on media concentrations in aquatic systems, the evaluation of higher order receptors (mammals and birds) requires identification of which species or guilds to consider, and also which pathways are likely to be complete and significant in the context of the Study Area. As part of the Phase 1 RI Field Program, the presence or absence of intertidal zones (mudflats, marshes, sediment mounds, etc.) will be confirmed during the shoreline assessment and habitat survey.
- An understanding of which environmental media are applicable to the SLERA. For example, deep subsurface sediment, although a potentially impacted medium in the Study Area, is not normally an ecologically relevant medium. Another factor is the role of loadings from discharges and runoff to the overall water quality, the structure of the ecological community, the potential for sediment exposure, and possible recontamination.

This process will allow definition of which receptors and pathways to consider in the screening process, as well as help select which set of screening levels to identify or develop.

2.2.2 Step 2: Screening Level Ecological Risk Evaluation

The screening level evaluation consists of screening of constituent concentrations measured in environmental media against appropriate screening levels for the media for each receptor or receptor category defined in the CSM. USEPA guidance specifies that screening levels should be conservative. Screening levels may or may not be Applicable or Relevant and Appropriate Requirement (ARARs) under *CERCLA*. Screening levels may not be considered as indicators of actual risk. The primary issue requiring discussion and resolution with stakeholders will be which screening level values to use. As part of the SLERA process, a consensus on screening levels for Study Area surface water and sediment data for relevant receptors is important prior to conducting the actual screening process (e.g., through the generation of a draft list of screening values for review by and discussion with the stakeholders).

SLERA analysis is based on conservative assumptions such as area usage, bioavailability, life stage, body weight, ingestion rates, and dietary composition. In addition, the maximum detected concentrations (MDCs) for an exposure pathway will be used to compare with the screening levels. Non-detected concentrations will be considered at half of the reporting limit.

<u>Screening Level Assessment Endpoints and Measures of Effect</u>

For the SLERA, the CSM assumes a simplified receptor analysis that can be evaluated using the standard screening levels (and default No Observed Adverse Effect Level, or NOAEL, doses) for the media of exposure for each receptor or receptor category. Figure 3 identifies 4 screening level assessment endpoints (AEs). These screening level assessment endpoints will be refined at the BERA Problem Formulation stage of the ERA.

The AEs and associated measures of effect (MEs) to be considered in the SLERA are:

- Protection of water column organisms (aquatic plants, zooplankton, fish, intertidal invertebrates) from adverse effects on survival, growth, or reproduction associated with exposure to contaminants in surface water. This endpoint will be evaluated by comparison of contaminant concentrations in surface water to screening level benchmark values.
- Protection of sediment organisms (benthic and intertidal invertebrates, benthic fish) from adverse effects on survival, growth, or reproduction associated with exposure to contaminants in sediment and surface water. This endpoint will be evaluated by comparison of contaminant concentrations in sediment and surface water to screening level benchmark values.
- Protection of semi-aquatic birds and mammals from adverse effects on survival, growth, or reproduction associated with exposure to contaminants in sediment and surface water. This category includes herbivorous, invertivorous, and piscivorous birds. Mammals may be included if significant presence is considered likely. Each feeding guild is evaluated separately. This endpoint will be evaluated by comparison of ingested doses from surface water, sediment, and biota to screening level NOAEL toxicity values.
- Protection of riparian insectivorous birds from adverse effects on survival, growth, or reproduction associated with exposure to contaminants in sediment and surface water. Insectivorous birds may feed on emerging insects which may biotransfer COPECs from water and sediment, but otherwise have little contact with the source media. This endpoint will be evaluated by comparison of ingested doses in emergent insect biota to screening level NOAEL toxicity values.

Screening levels may be derived from generic water and sediment screening levels from Federal or State sources, from the scientific literature, or from sources from other jurisdictions.

<u>Surface Water Screening Levels</u>

Sources of surface water screening levels (freshwater and /or marine waters) include the values recommended by USEPA Region 2 for use in New York waters, i.e., the following:

- *New York State Technical & Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. The authority for these values is derived from Article 17 of the *Environmental Conservation Law* and 6 *New York Codes, Rule and Regulations* (*NYCRR*) Parts 700-706, Water Quality Regulations. These screening values, which include marine, fresh water, and water for consumption of fish, are initially considered ARARs.
- *National Recommended Water Quality Criteria (NRWQC) (USEPA, 2009a)*. These criteria generally are the basis for the State values.
- *USEPA Region 4 Surface Water Screening Values for Hazardous Waste Sites (USEPA, 2002).* This source is a compilation of various sources, and includes references to several State, Federal, and Canadian guidance documents.
- Other water screening levels from literature and other jurisdictions applicable to those constituents not identified in the sources above (e.g., USEPA (1996) Ecotox Thresholds; Suter & Tsao (1996) Tier II values).

Additional screening levels exist in other sources and will be applied in a second, more Study Area-specific, tier of screening, where frequencies of detection are also considered. Essential nutrients will not be considered in this tier of screening. The 95% upper confidence limit (UCL) of the mean for the data will be used in this second tier of screening and non-detect data will be evaluated in accordance with ProUCL Version 4.1.00 statistical software (USEPA 2011).

Appropriate screening levels from these sources applicable to bioaccumulation in wildlife or human consumers via fish ingestion will also be considered.

<u>Sediment Screening Levels</u>

For sediments, there are no universally recognized screening levels. There are multiple sources of screening levels from Federal and State agencies and from the scientific literature. The screening levels often have varying derivation mechanisms, and varying levels of protectiveness, some of which may be overly protective for the Study Area given its current uses. No single source has screening levels for all COPECs[3]. Therefore, early consensus on the applicable screening levels is important.

Sediment screening will be conducted in a tiered process. Initial (Tier 1) screening will compare maximum detected concentrations to USEPA Region 2 recommended screening levels for New York waters.

In Tier 2 screening, a more Study Area-specific tier of screening, additional sources of screening levels will be considered. For this screening step frequency of detection in the data set will be considered (if frequency of detection is less than 5% the COPEC will be removed). Essential nutrients will not be considered in the screening. Screening will be against upper bound mean concentrations (i.e., the 95% UCL of the mean). Screening values based on total organic carbon-normalized values will be adjusted to Study Area-specific organic carbon content. Non-detect data will be evaluated in accordance with ProUCL 4.1.00 statistical software (USEPA, 2011).

In a third tier of screening, data will be screened against “probable” effect levels (i.e., Effect Range Median (ER-M), Probable Effect Levels (PELs), and T-50 logistic regression values), to help identify areas of highest concern early on in the process, and to help guide baseline investigations.

Sources of screening levels for sediment (in freshwater and/or marine water) include the following.

- USEPA Region 3 Biological Technical Assistance Group (BTAG) screening benchmarks (USEPA, 2006).
- *New York Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999). .
- National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT) (Buchman, 2008). NOAA has compiled sediment screening criteria for marine and freshwater sediment from several sources to consider as screening levels, such as MacDonald et al. (1996) Threshold Effect Levels (TELs) and PELs; Long et al. (1995) Effects Range-Low (ER-L) and ER-Ms; Field et al. (2002) logistic regression T-20 and T-50 values.

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[3] Many sources of screening levels present two or more levels of protection: a threshold level, usually suggesting a level protective of most sediment-exposed fauna, below which effects are unlikely even for sensitive organisms; and a probable level, above which effects are likely to most or a majority of organisms. The use of probable effect screening levels as an added screening step will permit the conditions in the Study Area to be further differentiated into areas of moderate potential impact and higher potential impact. This information will help guide the scope of baseline level investigations.

- Other State guidance from New Jersey, Washington, Florida, and other states; as well as Canadian Federal and Provincial sediment quality guidance, for chemicals lacking values in the above sources.
- USEPA equilibrium based screening levels, e.g., the sediment screening level for polynuclear aromatic hydrocarbon (PAH) mixtures (USEPA, 2003) and certain pesticides.
- Other literature sources of sediment criteria, e.g., USEPA, 1996 and Jones et al.,1997.

Screening Levels for Higher Trophic Level Organisms

When developing screening levels appropriate for higher trophic level organisms (birds, mammals, and fish) the USEPA (1997) guidance specifies that "conservative assumptions" should be incorporated including the following:

- The use of threshold individual toxicity reference values,
- The assumption that the animal is exposed for its lifetime at the most impacted location,
- A diet consisting of the most impacted food item to account for food transfer,
- The use of the most conservative biological uptake factors from water to organism (bioaccumulation factors [BAF] and bioconcentration factors [BCF]) and from sediment to organism (either via equilibrium partitioning to pore water and direct exposure to pore water, or via Biota-Sediment Accumulation Factors [BSAF]),
- The use of the most sensitive life stage, and
- No consideration of seasonality, limited area use, or background concentrations.

2.2.3 Step 3: Refined Screening Evaluation and BERA Problem Formulation

A step named "Refining of Contaminants of Concern" was added by USEPA (2001) as an additional screening step, because the constraints in the initial screening often resulted in SLERA conclusions of potential risk which overestimated reasonable estimates of actual risk and failed to help focus the BERA to only those constituents and receptors in areas of greatest ecological concern. In this refined screening step, the conservatism associated with those assumptions detailed in the previous section of this document can be reduced in some instances to provide additional information for the SMDP step and to help focus the subsequent steps in the BERA, if needed. In general, the objective of this step is to introduce Study Area specificity to the SLERA. Therefore, it is appropriate and customary to report the refined step as part of the screening level analysis.

The following activities may serve to refine the constituents of concern on a Study Area-specific basis.

- Incorporating background concentrations from appropriate reference locations. This use of background concentrations, which will gain added importance in the BERA analysis, is another topic for early discussion and understanding in the SLERA process outlined in this document.
- Considering frequency and magnitude of detection, dietary considerations related to nutrients, and the potential for contaminants to bioaccumulate. Other factors, not specifically addressed

in USEPA (2001), such as species and Study Area relevant diets, area use factors (AUFs)[4], seasonal use factors, and life stages for the development of screening levels may also be relevant to discuss in the uncertainty discussion of the SLERA. Bioaccumulative compounds need to be carried forward into the BERA irrespective of these factors.

- Considering average constituent exposure concentrations, typically based on the 95% UCL of the mean within an exposure area, for mobile receptors will be used to understand uncertainty associated with reliance on the MDC, and presented as part of the refinement process. Use of UCLs of the mean are not specifically addressed in the USEPA (2001) document.

In addition, it may be appropriate to incorporate additional modifications to the toxicity parameters. Although this is not explicitly considered in the USEPA (2001) guidance, it is commonly applied. This would entail using less conservative (e.g., Lowest Observed Adverse Effect Level (LOAEL)) or probable effect toxicity reference values, or screening levels in recognition that in general, the ERA is intended to protect ecological resources at a level higher than the organismal level (except for threatened or endangered species) (USEPA, 1997).

The “refined” screening is conventionally considered as part of Step 3 of the ERA process, and will be presented as part of the SLERA. For the Study Area, this step will be conducted immediately prior to the development of the BERA Problem Formulation. The results of the SLERA and the BERA Problem Formulation will be submitted together as one draft document to provide information for the SMDP.

This step may allow elimination of some pathways, COPECs, and receptors to be considered when developing the BERA level Problem Formulation. The conclusions reached in the SLERA may be modified, through stakeholder input in consultation with the USEPA and Respondents, as part of the BERA workshop.

2.3 SLERA Process and Milestones

In summary, the SLERA process will encompass the following steps.

1. Development of a CSM and Screening Levels

    a. A series of discussions to establish a common understanding for following topics identified:

        i. The “end vision” for the Study Area

        ii. Interactions of loadings, sediment, and other sources on receptors and pathways

        iii. The CSM, i.e., appropriate receptors, pathways, and media for the evaluation

        iv. Consensus on screening levels to use in SLERA.

[4] The AUF is a measure of the proportion of time or resources devoted to the area of concern by the receptors. Wide ranging and mobile species may spend only a small fraction of their time or obtain little food within the Study Area even if resident in the area.

2. Study Area Database Development

    a. Assembling existing sediment, water quality, and biological data to conduct the screening to include the following:

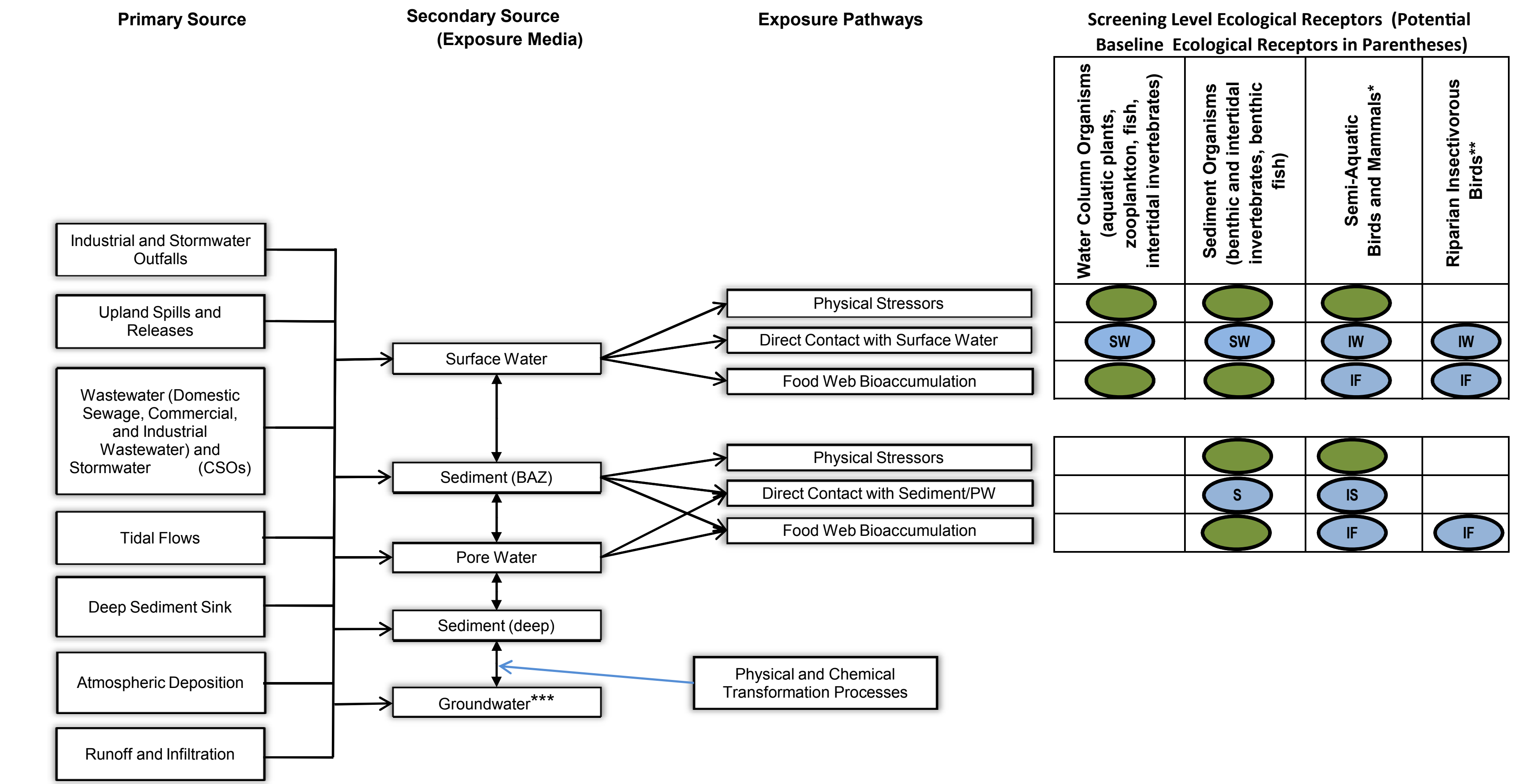
        i. USEPA *ESI Report* data
        ii. Laurel Hill OU6 data
        iii. NYSDEC and NYCDEP data on the Study Area and discharges to the Study Area
        iv. Habitat and biological data collected as part of the habitat survey and biological evaluation task of the Phase 1 RI Field Program (to the extent available)
        v. Other existing data as appropriate and available
        vi. Initial discussion of reference locations for background evaluation (the selection of reference locations for collection of background constituent data and for comparison of biological metrics will be of importance in the BERA).

3. SLERA Screening

    a. Conducting screening level analysis (Steps 1 and 2) and refined screening level analysis (Step 3) and reporting in a technical memorandum. The final SLERA will be presented as part of the BERA Problem Formulation process and will be reported as described in Item 4c below.

4. BERA Problem Formulation

    a. Presenting SLERA level analysis in pre-meeting materials for stakeholder review prior to the BERA Workshop
    b. Holding a BERA Problem Formulation workshop to discuss the results of the SLERA and define the scope and objectives of the BERA.
    c. Presenting full SLERA results in the BERA Problem Formulation document, which satisfies the SLERA SMDP at the end of Step 3 of the USEPA process.



Key: (blue ellipse) Complete and Significant Pathway - Quantitative

SW	*Surface Water Screening Benchmarks*
IW	*Ingested Dose via Water*
S	*Sediment Screening Benchmarks*
IS	*Ingested Dose via Sediment*
IF	*Ingested Dose via Food Items*

(green ellipse) To be Assessed Qualitatively - Limited Evaluation Methods

* This category includes herbivorous, invertivorous, and piscivorous birds. Mammals may be included if significant presence considered likely. Each feeding guild is evaluated separately

** Insectivorous birds may feed on emerging insects which may biotransfer COPC from water and sediment

*** Exposure to be determined after collection and evaluation of data

Blank cell indicates incomplete pathway

BAZ = Biologically Active Zone
COPC = Constituent of Potential Concern
CSO = Combined Sewer Overflow
PW = Pore Water
VOC = Volatile Organic Compound

AECOM

Figure 3
Preliminary Ecological Exposure Pathways (SLERA)
SLERA Approach, Newtown Creek

M11039_fig3_App C

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