APPENDIX 1

**STATEMENT OF WORK FOR REMEDIAL DESIGN
NEW CASSEL/HICKSVILLE GROUND WATER CONTAMINATION SUPERFUND SITE
NASSAU COUNTY, NEW YORK**

OPERABLE UNIT 1

I. WORK TO BE PERFORMED

As set forth in the Environmental Protection Agency's ("EPA") Record of Decision ("ROD") for the New Cassel/Hicksville Ground Water Contamination Site (Site) issued September 30, 2013, the objectives of the work (hereinafter "Work," as defined in Section III of the Administrative Settlement Agreement and Order for Remedial Design ("RD"), Investigation, and Cost Recovery ("Settlement Agreement") for Performance of the RD for operable unit 1 ("OU1") of the Site are to:

- Prevent or minimize current and potential future human exposure (via ingestion, dermal contact, and inhalation) to volatile organic compounds ("VOCs") in groundwater at concentrations in excess of federal maximum contaminant levels ("MCLs") and state standards;
- Minimize the potential for further migration of groundwater with VOC contaminant concentrations greater than federal MCLs and state standards; and
- Restore the impacted aquifer to its most beneficial use as a source of drinking water by reducing contaminant levels to the federal MCLs and state standards.

These objectives shall be furthered through design of the remedy selected in the ROD, attached as Appendix C to the Settlement Agreement. Respondents to the Settlement Agreement shall finance and perform the Work in accordance with the Settlement Agreement, the ROD, and this RD Statement of Work ("SOW"), including all terms, conditions and schedules set forth herein or developed and approved hereunder.

The RD will consist of all activities necessary to complete pre-design investigation studies and, the design of the major components of the remedy selected in the ROD. The remedy includes, but is not limited to, the following components:

- A combination of (a) in-situ treatment of groundwater via in-well vapor stripping and (b) extraction of groundwater via pumping and ex-situ treatment of extracted groundwater prior to discharge to a publicly owned treatment works or reinjection to groundwater (to be determined during design). The purpose is to establish containment and effectuate removal of contaminant mass where concentrations of total volatile organic compound concentrations are greater than 100 micrograms per liter ("µg/L");

- In-situ chemical treatment, such as in-situ chemical oxidation, to target high concentration contaminant areas, as appropriate;

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- Implementation of long-term monitoring to track and monitor changes in groundwater contamination in OU1 to ensure the remedial action objectives are attained;

- Development of a Site Management Plan to ensure proper management of the remedy post-construction. The Site Management Plan will include provisions for any operation and maintenance and long-term monitoring required for the remedy, as well as periodic certifications; and

- Institutional controls consisting of any existing local requirements that prevent installation of drinking water wells, and informational devices to limit exposure to contaminated groundwater.

II. PERFORMANCE STANDARDS

The RD shall be prepared to achieve compliance with the Performance Standards, which shall include and be consistent with the requirements set forth in the ROD including the Remedial Action Objectives. The RD shall also be prepared such that the remedy will achieve compliance with all legally applicable and relevant and appropriate requirements ("ARARs") as set forth in the ROD.

III. PROGRESS REPORTS AND MEETINGS

In addition to the other deliverables set forth in the Settlement Agreement, Respondents shall provide a written monthly progress report and participate in meetings with EPA at major milestones in the design process. Monthly progress reports shall be submitted on or before the 15th day of each month following the Effective Date of the Settlement Agreement.

Respondent's obligation to submit progress reports continues until EPA gives Respondents written notice of completion of work under Section XXIX of the Settlement Agreement. At a minimum, these progress reports shall include the following:

1. A description of all actions which have been taken toward achieving compliance with the Settlement Agreement during the prior month;

2. A description of any violations of the Settlement Agreement and other problems encountered during the prior month;

3. A description of all corrective actions taken in response to any violations or problems which occurred during the prior month;

4. A summary of the results of all sampling, test results and other data received or generated by Respondents during the course of implementing the Work during the prior month. Such results shall be validated in accordance with the approved Quality Assurance Project Plan developed in conformity with the RD SOW. Also identify all plans, reports, and other deliverables required by the Settlement Agreement completed and submitted during the previous month in addition to correspondence and/or comments Respondents have received from EPA;

5. A description of any modifications to the work plans or other schedules that Respondents have proposed to EPA or that have been approved by EPA, and a description of all plans, actions, and data scheduled for the next eight weeks. Also a description of all activities undertaken in support of the Community Relations Plan (if requested by EPA) during the previous month and those to be undertaken in the next eight weeks, if requested by EPA;

6. An estimate of the percentage of the Work required by the Settlement Agreement which has been completed as of the date of the progress report; and

   An identification of all delays encountered or anticipated that may affect the future schedule for performance of the Work, and all efforts made by Respondents to mitigate delays or anticipated delays.

IV. COMMUNITY RELATIONS

To the extent requested by EPA, Respondents shall provide information relating to the Work required hereunder for EPA's use in developing and implementing a Community Relations Plan. As requested by EPA, Respondents shall participate in the preparation of appropriate information disseminated to the public and participate in public meetings, which may be held or sponsored by EPA, to explain activities at or concerning the Site.

V. PRE-DESIGN INVESTIGATION

A. Pre-Design Investigation Activities

The Pre-Design Investigation activities shall be conducted by Respondents to gather sufficient information necessary to fully develop the RD for OU1 at the Site. The Pre-Design Investigation activities to be performed in support of the RD Work include, but are not limited to the following:

1. Review of existing OU1 groundwater data to identify possible data gaps or areas where data may require updating. These data include, but are not limited to, the results of previous OU1 groundwater and soil gas sampling investigations, historical information about OU1, including aerial photographs and other available information. This review shall result in recommendations to address any identified data gaps;

2. Development and implementation of a plan to identify existing groundwater monitoring wells to be sampled as part of the long-term monitoring program. The long-term monitoring program may include installation and sampling of additional groundwater monitoring wells, as necessary;

3. Development and implementation of a sampling plan which identifies media to be sampled (e.g., groundwater, soil gas) to address any identified data gaps and to collect additional rounds of groundwater sampling to support the RD Work and the long-term monitoring program, including monitored natural attenuation processes, as necessary;

4. Development and implementation of plan to evaluate aquifer properties including a

sampling and analysis to be conducted in support of an aquifer pump test;

5. Development and implementation of a plan with specifications for an in-situ chemical treatment treatability study. The treatability study shall, among other things, consist of a pilot study(ies) to for the use of in-situ chemical treatment as an element of the remedy and the development of protocols and monitoring requirements to ensure the treatment does not adversely affect nearby water supply wells;

6. Development and implementation of additional pilot study(ies) for the remedy, as necessary; and

7. Development of quality assurance/quality control ("QA/QC") requirements set forth in the Quality Assurance Project Plan ("QAPP") referenced in Section X below.

B. Pre-Design Investigation Work Plan

Within forty-five (45) days of the Effective Date of the Settlement Agreement, Respondents shall submit a Pre-Design Investigation Work Plan that addresses all the elements of Section V.A above and outlined below in Section V.B.

The Pre-Design Investigation Work Plan shall include:

1. An evaluation and summary of existing data gaps and description of data gaps with recommendations to address data gaps; as necessary;

2. A description of all Pre-Design Investigation tasks;

3. A plan which identifies the network of monitoring wells (existing and/or proposed) that will be sampled as part of the baseline RD sampling and long-term monitoring program. The plan, shall at minimum, provide the location of existing and proposed monitoring well locations and the total depth, screening interval and well construction details for monitoring wells;

4. A sampling plan for proposed media to be sampled (e.g., groundwater, soil gas) with the identification of contaminants or parameters for which sampling will be conducted, the areal extent, depths, numbers, and locations of samples collected as necessary;

5. A plan which specifies how monitored natural attenuation processes and parameters will be evaluated at OU1. The plan shall include a sampling plan, including parameters to be sampled, areal extent, depths, numbers, and locations of samples collected, as necessary;

6. A plan with specifications for an in-situ chemical treatment treatability study;

7. A plan which specifies pilot study(ies) for the remedy, including an aquifer pump test, to be conducted, as necessary;

8. QA/QC requirements set forth in the QAPP referenced in Section X below; and

9. A schedule for pre-design investigation activities listed in this SOW, which does not exceed eighteen (18) months.

10. Descriptions of access and other approvals that Respondents will need in order to perform the Pre-Design Investigation work under the Settlement Agreement. This description shall detail how such access and other approvals will be sought, and shall include a schedule for obtaining all necessary access and other approvals.

C. Interim Pre-Design Deliverables

Subsequent to EPA's approval of the Pre-Design Investigation Work Plan, the following interim deliverables shall be submitted to EPA:

1. Respondents shall provide EPA with validated analytical data within sixty (60) days after each sampling activity. Additionally, if requested by EPA, Respondents shall make all data available to EPA upon receipt from the lab (prior to validation). All data submitted to EPA shall be compiled in a database format or spreadsheet acceptable to EPA and shall show the location, medium and results for each sample.

2. Within thirty (30) days after submission to EPA of the final set of validated data, Respondents shall submit to EPA a Pre-Design Investigation Sampling Technical Memorandum. The Pre-Design Investigation Sampling Technical Memorandum shall, at minimum, provide a narrative and tabular summary of investigation results, graphics of investigation results, all validated data, and a data usability evaluation.

D. Pre-Design Investigation Evaluation Report

Within thirty (30) days of EPA's approval of the interim Pre-Design Investigation Sampling Technical Memorandum, Respondents shall submit a Pre-Design Investigation Evaluation Report. EPA may require Respondents to supplement the Pre-Design Investigation Evaluation Report and/or to perform additional pre-design investigation activities.

This Pre-Design Investigation Evaluation Report shall include:

1. Summary of investigations performed;

2. Summary of investigation results;

3. Summary of validated data (i.e., tables and graphics);

4. Data validation reports and laboratory data reports;

5. Narrative interpretation of data and results;

6. Results of statistical and modeling analyses;

7. Copies of field notes and log books;

8. Photographs documenting the work conducted; and

9. Conclusions and recommendations for RD, including design parameters and criteria.

VI. APPROVAL OF PRE-DESIGN DELIVERABLES

EPA will either approve each of the individual Pre-Design Investigation deliverables or otherwise respond pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement.

VII. REMEDIAL DESIGN ACTIVITIES

Respondents shall perform the RD of the remedy selected in the ROD. The RD activities to be performed pursuant to and in accordance with this SOW, the Settlement Agreement and the ROD include, but are not limited to the following:

1. Development of planning documents including but not limited to work plans, tasks, and schedules for conducting remedial design activities as necessary, for the remedy. Tasks shall include Preliminary RD Report (35% completion), Preliminary RD Report (65% completion), a Pre-Final RD Report (95% completion), and a Final RD Report (100% completion) (collectively, RD Reports);

2. Preparation of a detailed design of all the components of the remedy, as applicable, described in Section I;

3. Development of a Site Management Plan, which will include provisions for the construction, operation, and maintenance of all remedy components including provisions for long-term monitoring and periodic certifications, as applicable;

4. Preparation of a plan for the evaluation of and planning for a centralized treatment building;

5. Preparation of a plan to evaluate either reinjection of treated groundwater and/or discharge of treated groundwater to a publically owned treatment works;

6. Development of tasks to implement and monitor the effectiveness of in-situ chemical treatment, including the protocols and requirements to ensure treatment does not adversely impacts water supply wells, as deemed applicable by EPA;

7. Development of an Institutional Control Implementation Assurance Plan ("ICIAP") to assure institutional controls are implemented at OU1 of the Site such that they restrict the use of groundwater until Site-related contaminants in the aquifer are restored to the RAOs specified in the ROD. Respondents shall prepare an ICIAP which shall specify existing governmental and proposed informational institutional controls to insure that the remedy is protective. The ICIAP shall include, but shall not be limited to: (a) a description of the pathways for potential human exposure to hazardous substances that may remain during and/or after completion of construction of the remedial action; (b) a description of the proposed institutional controls and their

purpose (i.e., letters to local government); (c) a description of the proposed duration of each institutional control and an explanation for such duration; (d) a schedule for implementing each institutional control; (e) a plan for monitoring, maintaining, and reporting on, the continued efficacy of the institutional controls, and (f) a schedule for annual certifications regarding whether the institutional controls remain in place, regarding whether the institutional controls have been complied with, and steps taken to address any problems with informational or governmental controls, as applicable;

8. Data collection for the evaluation of the soil vapor pathway in OU1, as necessary;

9. Incorporation of EPA's data into the RD if EPA conducts data collection;

10. Evaluation of the need for air monitoring during construction activities at the Site and development, if necessary, of plans to ensure that air emissions resulting from construction activities meet applicable or relevant and appropriate air emission requirements; and

11. Development of tasks to identify how the RD will be implemented using the principles specified in EPA Region 2's Clean and Green Policy (available at www.epa.gov/region2/superfund/green_remediation/policy.html).

VIII. REMEDIAL DESIGN WORK PLAN

A. Within 30 days after EPA's approval of the Pre-Design Investigation Evaluation Report, Respondents shall submit to EPA a work plan for the design of the Remedial Action at the Site (Remedial Design Work Plan ("RDWP")). The RDWP shall provide a detailed plan for the design of the remedy set forth in the ROD, in accordance with this SOW and for the achievement of the Performance Standards and other requirements set forth in the ROD, the Settlement Agreement, and this SOW.

B. The RD Work Plan shall also be prepared in accordance with CERCLA and relevant EPA guidance, including the EPA document entitled "Guidance on Oversight of Remedial Designs and Remedial Actions performed by Potentially Responsible Parties," (OSWER directive 9355.5-01, EPA/540/g-90-001), dated April 1990.

C. The RDWP shall include tasks, work plans, field work and data collection, and schedules for implementation of the RD, that are necessary to ensure compliance with performance standards, ARARs, or other requirements of the remedy selected in the ROD. The RDWP shall include, but not be limited to Section VII and the following:

1. A project schedule for all activities covered by this SOW in the form of a task/subtask activity bar chat or critical path method sequence of events;

2. A description of all RD tasks, including submittal of a Preliminary RD (35% completion), Preliminary RD Report (65% completion), a Pre-Final RD Report (95% completion), and a Final RD Report (100% completion) (collectively "RD Reports");

3. A summary of all pre-design investigation activities;

4. An ICIAP, which specifies existing governmental and any proposed informational institutional controls for OU1. Plan for development of the ICIAP shall also be provided;

5. A plan for the performance of air monitoring, if necessary, during construction activities at the Site to ensure that air emissions resulting from the construction activities meet applicable or relevant and appropriate air emission requirements;

6. Quality Assurance/Quality Control Project Plan as developed during the Pre-Design Investigation activities. If the QAPP submitted during the Pre-Design Investigation Work Plan is not adequate for the scope of activities to be performed during the RD, an amendment to the original QAPP for the Site shall be prepared by Respondent for EPA review and approval and will be submitted at the same time as the RD Work Plan;

7. Health and Safety Plan as developed during the Pre-Design Investigation activities. If the HASP submitted in the Pre-Design Investigation Work Plan is not adequate for the activities to be performed during the RD, Respondents shall submit an amendment to the HASP for the Site to EPA;

8. Descriptions of known access and other approvals that Respondents will need in order to perform the Work under the Settlement Agreement. This description shall detail how such access and other approvals will be sought, and shall include a schedule for obtaining all necessary access and other approvals. This description shall be updated as appropriate, if subsequent approvals are required; and

9. The RD Work Plan shall also include a description of how the RD will incorporate the principles found in EPA Region 2's Clean and Green Policy (available at www.epa.gov/region2/superfund/green_remediation/policy.html). At a minimum, the Remedial Design Work Plan shall include, but not be limited to, the following:

IX. APPROVAL OF REMEDIAL DESIGN WORK PLAN

EPA will either approve the RD Work Plan or otherwise respond pursuant to Section IX (EPA Approval of Plans and Other Submissions) of the Settlement Agreement. Respondents shall implement the RDWP in accordance with the EPA-approved schedule.

X. WORK PLAN DELIVERABLES

The Pre-Design Investigation Work Plan and Remedial Design Work Plan shall also include, but not be limited to the following:

1. A QAPP, which shall be prepared consistent with the *Uniform Federal Policy for Quality Assurance Project Plans* ("UFP-QAPP"), Parts 1, 2 and 3, EPA-505-B-04-900A, B and C, March 2005 or newer, and other guidance documents referenced

in the aforementioned guidance documents. The UFP documents may be found at: http://www2.epa.gov/fedfac/assuring-quality-federal-cleanups. In addition, the guidance and procedures located in the EPA Region 2 Quality Assurance web site: http://www.epa.gov/region02/qa/documents.htm, as well as other OSWER directives and EPA Region 2 policies should be followed, as appropriate.

a. All sampling and analyses performed pursuant to this Settlement Agreement shall conform to EPA policy and guidance regarding sampling, quality assurance, quality control, data validation, and chain of custody procedures. Respondents shall incorporate these procedures into the QAPP in accordance with the *Uniform Federal Policy for Implementing Quality Systems* (UFP-QS), EPA-505-F-03-001, March 2005; *Uniform Federal Policy for Quality Assurance Project Plans* (UFP-QAPP), Parts 1, 2, and 3, EPA-505-B-04-900A, B, and C, March 2005 or newer; and other guidance documents referenced in the aforementioned guidance documents. Subsequent amendments to the above, upon notification by EPA to Respondents of such amendments, shall apply only to procedures conducted after such notification.

b. The QAPP shall provide for collection of data sufficient to conduct the RD activities including pre-design investigations, treatability studies, pilot testing, and periodic groundwater monitoring.

c. The QAPP shall specifically include the following items:

    i. An explanation of the way(s) the sampling, analysis, testing, and monitoring will produce data for the RD;

    ii. A detailed description of the sampling, analysis, and testing to be performed, including sampling methods, analytical and testing methods, sampling locations and frequency of sampling to be implemented to sample and analyze the contaminants found in groundwater, air, and soil, if necessary;

    iii. A description of how sampling data and a site base map will be submitted in a manner that is consistent with the Region 2 Electronic Data Deliverable (EDD) format (information available at www.epa.gov/region02/superfund/medd.htm);

    iv. A map depicting sampling locations (to the extent that these can be defined when the QAPP is prepared); and

    v. A schedule for performance of the specific tasks in subparagraphs (c)(i)-(iii) of this Section.

d. In the event that additional sampling locations, testing, and analyses are required or other alterations of the QAPP are required, Respondents shall

submit to EPA a memorandum documenting the need for additional data within thirty (30) days of identification. EPA in its sole discretion will determine whether the additional data will be collected by Respondents and whether it will be incorporated into plans, reports and other deliverables.

e. In order to provide quality assurance and maintain quality control with respect to all samples to be collected, Respondents shall ensure the following:

i. Quality assurance and chain of custody procedures shall be performed in accordance with standard EPA protocol and guidance, including the guidance provided in the EPA Region 2 Quality Assurance website, http://www.epa.gov/region2/qa/;

ii. The laboratory(s) to be used must be specified in the QAPP. Any laboratory selected to provide analytical services shall be accredited by a national or state organization such as the National Environmental Laboratory Accreditation Program ("NELAP") or the American Association for Laboratory Accreditation ("A2LA"). Alternatively, if the laboratory participates in the EPA Contract Laboratory Program ("CLP"), this requirement will be considered as fulfilled. In addition, the laboratory should submit (or the Respondent shall submit on behalf of the laboratory) to EPA current copies (within the past twelve months) of laboratory certification provided from either a State or Federal Agency which conducts certification. The certification shall be applicable to the matrix/analyses which are to be conducted;

iii. The laboratories utilized for analyses of samples must perform all analyses according to approved EPA methods;

iv. Unless indicated otherwise in the approved QAPP, upon receipt from the laboratory, all data shall be validated;

v. Submission of the validation package (checklist, report and Form I's containing the final data) to EPA, prepared in accordance with the provisions of Subparagraph vi. below as part of the RD Report submittal;

vi. Assurance that all analytical data that are validated as required by the QAPP are validated according to the latest version of EPA Region 2 data validation Standard Operating Procedures. Region 2 Standard Operating Procedures are available at: http://www.epa.gov/region02/qa/documents.htm;

vii. Unless indicated otherwise in the QAPP, Respondents shall require deliverables equivalent to CLP data packages from the laboratory for analytical data. Upon EPA's request, Respondents shall submit to EPA the full documentation (including raw data) for this analytical data. EPA reserves the right to perform an independent data validation, data validation check, or qualification check on generated data; and

viii. Respondents shall insert a provision in their contract(s) with the laboratory utilized for analyses of samples that requires granting access to EPA personnel and authorized representatives of the EPA for the purpose of ensuring the accuracy of laboratory results related to the Site.

2. A Field Sampling and Analysis Plan ("FSP"), which provides a detailed description of the sampling, analysis and monitoring that, shall be performed during the Pre-Design Investigation and RD phase.

3. A Health and Safety Plan ("HSP"), which shall conform to 29 CFR §1910.120, "OSHA Hazardous Waste Operations Standards," and the EPA guidance document, "Standard Operating Safety Guidelines" (OSWER, 1988). EPA does not approve the HSP.

XI. REMEDIAL DESIGN

A. Respondent shall perform the RD activities in conformance with the RD Work Plans approved by EPA and within the time frames specified in the RD schedule contained therein.

B. The RD Reports shall be submitted to EPA in accordance with the schedule set forth in the EPA-approved RDWP. Each RD Report shall include a discussion of the design criteria and objectives, with emphasis on the capacity and ability to meet design objectives successfully. Each report shall also include the plans and specifications that have been developed at that point in time, along with a design analysis. The design analysis shall provide the rationale for the plans and specifications, including results of relevant sampling and testing performed, supporting calculations and documentation of how these plans and specifications will meet the requirements of the ROD for OU1 and shall provide a discussion of any impacts these findings may have on the RD. In addition to the above, the RD Reports shall include the following items:

1. Technical specifications for photographic documentation of the remedial construction work;

2. A discussion of the manner in which the Remedial Action ("RA") will achieve the Performance Standards;

3. A draft schedule for RA activities;

4. A preliminary Construction Quality Assurance Project Plan ("CQAPP");

5. A report describing those efforts made to secure access and obtain other approvals and the results of those efforts;

6. A plan for implementation of construction and construction oversight;

7. An update to the ICIAP, which specifies existing governmental and any proposed informational institutional controls; and

8. A discussion of the manner in which the RA will comply with EPA Region 2's Clean and Green Policy (available at www.epa.gov/region2/superfund/green_remediation/policy.html);

XII. APPROVAL OF RD REPORTS

A. Each RD Report will be submitted to EPA for review and comment. EPA will either approve the RD Report or otherwise respond pursuant to Section IX (EPA Approval of Plans and Other Submissions) of the Settlement Agreement. Respondents shall make those changes required by EPA's comments in the succeeding drafts of the RD Reports (e.g. changes required by comments on the Preliminary RD Report (65% completion) shall be made in the Pre-Final RD Report (95% completion)).

B. Respondent shall submit the Final RD Report (100% completion) to EPA for review and approval pursuant to Section IX (EPA Approval of Plans and other Submissions) of the Settlement Agreement.