NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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February 8, 2021

Jeremy Wolf
RG&E
89 East Avenue, 7th Floor
Rochester, NY 14649

Re: OU-01 (Upland) Pre-Design Investigation and
OU-02 (Sediment) Supplemental Investigation Work Plan – Approval with Condition
NYSEG - Palmyra MGP
Site #859022

Dear Mr. Wolf:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the OU-01 Pre-Design Investigation and OU-02 Supplemental Investigation Work Plan for the Palmyra MGP site, dated January 22, 2021. The Department and NYSDOH find the work plan to be acceptable with the following condition:

- Include polycyclic aromatic hydrocarbon (PAH) and total organic carbon (TOC) analysis on all sediment samples.

Please update the pages of the work plan to include these analyses, as necessary (i.e. Table 2), and provide updated pages to the Department for inclusion in the final document. If you have any questions, please feel free to contact me at 518-402-2029 or email: greta.white@dec.ny.gov.

Sincerely,

Greta White, P.G.
Project Manager
Remedial Action Bureau C
Division of Environmental Remediation

EC: D. Eaton, J. Brown, D. Pratt, R. Quail & M. King; NYSDEC
A. Perretta & J. Deming, NYSDOH
M. Thorpe & T. Raby; AECOM

NEW YORK STATE OF OPPORTUNITY. Department of Health

ANDREW M. CUOMO
Governor

HOWARD A. ZUCKER, M.D., J.D.
Commissioner

LISA J. PINO, M.A., J.D.
Executive Deputy Commissioner

January 6, 2021

Matthew King
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Re: OU-01 (Upland) Pre-Design Investigation
and OU-02 (Sediment) Supplemental
Investigation Work Plan
Palmyra MGP
Site # 859022
Palmyra, Wayne County

Dear Mr. King:

I have reviewed the above referenced work plan. Based on my review I have no public health related comments to offer.

Thank you for the opportunity to comment on this work plan. If you have any questions about my comments, please contact me at (518) 486-7186.

Sincerely,

Anthony Perretta
Public Health Specialist
Bureau of Environmental Exposure Investigation

ec: J. Deming / e-File
A. Bonamici / C. Nicastro – NYSDOH WRO
P. Toye – NYSDOH GDO
M. Cruden / K. Carpenter / G. White – NYSDEC Central Office
D. Pratt – NYSDEC Region 8

AECOM Environment

Prepared for:
New York State Electric & Gas Corp
18 Link Drive
P. O. Box 5224
Binghamton, NY 13902

Prepared by:
AECOM
Buffalo, NY
Project 60639035
January 22, 2020

OU-01 (Upland) Pre-Design Investigation and OU-02 (Sediment) Supplemental Investigation Work Plan – FINAL

NYSEG - Palmyra MGP
Village of Palmyra, Wayne County, New York
NYSDEC Site # 8-59-022

AECOM Environment

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Binghamton, NY 13902

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Project 60639035
January 21, 2020

OU-01 (Upland) Pre-Design Investigation and OU-02 (Sediment) Supplemental Investigation Work Plan – FINAL

NYSEG - Palmyra MGP
Village of Palmyra, Wayne County, New York
NYSDEC Site #8-59-022

I, Matthew Thorpe, certify that I am a currently a Professional Engineer and that this Pre-Remedial Design Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the New York State Department of Environmental Conservation (NYSDEC) Department of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities will be performed in full accordance with the DER-approved scope of work and any DER-approved modifications.

Respectfully submitted,
AECOM USA, Inc.

Matthew Thorpe 01/21/2021 Date
Registered Professional Engineer
New York License No. 090842

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1.0 Introduction

This Work Plan presents the sampling locations, rationale, field methods, and laboratory methods to be used for two investigations at the New York State Electric & Gas Corporation (NYSEG) Palmyra Manufactured Gas Plant (MGP) Site (Site), located in Palmyra, New York. Figure 1 shows the Site location. The investigations include the following:

- Operable Unit (OU)-01 (Upland) Pre-Design Investigation (PDI) to support the design of the excavation and off-site disposal activities planned as the first phase of the remedy at Site; and,
- OU-02 (Sediment) Supplemental Investigation (SI) to address potential data gaps in the previously completed sediment investigation.

The OU-01 (Upland) PDI is in support of a remedial design to be developed in accordance with the Amended and Restated Multi-Site Order on Consent (ARMSCO) (Index No. D0-0002-9309) between New York State Department of Environmental Conservation (NYSDEC) and NYSEG (NYSDEC, 2016).

NYSEG submitted the feasibility study (FS) for the Site to NYSDEC in 2009. The FS considered remedial options for two areas at the Site – uplands and wetlands. The FS report selected a remedial alternative including partial excavation and non-aqueous phases liquid (NAPL) containment for the upland area and NAPL extraction for the wetlands (NYS Canal Corporation property north of Hathaway Brook (Brook), also known as Mill Creek). In their review of the FS report, NYSDEC indicated that additional investigation was required to characterize submerged sediment in the Brook which runs between the uplands and the wetlands at the Site. The FS was amended in 2010 to focus only on the upland portions of the Site. To address potential sediment issues in the Brook, NYSDEC split the Site into two operable units in the Record of Decision (ROD) – OU-01 which includes the upland and wetland portions of the Site and OU-02 which includes sediment in the Brook. The ROD for OU-01 was issued in 2011.

Subsequently, a sediment investigation and forensics evaluation were performed to further define the potential nature and extent of Site-related impacts to sediment at OU-02 by evaluating the source or sources of polycyclic aromatic hydrocarbon (PAH) impacts in the Brook and to determine sediment background concentrations using data collected upstream. The evaluation report was submitted to NYSDEC on November 17, 2017 with no further action recommended for OU-02. The no further action recommendation was concluded based on the following reasons: similar exceedances of NYSDEC sediment and soil criteria were noted in both the Site and background sediment locations; no coal tar NAPL was identified in the Brook; and, PAH fingerprint samples were not consistent with the MGP material on-site. NYSDEC responded to the report in a letter dated December 19, 2017 and agreed with the conclusion that there was no sufficient evidence to support active remediation of sediments in the Brook adjacent to the Site (near-site) and in downstream areas of the channel. However, NYSDEC concluded that the sampling locations were biased and not driven by the presence of deep sediments. NYSDEC felt that this preferential sample collection created a data gap and that the sediment sampling did not characterize potential sediment contamination in depositional areas of the Brook downgradient of the Site. In their letter,

NYSDEC requested, at a minimum, additional sediment probing for the presence of separate phase coal tar NAPL in the delta where the Brook discharges into the New York State (NYS) Barge Canal (Canal).

As outlined in Section 3.3 of Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10), specific requirements for investigation work plans are provided in the following sections:

- Section 2 contains the Site description and history.
- Section 3 describes the OU-01 (Upland) PDI objectives, scope and rationale.
- Section 4 describes the OU-02 (Sediment) SI objectives, scope and rationale.
- Section 5 provides a quality assurance project plan (QAPP).
- Section 6 describes health and safety protocols.
- Section 7 presents the OU-01 (Upland) PDI and OU-02 (Sediment) SI schedule.

2.0 Site Description and History

2.1.1 Site Description

The Site is located on Park Drive (formerly Railroad Ave.) in the Village of Palmyra, Town of Palmyra, Wayne County, New York (Figure 1). The Site is 0.89 acres of land owned by NYSEG. The parcel is zoned for commercial use by the Town of Palmyra, New York.

The Site is located in an urban setting surrounded by land mostly used for residential and commercial purposes. The Site is bounded to the north by Hathaway Brook, to the south by the Village of Palmyra right-of-way along Park Drive, to the west is a strip of land which is the former tow path area of the Erie Canal (right-of-way owned by Village of Palmyra including a paved driveway leading to adjacent property), and to the east by a residential property. The Site boundary is shown on Figure 2.

The Site is divided into two operable units: OU-01 which includes the upland and wetland portions of the Site and OU-02 which includes sediment in Hathaway Brook.

No original above-grade MGP structures remain at the Site. Historical features associated with the former MGP are shown on Figure 2. Existing structures include a gray block gas monitoring house, the old brick electric switch house, and two electric substations. The majority of the ground surface around the substation equipment is covered by gravel. A perimeter fence encloses the regulator station, electric substation and vacant northeast portion of the property. Outside the perimeter fence is a brush-covered area adjacent to Hathaway Brook and grass-covered strips adjacent to Park Drive and the adjacent property (former tow path).

2.1.2 Site History

The MGP operated from approximately 1857 to 1911 primarily using coal to produce gas through the coal carbonization process. Gasification was originally completed using the Aubin gas generator process but was later reconfigured to more common vertical retorts. The original configuration had all components of the gasification process enclosed within one building. Later configurations added the gas holder on the north side of the plant building. In the original configuration the “liquor pool”, more commonly referred to the tar separator, and purifier were located inside the gas house. Later configurations show, at least, the gas purifier as a separate structure. The subgrade structure that remains beneath the substation footprint southeast of the gas holder foundation is likely a tar separator or part of the gas purifier. Gas was distributed to consumers through buried mains and used primarily for illumination. Several residuals from the MGP process including coal tar, ash, and purifier waste were stored on-site and either sold or disposed of off-site.

The key features of the former MGP as shown on Figure 2 were as follows:

- MGP Process Building, located in the southwestern area of the Site. A retort and coal storage area were present within the footprint of the building.
- Gas Holder (35-foot in diameter), located in the southwestern portion of the Site. The foundation of the Gas Holder is still present in the subsurface of the Site.
- Lime Storage and Gas Purifier, located to the east of the MGP Process Building.

- Shop, located to the northeast of the Gas Holder.

When the MGP was operational, the Site was bounded to the south by the Erie Canal. By 1915, the New York State Barge Canal (Canal), constructed to the north of the Site, was opened to traffic. The Erie Canal south of the site was abandoned and later filled in.

3.0 OU-01 (Upland) Pre-Design Investigation Objectives, Scope, and Rationale

3.1 Objectives

This OU-01 (Upland) PDI is intended to provide the additional information required to design the selected remedy for the Site as specified in the ROD. The objectives of this OU-01 (Upland) PDI are:

- Characterize the soils for off-site disposal in accordance with the requirements of the receiving facility.
- Collect geotechnical data, to include blow counts, on the soils in the excavation areas for analysis of the excavation support system(s).
- Identify former MGP subsurface piping/structures/obstructions.
- Further delineate the limits of subsurface soil excavation.
- Obtain a topographic and utility survey to serve as the design base map.

3.2 OU-01 (Upland) PDI Scope and Rationales

The OU-01 (Upland) PDI will consist of the following activities:

- Direct-push and hollow stem auger or cased wash rotary/split spoon borings will be advanced to collect soil samples for the following purposes:
    - Geotechnical drilling and testing to support the remedial design.
    - Investigation/Delineation:
        - Data gap investigation at the near-site section of the Brook.
        - Further delineation of MGP-impacts south of the property boundary along the former Erie Canal Tow Path and Park Drive.
        - Vertical delineation of MGP-contaminated soils selected for removal between the gas holder foundation and the internal site fence.
    - Waste pre-characterization for excavation and removal for landfilling or thermal desorption treatment during the Remedial Action. Therefore, removing the need to stockpile and sample at the time of Remedial Action.
- Investigational test pits will be excavated for the following purposes:
    - Delineate the “hot spot” for excavation and offsite disposal/treatment associated with the process pipe (clay tile pipe) containing MGP-impacts/tar that was identified to the northeast of the former MGP process area during the Remedial Investigation (RI). This will also further delineate impacts at the breakpoint between the near-site and downstream sections of Hathaway Brook.
    - Further delineate the MGP-impacts observed in RI test pit TP9 to determine if impacts may extend under the near-site section of the Brook in this area.

  - Determine the southern edge of the former MGP building footprint prior to installing associated delineation borings.
  - Waste pre-characterization samples from shallow soils.
- Topography and surface utilities will be surveyed to assist with the preparation of a base map suitable for the project design work.

Table 1 lists the American Society for Testing and Materials (ASTM) methods which will be followed during the completion of investigation activities. These activities will be discussed in more detail below.

3.2.1 Geotechnical Borings

Seven (7) geotechnical borings will be advanced to gather geotechnical information to support the remedial design. The proposed geotechnical boring locations are identified in Figure 3 as GT-0X-2021. Geotechnical borings will be advanced using a truck- or track-mounted hollow stem auger or cased wash rotary drill rig with continuous split spoon sampling.

The borings will be continuously logged, recording blow counts, presence of fill material or subsurface obstructions, nature of each geologic unit encountered, observations regarding moisture content, photo ionization detector (PID, 10.2 electronvolt (eV)) readings, and visual and/or olfactory observations regarding the presence of MGP-related residuals. Borings will extend to a minimum of five feet into bedrock, anticipated to be approximately 30-35 feet below ground surface (bgs). If bedrock is not encountered, borings will extend to 50 feet bgs. If bedrock is encountered a rock core will be collected. Rock coring will extend at least five feet into bedrock at each boring location to establish top of competent rock elevation. If competent rock is not encountered in the first five feet of coring, additional runs may be required and will be completed at five foot increments.

Some of these borings will also be used to collect delineation and waste characterization samples as shown on Figure 3 and detailed in Sections 3.2.2 and 3.2.4, respectively. Samples will be collected by split spoon sampling methods for granular soils. If fine grained soils are encountered thin-walled tube (Shelby Tube) sampling methods will be used to collect samples from these soils. Representative samples will be chosen based on the boring logs and sent to the contract laboratory for geotechnical analysis as detailed in Section 5. Downhole drilling equipment will be decontaminated between each boring.

Boring locations and rationale are detailed below:

- One (1) boring will be installed along the southern portion of the Site to evaluate geotechnical conditions in the vicinity of the former MGP gas house foundations and Brook culvert structure.
- One (1) boring will be installed south of the existing substation to characterize geotechnical soil conditions the southern boundary of proposed excavation limits and the containment barrier around the substation.
- Three (3) borings will be installed in the central portion of the Site and close to the proposed containment barrier area around the substation, to characterize geotechnical soil conditions for design of the excavation support systems and containment barrier.
- Two (2) borings will be installed on the far side of Brook near the stream bank/retaining wall to characterize geotechnical soil conditions for design of the excavation support systems.

3.2.2 Delineation Soil Borings

A total of 19 delineation borings (including seven co-located geotechnical borings and five co-located waste characterization borings, two locations of which have all three investigative purposes) are proposed for the purposes of vertical and horizontal delineation of MGP-impacts. The proposed delineation boring locations are identified in Figure 3 as TB-0X-2021. These borings will be completed in the following areas:

- Horizontal and vertical delineation borings will be completed along the near-Site sections of the Brook, along the slope east of the proposed limits of subsurface soil excavation (i.e., middle of NYSEG property), and along the southern NYSEG property boundary.
- Vertical delineation borings will be completed within the ROD proposed subsurface soil excavation area.

Delineation borings will be advanced using the appropriate drilling equipment for Site conditions and investigative purposes at each location. Downhole drilling equipment will be decontaminated between each boring.

The borings will be continuously logged, recording the presence of fill material or subsurface obstructions; the nature of each geologic unit encountered; observations regarding moisture content; PID readings; and, visual and olfactory observations regarding the presence of MGP-related residuals. The descriptions will be in accordance with the Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), ASTM D2487-17.

Soil samples for laboratory analysis will be collected directly from the split spoon or MacroCore™ liners and placed into appropriate containers. Sample containers will be new and supplied by the laboratory in advance of the sampling. The soil samples will be collected by the field scientist, placed in a cooler with ice, and delivered to the laboratory. Analytical soil sample locations, descriptions, and depths will be recorded in the field log book.

The delineation soil samples will be sent to the contract analytical laboratory for analysis of the following parameters as indicated in Section 5:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by United States Environmental Protection Agency (USEPA) SW846 Method 8260C; and,
- PAH compounds by USEPA Method SW846 8270D.

Soil sample methodology and rationale is provided in the following subsections.

3.2.2.1 Horizontal and Vertical Delineation Soil Borings

There are three areas where horizontal and vertical delineation borings are proposed. Boring locations and rationale are detailed below:

Near-Site sections of Brook – There are documented impacts on the Site and far side of the Brook (north of the former MGP) that exist below the channel bottom elevation. There is concern in this section of the Brook that drilling into the channel could create preferential pathways for coal tar NAPL to vent into the water. To more fully define the limits of MGP-impacts in the near-Site section of the Brook, borings will be advanced on the northwestern side (far) of the Brook and test pits will be excavated on the southeastern side (Site-side, due to safe access requirements on side slopes) of the

Brook (as further described in Section 3.2.3 below). Six (6) borings will be advanced on the northwestern (far) side of the Brook. During the Remedial Investigation, based on the physical observations made during the completion of soil borings, geotechnical analyses, and laboratory analyses performed on subsurface soil, it appears that the continuous clayey silt unit that underlies the site is acting as a confining unit which is limiting the potential downward migration of coal tar. Therefore, the proposed borings will be advanced to this confining unit, approximately 18 to 22 feet bgs. These borings are being advanced to further delineate MGP-impacts observed during the RI immediately adjacent to Hathaway Brook.

MGP-impacts in slope east of the proposed limits of subsurface soil excavation – A subsurface data gap investigation will be completed along the slope east of the proposed limits of the excavation area (east of the fence line which bisects the Site). Three (3) borings will be advanced along the slope, to the confining layer, approximately 22 to 26 feet bgs. These borings are being advanced to further delineate the horizontal extent of MGP-impacts and assess data gaps between MGP-impacts in the proposed excavation area and those identified as the “hot spot” observed around the pipe in RI test pit TP14.

MGP-impacts south of the property boundary – A subsurface data gap investigation will be completed within the former Canal tow path and Park Drive. Six (6) borings will be advanced to the confining layer, approximately 20 to 26 feet bgs. Five (5) of these borings are intended to delineate MGP-impacts immediately south and west of the former plant structures. Additionally, one (1) boring will be advanced east of the former plant structures, in Park Drive near the limits of excavation and the containment barrier. Boring locations will be finalized after the former plant foundations have been located during test pit excavation, as detailed in Section 3.2.3 below.

Soil samples for laboratory analysis will be collected as follows:

- If soil within a boring exhibits gross amounts of MGP-related residuals, one (1) soil sample for laboratory analysis will be collected from the interval just below the deepest interval with observed potential MGP-impacts (i.e., highest PID readings, or intervals with visual and olfactory observations indicating the presence of MGP-related residuals) in order to confirm this layer is not at or above the site clean up goal of 500 ppm total PAH (TPAH) such that maximum (or worst case) excavation depth can be identified for remedial design. A field decision will be made if a step-out boring is required to properly delineate the horizontal extent of MGP-impacts. The intent will be to eliminate the need for additional mobilizations, if possible.
- If soil within a boring does not exhibit MGP-related residuals, one (1) soil sample for laboratory analysis will be collected from the interval just above the top of the confining layer.
- If gross amounts of MGP-related residuals are encountered within a boring, a field decision will be made whether to collect waste characterization samples from the respective boring location (see waste characterization sampling, Section 3.2.4 below).

3.2.2.2 Vertical Delineation Soil Borings

There is one area proposed for additional vertical delineation. Vertical delineation boring locations and rationale are detailed below:

MGP-impacts east of the former gas holder foundation – A subsurface data gap investigation will be completed between the former gas holder foundation and the fence line which bisects the site. Four (4) borings will be advanced to further delineate the vertical extent of MGP-impacts and refine lithology/geotechnical characteristics in the proposed excavation area. These borings are located proximate to RI soil borings SB-18, 21, 22 and 36/MW-13S. Borings will be completed to the confining layer, approximately 22 to 26 feet bgs.

Soil samples for laboratory analysis will be collected as follows:

- One (1) soil sample for laboratory analysis will be collected from the interval just below the deepest interval with observed potential MGP-impacts (i.e., highest PID readings, or intervals with visual and olfactory observations indicating the presence of MGP-related residuals) in order to confirm this layer is not at or above the site clean up goal of 500 ppm TPAH such that maximum (or worst case) excavation depth can be identified for remedial design.

3.2.3 Test Pits

Ten (10) test pits will be excavated as part of the OU-01 (Upland) PDI. The proposed test pit locations are identified in Figure 3 as TP-0X-2021. Numbering will begin at TP-17-2021 as this continues test pit designation used throughout the RI. Locations may be modified in the field based on site conditions.

Test pits will be excavated using a mini track-mounted excavator. During test pit investigation activities, personnel will stand upwind of the excavation area to the extent possible. Community air monitoring, including real-time monitoring for volatile organic compounds (VOCs), and particulates (i.e., dust), at the downwind perimeter of each designated OU-01 (Upland) PDI work area, will be completed when test pitting activities are in progress, as described in the Community Air Monitoring Plan presented in Section 3.2.6. Test pit materials will be photographed and logged for future reference. Material removed from the test pit will be placed on polyethylene sheeting. Odor, vapor, and dust control is described in Section 3.2.6. Upon completion, the materials from the test pit will be placed back in the excavation in the reverse order in which it was removed. The location and size of the test pit will be measured and described in the field logbook.

Visually clean soils will be segregated from soils that may be impacted. The visually clean soils will be used to cover the impacted soils when placed back in the excavation. At a minimum, the top 2 feet of backfilled soil will be visually clean. The test pit will be backfilled as soon as possible after completion and in general prior to the cessation of activities at the end of the day. Following restoration of the excavation, the test pit will be staked/marked to facilitate subsequent location by surveying crews.

The test pit locations and rationale by subarea are as follows:

Pipe Investigation - During the excavation of RI test pit TP14, a clay tile pipe with ½-inch coal tar residue was observed. Since the sediment in the section of the Brook where the pipe is assumed to have discharged (i.e, along the downstream section of Brook) has been sampled (i.e. soft sediments that could be sampled with handheld equipment) multiple times with no identification of shallow MGP-impacts, no further investigation of the sediments along this reach of the Brook is proposed. However, subsurface soils will be investigated from the known location of the clay tile

pipe to the bank of the Brook to delineate where MGP-impacts exist in this portion of the Site. Up to three (3) test pits will be installed to 4 feet below ground surface either side of the location that the clay tile pipe was identified in the RI and up to the bank of the Brook. As discussed below in Section 3.2.4, a waste characterization sample(s) will be collected from the test pit(s) where they extend into the "hot spot" excavation area to address the pipe observed in the RI. No other soil samples will be collected for laboratory analysis.

Bank Investigation – North of RI Test Pit TP9 - Test Pit TP9 advanced during the RI indicated MGP-impacts. Two (2) test pits will be excavated north of TP9 to determine if, and if so delineate how far, MGP-impacts in this area extend up to and potentially under the Brook. As discussed below in Section 3.2.4, waste characterization samples will be collected from these test pits. No other soil samples will be collected for laboratory analysis.

MGP Gas House Foundations - To aid in locating the delineation borings south of the former MGP structures, two (2) test pits are proposed to locate the former building foundations in this area for survey location. These two test pits are anticipated to be relatively shallow and will be terminated once the foundation is located. The asphalt pavement in this area will need to be restored after completion of the test pits and associated delineation borings. Soil samples will not be collected for laboratory analysis.

Gas Holder Foundation - Three (3) test pits will be excavated to expose the gas holder foundation (ring) for survey location. Soil samples will not be collected for laboratory analysis.

3.2.4 Waste Characterization Sampling

A total of 20 waste characterization samples will be collected from the PDI borings and test pits for pre-characterization of waste soils. The proposed waste characterization sample locations are identified in Figure 3 as WC-0X-2021. These 20 samples will be for waste characterization of up to 12,000 cubic yards (CY) of soil for offsite disposal/treatment during the remedial action. The sample locations are spread throughout the expected on-site excavation areas so that each sample will correspond to approximately 1,000 tons of soil for disposal/treatment.

At each boring indicated, waste characterization samples will generally be collected from up to four horizons (0-6', 6-12', 12-18', and 18-24'), whereas at the test pit locations indicated, samples will be from two intervals (generally 0-6' and 6-12'). From each waste characterization sampling interval, a single, discrete sample for volatiles analysis will be selected from the interval with visible MGP-impacts or the highest PID reading. The presence of NAPL or tar-like residuals encountered in the selected sample will be noted on the chain of custody (COC) in consideration of laboratory instrument limitations, and the sample will be submitted for analysis.

For all other (non-volatiles) analyses, subsamples from within depth interval will be collected for homogenization into one representative sample. Subsamples will be collected from the most impacted portion of the intervals based on the PID screening and field observations (visual and olfactory) regarding the presence of MGP-related residuals. The subsamples will be placed in a clean zip lock bag and thoroughly mixed. A representative sample of the mixed soil will then be collected for non-volatiles laboratory analysis.

The samples will be sent to the contract analytical laboratory for analysis as indicated in Section 5. The intent of sample breakdown is that up to 60 percent of soils targeted for excavation and removal

will be subject to categorization analysis for each disposal in a permitted landfill and for treatment at a licensed thermal desorption facility.

3.2.5 Investigation-derived Waste Management

All investigation-derived waste (IDW) generated during the OU-01 (Upland) PDI will be collected in properly labeled 55-gallon drums. Drill cuttings will be contained in 55-gallon drums or a roll-off container lined with polyethylene sheeting. Drums of soil will be labeled as "**PENDING ANALYSIS – INVESTIGATION-DERIVED RESIDUAL – SOIL FROM DRILL CUTTINGS**" and temporarily stored pending characterization and proper disposal. Depending upon the results of the characterization sampling, the drummed soils may be re-used on site as backfill following the remediation work, or they may be disposed of off-site at a facility permitted to accept such material.

All personal protective equipment (PPE) will be placed in 55-gallon drums or roll-off containers for proper disposal.

3.2.6 Odor, Vapor and Dust Control

Odor, vapor, and dust control will be conducted for this project due to the sensitive location of the Site and immediate proximity to residential and commercial buildings.

A variety of engineering controls will be available to control odors, vapors, and dust. Those controls will include, but will not necessarily be limited to, wetting soils with water to control dust, limiting the size of excavations, covering contaminated soils with plastic sheeting or foam, and spraying soils with an odor suppressant.

3.2.7 Community Air Monitoring Plan

Community air monitoring requires real-time monitoring for volatile organic compounds (VOCs), and particulates (i.e., dust), at the downwind perimeter of each designated OU-01 (Upland) PDI work area when certain activities are in progress at the Site. The community air monitoring is intended is to provide a protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigation work activities.

Real time monitoring will be performed at upwind and downwind stations for VOCs and particulates during upland (and if needed wetland) drilling activities.

VOC monitoring will be performed using a field PID (RAE Systems MiniRAE™ or equivalent) located within the work zone. If the concentration of total VOCs exceeds 5 parts per million (ppm) above background, then work activities will be temporarily halted. If the total VOC level then decreases below 5 ppm over background, work activities will resume. If the total VOC levels persist at levels in excess of 5 ppm, work activities will be halted, the source of the vapors identified, and corrective actions taken to abate the emissions until the concentrations drop below the action levels.

Particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 microns in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. Each particulate monitor will be calibrated daily with a filtered air sample. Each air monitoring instrument will be continuously downloaded and saved electronically to a dedicated computer located on-site.

Table 2 describes the action levels for perimeter particulate air monitoring and the associated responses to each level. Equipment will be calibrated as per manufacturer's instructions, daily and throughout the day, as necessary.

3.2.8 Site Survey

In conjunction with the OU-01 (Upland) PDI, a field survey will be conducted to assist with the preparation of a base map suitable for the project design work.

The survey work will include field data collection and compilation of information from available mapping (village and utility companies) to establish the location and elevation of the following items within the project limits:

- The horizontal location and vertical elevation of all utilities (underground and overhead).
- The horizontal location and vertical elevation of the gas holder foundation and MGP Gas House Foundations.
- The existing topographic features, including; all surface utility structures; utility poles; overhead utilities; limits of street pavement; curbs; sidewalks; driveways; buildings and structures; and, monitoring wells.
- Survey components include topographic, utility (OL-B), bathymetric, and boundary surveying and mapping to include the following:
    - topographic and utility surveying within the proposed remediation area;
    - bathymetric surveying of Hathaway Brook within the proposed remediation area;
    - boundary retracement survey of village lot 64111-12-896718;
    - boundary retracement survey of village lot 64111-12-880719 (Stafford);
    - boundary retracement survey of village lot 64111-12-869710 (Hetelekides);
    - boundary retracement survey of a portion of village lot 64111-08-783758 (Village of Palmyra);
    - boundary retracement survey of a portion of 64111-07-704820 (NYS Thruway Authority)
- The existing street right of way and property lines.

In addition, all OU-01 (Upland) PDI boring and test pit locations will be surveyed for elevation and location. Natural resources including the top of bank, waterline, edge of any wetlands, and approximate limits of sub-aquatic vegetation will be flagged by a qualified wetland scientist for inclusion on the base-map. This information, as well as previous sample locations throughout the project area, will be incorporated on the Site base map.

4.0 OU-02 (Sediment) Supplemental Investigation Objectives, Scope, and Rationale

4.1 Objectives

This OU-02 (Sediment) SI is intended to provide the additional information required to fill data gaps NYSDEC identified and confirm if there are any MGP-impacts to the sediments in Hathaway Brook in downstream areas of the channel where it now meets the NYS Barge Canal or where it historically met Ganargua Creek.

The objectives of this OU-02 (Sediment) SI are:

- Characterize potential sediment contamination (MGP or non-MGP, if any) in depositional areas of the Brook downgradient of the Site.
- Potentially correlate non-MGP impacts in upgradient storm sewer catch basin material to existing Brook sediment data.

4.2 OU-02 (Sediment) SI Scope and Rationales

The OU-02 (Sediment) SI will consist of the following activities:

- Sediment investigation in the current confluence of the Brook and the Canal and the historic confluence of the Brook and Ganargua Creek will be conducted to identify potential sediment with Site-related MGP contamination in areas of likely sediment deposition from Hathaway Brook
- Storm sewer catch basin material investigation will be conducted to identify potential non-MGP impacts to the material that has collected in the storm sewer catch basins located up gradient of the former MGP and that empty into the Brook. Data will be evaluated for correlation to existing Brook sediment data.

Table 1 lists the ASTM methods which will be followed during investigation. These activities will be discussed in more detail below.

4.2.1 Soft Sediment Investigation in Hathaway Brook Depositional Areas

The soft sediment investigation of the Brook depositional areas will be completed in the Canal and Ganargua Creek by probing along transects.

Sediment samples will be collected at locations along the transects for visual observation. Sediment samples for chemical analysis may be collected as further described below and analyzed for the following parameters:

- Target Compound List (TCL) VOCs by USEPA SW846 Method 8260C; and,
- TCL Semi-Volatile Organic Compounds (SVOCs) by USEPA Method SW846 8270D, including all 34 PAHs identified in Table 7 of the Screening and Assessment of Contaminated

Sediment Guidance dated June 24, 2014 and published by the Division of Fish, Wildlife, and Marine Resources Bureau of Habitat.

- Total Organic Carbon (TOC) by the Lloyd-Kahn Method.

The samples will be sent to the contract analytical laboratory for analysis as indicated in Section 5.

New York State Barge Canal - A total of two (2) transects will be completed as shown on Figure 4. Probing will be conducted along each transect at an approximate spacing of approximately five feet from shore to approximately 75 feet towards the Canal centerline. Sediments at each probe point will be probed (agitated) by hand using a threaded steel bar and/or bucket auger (if possible) to observe the sediment physical characteristics, including the presence of hydrocarbon-like sheen or NAPL. Following completion of probing activities, a total of six vibracores will be advanced (SED-01 through SED-06, three (3) locations along each transect). Vibracores will be advanced at locations where the presence of hydrocarbon-like sheen or NAPL is observed during probing. If hydrocarbon-like sheen or NAPL is not observed during probing, up to 3 viabracores will be completed along each transect at 20 feet intervals. Vibracores will be advanced to refusal or to a maximum of 10 feet below sediment surface (whichever is encountered first) using a vibracore rig situated on a barge. Six sediment samples will be collected for laboratory analysis. If suspected MGP-impacts are not identified based on visual or olfactory observations, the bottom six-inches of the vibracore run will be collected and submitted for laboratory analysis. If suspected MGP-impacts are identified, the analytical sample collection will be biased to sediment with observed potential MGP-related residuals (i.e., highest PID readings, or intervals with visual and olfactory observations indicating the presence of MGP-related residuals).
Ganargua Creek - Sediment probing will be performed to determine whether visible evidence of MGP-related residuals is present in the sediments in Ganargua Creek. Transect locations will be marked out approximately 25 feet apart along the shoreline at the locations shown on Figure 4. A series of probe points will be established out into the stream using a rope with measured increments attached to a small boat. Sediments at each probe point will be probed (agitated) by hand using a threaded steel bar and/or bucket auger (if possible) to observe the sediment physical characteristics, including the presence of hydrocarbon-like sheen or NAPL. The bar or bucket auger will be advanced by hand as deep as possible at each probe point, with a target depth of two to three feet below the sediment surface. A total of ten (10) transects will be completed along the axis of Ganargua Creek. If suspected MGP-impacts are identified, then sediment cores will be collected using manual methods (e.g. hand driven Macro-Core™ sampler or Wildco® Hand Core Sediment sampler to approximately 2-foot depth, if achievable). Up to six (6) samples will be selected for laboratory analysis. If suspected MGP-impacts are not identified based on visual or olfactory observations sediment samples will not be collected for laboratory analysis. If suspected MGP-impacts are identified based on visual or olfactory observations, a sample will be collected from the interval with the greatest observed suspected MGP-impacts.

4.2.2 Storm Sewer Catch Basin Sampling

Upgradient storm sewer catch basins will be investigated to determine if they are connected to the Brook (Figure 5). AECOM will contact the Village of Palmyra to determine what mapping they have. If mapping is unavailable, or their connection to the Brook is otherwise unable to be determined, a dye test may be performed to determine if they are connected. If it is determined there is a connection to the Brook, up to four samples (CB-01 through CB-04) of accumulated storm sewer catch basin material will be collected for the following analyses:

- TCL VOCs by USEPA SW846 Method 8260C; and,

- TCL SVOCs by USEPA Method SW846 8270D, including all 34 PAHs identified in Table 7 of the Screening and Assessment of Contaminated Sediment Guidance dated June 24, 2014 and published by the Division of Fish, Wildlife, and Marine Resources Bureau of Habitat.

- Total Organic Carbon (TOC) by the Lloyd-Kahn Method.

Storm sewer catch basin material will be logged, recording PID readings, and visual and olfactory observations regarding the presence of contamination.

The samples will be sent to the contract analytical laboratory for analysis as indicated in Section 5.

4.2.3 Investigation-derived Waste Management

All IDW generated during the OU-02 (Sediment) SI will be collected in properly labeled 55-gallon drums. Drill cuttings will be contained in 55-gallon drums or a roll-off container lined with polyethylene sheeting. Drums of soil will be labeled as "**PENDING ANALYSIS – INVESTIGATION-DERIVED RESIDUAL – SOIL FROM DRILL CUTTINGS**" and temporarily stored pending characterization and proper disposal. Depending upon the results of the characterization sampling, the drummed soils may be re-used on-site as backfill following the remediation work, or they may be disposed of off-site at a facility permitted to accept such material.

All PPE will be placed in 55-gallon drums or roll-off containers for proper disposal.

4.2.4 Community Air Monitoring Plan

Community air monitoring requires real-time monitoring for VOCs, and particulates (i.e., dust), at the downwind perimeter of each designated OU-02 (Sediment) SI work area when certain activities are in progress at the Site. The community air monitoring is intended is to provide a protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigation work activities.

Real time monitoring will be performed at upwind and downwind stations for VOCs and particulates during drilling activities.

VOC monitoring will be performed using a field PID (RAE Systems MiniRAE™ or equivalent) located within the work zone. If the concentration of total VOCs exceeds 5 parts per million (ppm) above background, then work activities will be temporarily halted. If the total VOC level then decreases below 5 ppm over background, work activities will resume. If the total VOC levels persist at levels in excess of 5 ppm, work activities will be halted, the source of the vapors identified, and corrective actions taken to abate the emissions until the concentrations drop below the action levels.

Particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 microns in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. Each particulate monitor will be calibrated daily with a filtered air sample. Each air monitoring instrument will be continuously downloaded and saved electronically to a dedicated computer located on-site.

Table 2 describes the action levels for perimeter particulate air monitoring and the associated responses to each level. Equipment will be calibrated as per manufacturer's instructions, daily and throughout the day, as necessary.

4.2.5 Site Survey

All OU-02 (Sediment) SI sample locations will be surveyed with a handheld Global Positioning System (GPS) Model Trimble Geo XH, or similar, accurate to one meter.

5.0 Quality Assurance Project Plan

This section describes the quality assurance (QA) requirements for the pre-design investigation as specified in DER-10.

5.1 Project Organization

This OU-01 (Upland) PDI and OU-02 (Sediment) SI will be performed by AECOM on behalf of NYSEG. AECOM will arrange for the drilling and analytical services and provide on-site field representative to perform the soil characterization, soil sampling, sediment, and groundwater sampling. The consultant will also perform the data interpretation and reporting tasks. Key contacts for this project are as follows:

5.1.1 NYSEG Project Manager:

Jeremy Wolf
Rochester Gas and Electric
89 East Avenue, 7th Floor
Rochester, NY 14649

5.1.2 AECOM Project Manager:

Tamara Raby, P.G.
AECOM
257 West Genesee Street, Suite 400
Buffalo, NY 14202

5.1.3 AECOM Field Team Manager:

Matt Thorpe, P.E.
AECOM, Inc.
40 British American Blvd.
Latham, NY

5.1.4 AECOM Quality Assurance Officer:

George Kisluk
AECOM, Inc.
257 West Genesee Street, Suite 400
Buffalo, NY 14202

5.1.4.1 Laboratory Representative (TBD):

To be determined

5.2 Sampling and Testing Procedures

The following section details the sampling and testing procedures which will be followed during this PDI and SI. The chosen laboratory for the project will be certified, and maintain certification, under the NYSDEC Environmental Laboratory Approval Program (ELAP) and the New York State Department

of Health (NYSDOH) ELAP Contract Laboratory Program (CLP) for analyses of solid and hazardous waste.

All sampling equipment will be properly decontaminated before being reused or disposed of accordingly. Samples will be collected in pre-cleaned sample containers provided by the laboratory performing analysis with any necessary preservations added to the sample containers at the laboratory prior to sample collection (Table 3). Coolers with ice will be used to store samples at 4 degrees Celsius (°C) until delivered to and analyzed by the laboratory. Samples will be picked up by or delivered to the laboratory within 48 hours of collection.

5.2.1 Waste Characterization Analysis

Samples collected for waste characterization analysis will be analyzed for the parameters specified in Table 3. Holding times for the samples are given in Table 3. COC procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling.

5.2.2 Geotechnical Analysis

Samples collected for geotechnical analysis will be analyzed for the following:

- Grain size (ASTM D6913/D7928)
- Atterberg Limits (ASTM D4318)
- Consolidated undrained triaxial shear strength (ASTM D4767)
- Unconsolidated undrained triaxial shear strength (ASTM D2850)
- Moisture content (ASTM D2216)
- Specific gravity (ASTM D854)

Sample collection and field testing methods are listed in Table 1.

5.2.3 PDI Soil Sample Analysis

Samples collected for PDI soil sample analysis will be analyzed for the parameters specified in Table 4. Sample collection and field testing methods listed in Table 1. Duplicate and matrix/matrix-spike duplicates are required at a frequency of 1 per 20 samples (see Table 4). In addition, one trip blank will be analyzed per shipment of samples (see Table 4). Holding times for the samples are given in Table 3. COC procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling.

5.2.4 SI Sediment Sample Laboratory Analysis

Samples collected for laboratory analysis will be analyzed for the parameters specified in Table 4. Sample collection and field testing methods are listed in Table 1. Duplicate and matrix/matrix-spike duplicates are required at a frequency of 1 per 20 samples (see Table 4). In addition, one trip blank will be analyzed per shipment of samples (see Table 4). Holding times for the samples are given in Table 3. COC procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling.

5.3 Sample Tracking and Custody

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the COC and transfer of samples will be trained on the purpose of the COC and specific procedures prior to implementation.

Evidence of sample traceability and integrity is developed by implementation of, and adherence to, the COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. A sample is considered to be in a person's custody if the sample is:

- In a person's possession.
- Maintained in view after possession is accepted and documented.
- Locked and tagged with custody seals so that no one can tamper with it after having been in physical custody.
- In a secured area which is restricted to authorized personnel.

5.3.1 Field Sample Custody

A COC record accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The **REMARKS** space on the COC is used to indicate if the sample is a matrix spike/matrix spike duplicate (MS/MSD), or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and equipment blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first **RELINQUISHED BY** space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper air bill number on the top of the COC. Errors will be crossed out with a single line in ink and initialed and dated by the author.

One copy of the COC is retained by sampling personnel and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The packing tape must be broken to open the container. Breakage of the tape before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample(s) will not be analyzed.

5.3.2 Laboratory Sample Custody

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities and the subsequent shipment of samples to the laboratory. This notification will include

information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or description errors. In the event of discrepant documentation, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming COC procedure.
- The samples will be stored in a secured area and, if required, stored at a temperature of 4°± 2°C.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis and final storage for control.

A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

5.4 Reporting

Data will be provided in electronic format, including the following specific requirements:

- All data generated will be submitted in an electronic data deliverable (EDD) that complies with the DEC's Electronic Data Warehouse standards (EDWS) or as otherwise directed by DER.
- Preliminary or final reports will be submitted to the DER in an electronic format that complies with DEC’s Electronic Document Standards (EDS) or as otherwise directed.
- Data Usability Summary Reports (DUSR) will be prepared in accordance with NYSDEC procedures, included in Appendix A.

5.5 Data Quality Usability Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements to ensure that data of known and appropriate quality are obtained during sampling and analysis activities. Data developed during the pre-design investigation will be used to fulfill the overall objectives of the program. Evaluation of DQOs is preformed following procedures in USEPA National Functional Guidelines for Data Review. Generally, the validation uses 1) method specification limits, 2) laboratory statistically calculated limits based on historical data, and finally 3) default limits from the USEPA National Functional Guidelines.

The quality assurance and quality control (QA/QC) objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in following subsections. They are formulated to meet the requirements of the USEPA SW-

846, the analytical methods and their Contract Required Quantitation Limits (CRQLs), and Contract Required Detection Limits (CRDLs).

5.5.1 Precision

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value. Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this project, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation, calculating the RPD for field duplicate sample results.

The data quality objectives for analytical precision, calculated as the RPD between duplicate analyses, will be statistically calculated laboratory control limits based on historical data. Should there be insufficient data to calculate limits; the validation default RPD limits will be used: 20% for aqueous samples and 35% for soils.

5.5.2 Accuracy

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern, or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity which is recovered or measured (percent recovery).

Sampling accuracy may be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be established and be within method control limits. Instrument and method analytical accuracy can then be determined for any sample set.

The data quality objectives for analytical precision, calculated as the percent recovery, will be statistically calculated laboratory control limits based on historical data. Should there be insufficient data to calculate limits, the validation default percent recovery limits will be used: 70-130% for organic analyses, and 75-125% (matrix spike recovery) and 80-120% (laboratory control spike (LCS) recovery) for inorganic analyses.

5.5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program. Samples must be representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data derived represents the in-place quality of the material sampled. Every effort will be made to ensure that chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. Decontamination of sampling devices and digging equipment will be performed between samples. Analysis of field blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis, so the reported results are representative of the sample received.

COC procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling.

5.5.4 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid. The QC objective for completeness is generation of valid data for at least 90% of the analyses requested

5.5.5 Comparability

Comparability expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project.
- Requiring traceability of all analytical standards and/or source materials to the USEPA or National Institute of Standards and Technology (NIST).
- Requiring that all calibrations be verified with an independently traceable standard from a source other than that used for calibration.
- Using standard reporting units and reporting formats including the reporting of QC data.
- Performing a complete data validation on all of the analytical results, including the use of data qualifiers in all cases where appropriate.
- Requiring that all validation qualifiers be considered any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

5.5.6 Sensitivity

Soil, water, and waste samples will be analyzed according to the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition and subsequent updates. The methods to be used for the laboratory analysis of soil samples are presented in Table 3. These methods were selected because they attain the quantitation limits and DQOs required by the project, which are also compiled on the table.

5.6 Equipment Decontamination Procedures

The following decontamination procedure will be followed for all non-disposal sampling equipment before being reused. Equipment will be washed thoroughly with a non-phosphate detergent. The equipment will then be rinsed with potable water.

After decontamination, equipment will be carefully stored to avoid contamination between sampling events.

6.0 Health and Safety Protocols

6.1 Site Hazards

There are physical hazards which may be present at the Site associated with existing conditions and with investigation activities. Potential physical hazards include the following:

- Traffic – Requires care when entering and leaving the Site.
- Overhead and underground utilities - Overhead power lines near the substation, driveway, and road. Potential underground utilities during drilling and test pitting.
- Working on water – Work will be conducted from a boat on the Canal. Work will be conducted in the creek, transport of equipment on a Jon boat will be required.
- Existing structures – The existing stone retaining wall along the Canal is in deteriorated condition. Some stones have moved due to frost and/or erosion.
- Mechanical equipment including drill rigs and excavations.
- Slips, trips, and falls – General site hazards, debris, and slippery conditions (i.e., potential wet surfaces).
- Exposure to hazardous wildlife and plants.

A number of environmental investigations have been performed at the Site between 1986 and 2006. These investigations were documented in the RI Report (AECOM, 2008). The RI indicates that coal tar which contains volatile and semi-volatile organic compounds including BTEX and PAHs is present in subsurface soils and groundwater at the Site. Sediment adjacent to the Site has also been impacted by coal tar constituents and NAPL.

AECOM staff and visitors will be bound by the provisions of the Site HASP. This HASP will be developed for the Site PDI and SI work to incorporate protocols required for the activities to be undertaken as part of this Work Plan including (but not limited to) requirements for:

- Personnel training
- Personal Protective Equipment (PPE)
- Air monitoring
- Decontamination
- Waste management
- Spill containment
- COVID-19 preparedness
- Traffic control
- Emergency response

A Job Safety Analysis (JSA) will be conducted and any potential health and safety risks that are not outlined in the HASP will be identified and addressed in the JSA. JSAs will be appended to the HASP and provided to the field staff. A preliminary project safety meeting will be conducted with all field staff to familiarize them with the anticipated hazards and respective on-site controls. The discussion will cover the entire HASP subject matter, putting emphasis on critical elements of the plan; such as the emergency response procedures, personal protective equipment, Site control strategies, and monitoring requirements. In addition, daily tailgate safety meetings will be held to discuss: the anticipated scope of work, required controls, identify new hazards and controls, incident reporting, review the results of inspections, any lessons learned or concerns from the previous day.

7.0 Schedule

The OU-01 (Upland) PDI and OU-02 (Sediment) SI will begin upon NYSDEC approval of this Work Plan. The field portion of the work is anticipated to start March 2021 and is expected to require six to ten weeks of on-site activities. This will begin as soon as practicably possible after approval of this Work Plan. NYSEG will inform NYSDEC at least 7 calendar days prior to conducting the work. The OU-01 (Upland) PDI and OU-02 (Sediment) SI Summary Letter Report will be submitted to NYSDEC approximately 60 days after the completion of the field work.

Tables

Table 1 List of ASTM Methods

Field Activity	ASTM Method
Direct Push Borings	• ASTM D 2487-17 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) • ASTM D 2488-17 –Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) • ASTM D 4220/4220M - Standard Practices for Preserving and Transporting Soil Samples • ASTM D 5434-12 – Field Logging of Subsurface Explorations of Soil and Rock
Geotechnical Borings	• ASTM D 1586/1586M-18 Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils • ASTM D 1587/1587M-15 – Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes • ASTM D 2113-14 Practice for Rock Core Drilling and Sampling of Rock for Site Investigation • ASTM D 2487-17 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) • ASTM D 2488-17 –Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) • ASTM D 4220/4220M-14 – Standard Practices for Preserving and Transporting Soil Samples • ASTM D 5434-12 – Field Logging of Subsurface Explorations of Soil and Rock • ASTM D 6032/6032M-17 – Determining Rock Quality Resignation for Rock Core • ASTM D 6151/6151M-15 - Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling
Test Pits	• ASTM D 2487-17 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) • ASTM D 2488-17 –Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) • ASTM D 5434-12 – Field Logging of Subsurface Explorations of Soil and Rock

Table 2 Action Levels For Perimeter Particulate Air Monitoring

Action Level	Response
Ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average.	Work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring
Total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm.	Work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
If the organic vapor level is above 25 ppm at the perimeter of the work area.	Activities must be shutdown. The source of the vapors identified, corrective measures taken to abate emissions, and monitoring continued. Work activities can resume once the organic vapor level is less than 25 ppm at the perimeter provided all other provisions of the CAMP are followed.
Downwind particulate concentrations 100 µg/m3 greater than upwind particulate monitor sustained over 15 minute average	Dust suppression techniques are employed
Downwind particulate concentrations 150 µg/m3 greater than upwind particulate monitor sustained over 15 minute average	Work halted and dust suppression techniques evaluated. Work continues once dust suppression techniques are proven successful

Table 3
OU-01 (Upland) Pre-Design Investigation and OU-02 (Sediment) Supplemental Investigation - Quality Assurance Project Plan
NYSEG - Palmyra Manufactured Gas Plant, Palmyra, New York

Sample Bottle, Volume, Preservation, and Holding Time Summary

MATRIX/ANALYSIS	Sample Prep Method [1]	Analytical Method [2]	Sample Bottles [3]				Minimum Vol Rqd	Preservation (4)	Holding Time [4, 5]		Comment
			Mat'l	Size	Qty	Source			Extraction	Analysis	
Soil Delineation Samples											
PAHs	SW 846 3550C	SW-846 8270D	G	4 oz	1	Lab	50 g	None	14 days	40 days	
BTEX	SW 846 5035	SW 846 8260C	G	2 oz	1	"	5 g	None	NA	14 days	
Waste Characterization Samples											
Volatile Organics	SW 846 5035	SW 846 8260C	G	5 or 25 g	3 or 1	Vendor [6]	5 g	None	NA	48 hours [7]	
Semi-Volatile Organics	3550C	SW 846 8270D	G	4 oz	1	Lab	50 g	None	14 days	40 days	
Metals - 8 RCRA	3050B/7471B	SW 846 6010C/7471B	G	4 oz	1	"	10 g	None	None	180 days	
Total Cyanide	9012B_Prep	9012B	G	4oz	1	"	50g	None	14 days	14 days	
Total PCBs	SW 846 3540C/3541/3545C	SW 846 8082A	G	"	"	"	30 g	None	14 days	40 days	
TCLP Volatile Organics	SW 846 5035/1311	SW 846 8260C	G	4 oz	1 or 2	"	30 g	None	14 days	14 days	
TCLP Semivolatile Organics	SW 846 3540C/3541/3545C/1311	SW 846 8270D	G	8 oz [6]	2 to 3 [8]	"	100 g	None	14 days	40 days	
TCLP RCRA Metals	SW 846 3050B/3051/3052/1311	SW 846 6010C/7470A	G	"	2 to 3 [8]	"	100 g	None	NA	180 days	180 days for TAL metals except Hg.
TCLP Herbicides/Pesticides	SW 846 3540C/3541/3545C/1311	SW 846 8151/8081B	G	8 oz	2 to 3 [8]	"	100 g	None	14 days	40 days	
TPH/DRO	3550C	8015D	G	4 oz	1	"	50 g	None	14 days	40 days	
% Sulfur	5050	ASTM C16D129-64 (Solid by Method D3177)	G	4oz	1	"	1g	None	None	None	
British Thermal Unit (BTU) Content	D240_87_P	ASTM D240-87	G	8oz	1	"	200g	None	None	None	
Flashpoint (Ignitability)	NA	SW 856 1010A	G	4oz	2 to 3 [8]	"	30 g	None	NA	None	
% Solids	Moisture	Moisture	G	2oz	1	"	60g	None	None	None	
pH (Corrosivity)	NA	SW 846 9045D	G	4oz	2 to 3 [8]	"	30 g	None	NA	Immediately	
Paint Filter	None	SW 846 Method 9095B	G	8 oz	1	"	50g	None	NA	None	
Reactive sulfide	NA	9034	G	8oz	2 to 3 [8]	"	30 g	None	NA	28 days	
Reactive cyanide	NA	9012	G	8oz	2 to 3 [8]	"	30 g	None	NA	28 days	
Sediment and Catch Basin Material Samples											
Volatile Organics	SW 846 5035	SW 846 8260C	G	5 or 25 g	3 or 1	Vendor [6]	5 g	None	NA	48 hours [7]	
Semi-Volatile Organics [9]	3550C	SW 846 8270D	G	4 oz	1	Lab	50 g	None	14 days	40 days	
Total Organic Carbon	None	Lloyd Kahn	G	4oz	1	"	10g	None	NA	14 days	

(1) Laboratory may propose alternate extraction/preparation methods, subject to AECOM approval.
(2) More recent versions of SW-846 methods may be used subject to AECOM approval.
(3) Bottles typical. EnCore samplers for VOCs in soil will be provided by laboratory or AECOM on a case-by-case basis.
(4) All samples for chemical analysis should be held at 4 degrees C in addition to any chemical preservation required.
(5) Holding time calculated from day of collection, unless noted as being from time of extraction. Laboratory holding times (ASP 2005, Exhibit I) are two days shorter to allow for field handling and shipping.
(6) Encore samplers are typically purchased from an outside supplier by AECOM but may also be requested (for a fee) from the analytical laboratory.
(7) Encore samplers must be prepared/preserved in the laboratory within 48 hours of collection. Soil samples in glass bottles and preserved Encores have a 14 day (total) holding time.
(8) Combine with other waste characterization analysis samples.
(9) Includes all 34 PAHs identified in Table 7 of the Screening and Assessment of Contaminated Sediment Guidance dated June 24, 2014 and published by the Division of Fish, Wildlife, and Marine Resources Bureau of Habitat.
G = Glass
SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. USEPA SW-846. Complete through Update IV, March 2009.
EPA = Compendium of Methods for the Determination of Toxic Organics in Air, Second Edition (EPA/625/R-96/010b; 1999)

Table 4
OU-01 (Upland) Pre-Design Investigation and OU-02 (Sediment) Supplemental Investigation - Quality Assurance Project Plan
NYSEG - Palmyra Manufactured Gas Plant, Palmyra, New York

Reporting Limits and QA/QC Sample Quantity Summary

MATRIX/ANALYSIS	Analytical Method	Laboratory	Reporting Limit -Typical (units as specified)	Field Sample Quantity [1]	Matrix Spike (MS) or LCS	MS Duplicate or Matrix Duplicate	Field Duplicate	Equipment Blank [3]	Trip Blank [4]	Total Analyses
Soil Delineation Samples										
PAHs	SW-846 8270D	TBD	170 ug/kg	19	1	1	1	1	0	23
BTEX	SW 846 8260C	"	5 µg/kg (typical) [2]	19	1	1	1	1	1	24
Waste Characterization Samples										
Volatile organics	SW 846 8260C	TBD	5 µg/kg (typical) [2]	20	0	0	0	0	0	20
Semi-volatile organics	SW 846 8270D	"	170 - 1660 ug/kg	20	0	0	0	0	0	20
Metals - 8 RCRA	SW 846 6010C/7471B	"	0.2 -4 mg/kg	20	0	0	0	0	0	20
Total Cyanide	9012B	"	1.0 mg/kg	20	0	0	0	0	0	20
Total PCBs	SW 846 8082A	"	0.2 - 0.3 mg/kg (typical)	20	0	0	0	0	0	20
TCLP Volatile Organics	SW 846 8260C	"	0.5 - 1.0 µg/L (typical)	20	0	0	0	0	0	20
TCLP Semi-volatile Organics	SW 846 8270D	"	5 - 25 µg/L (typical)	20	0	0	0	0	0	20
TCLP RCRA Metals	SW 846 6010C/7470A	"	2 - 25 mg/L (analyte specific)	20	0	0	0	0	0	20
TCLP Pesticides/Herbicide	SW 846 8151/8081B	"	0.2 - 2.0 µg/L (typical)	20	0	0	0	0	0	20
TPH/DRO	8015D			20				0		
% Sulfur	ASTM C16D129-64 (Solid by Method D3177)	"	200 mg/kg	20	0	0	0	0	0	20
British Thermal Unit (BTU) Content	ASTM D240-87	"	200 BTU/lb	20	0	0	0	0	0	20
Flashpoint (Ignitability)	SW 856 1010A	"	50° F	20	0	0	0	0	0	20
% Solids	Moisture	"	1.00%	20	0	0	0	0	0	20
pH (corrosivity)	SW 846 9045D	"	0.1 S.U.	20	0	0	0	0	0	20
Paint Filter	SW 846 Method 9095B	"	NA	20	0	0	0	0	0	20
Reactive sulfide	9034	"	10 mg/kg	20	0	0	0	0	0	20
Reactive cyanide	9012	"	10 mg/kg	20	0	0	0	0	0	20
Sediment and Catch Basin Material Samples										
TCL VOCs	SW 846 8260C	TBD	5 µg/kg (typical) [2]	16	1	1	1	1	1	21
TCL SVOCs[5]	SW 846 8270D	"	170 - 1660 ug/kg	16	1	1	1	1	0	20
Total Organic Carbon	Lloyd Kahn	"	100 mg/kg	16	1	1	1	0	0	19

Notes

1 Field sample quantity shown is based on the planned scope of work outlined in the OU-01 (Upland) Pre-Design Investigation and OU-02 (Sediment) Supplemental Investigation Work Plan. Actual numbers may differ if field conditions/changes dictate.

2 Reporting limits for soils, when adjusted for dry weight, will be higher. Detections above the MDL but less than reporting limits will be reported and flagged estimated (J).

3 Field equipment rinsate blank quantity will vary depending on sample collection rate and types of sampling equipment used; quantity may be greater or less than that shown. See Work Plan.

4 A trip blank will be included with each shipment of samples that includes samples for volatile organic analysis, where noted.

5 Includes all 34 PAHs identified in Table 7 of the Screening and Assessment of Contaminated Sediment Guidance dated June 24, 2014 and published by the Division of Fish, Wildlife, and Marine Resources Bureau o

Figures

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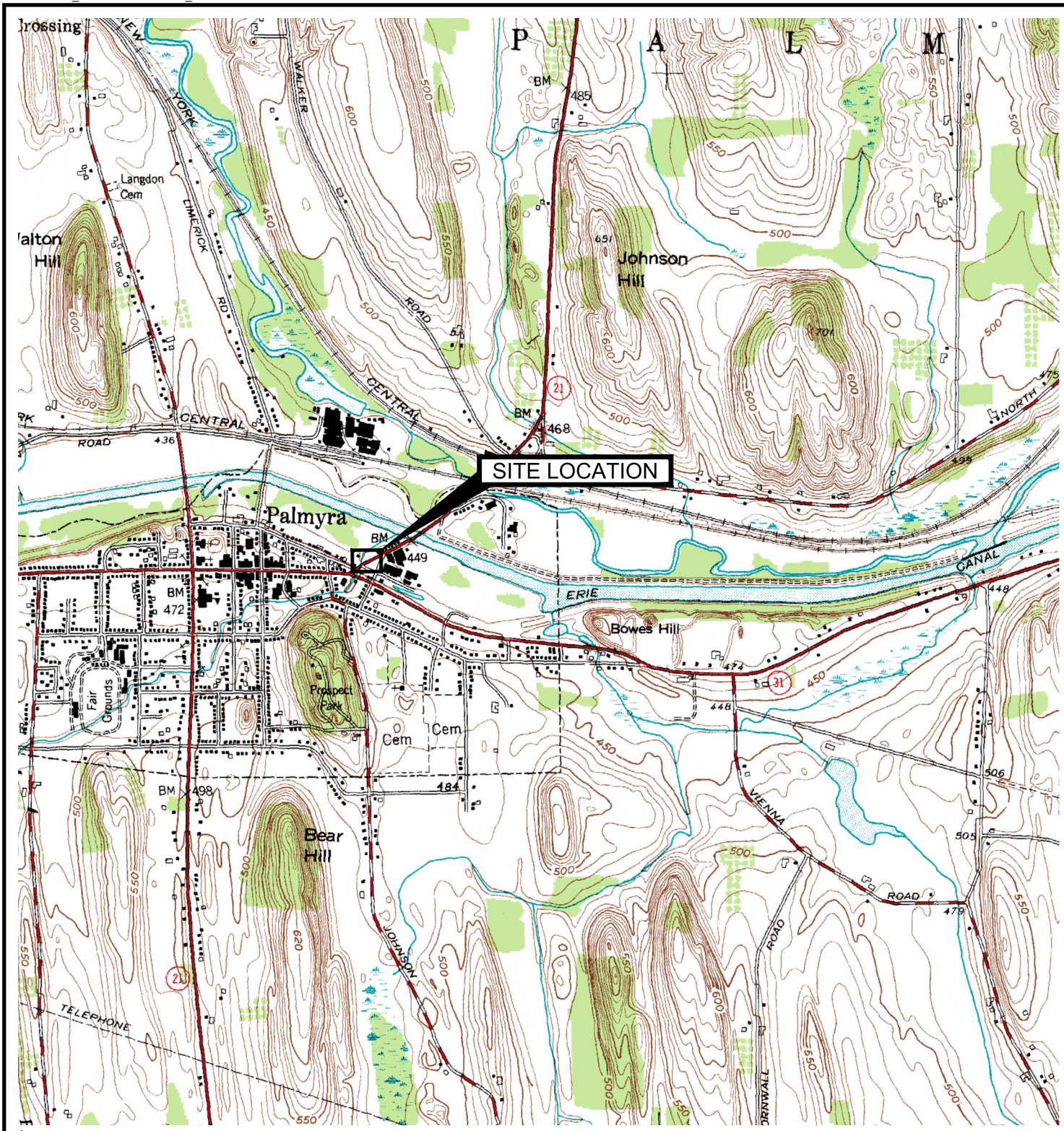

MAP REFERENCE:
U.S.G.S. 7.5 MINUTE QUADRANGLE,
PAYMYRA NEW YORK SERIES

0 2000' 4000'

OU-01 (UPLAND) PRE-DESIGN INVESTIGATION AND OU-02 (SEDIMENT) SUPPLEMENTAL INVESTIGATION
NYSEG - PALMYRA MGP
VILLAGE OF PALMYRA, NEW YORK - PROJECT No. 60639035
Date: DECEMBER 2020

SITE LOCATION PLAN

AECOM

Figure 1

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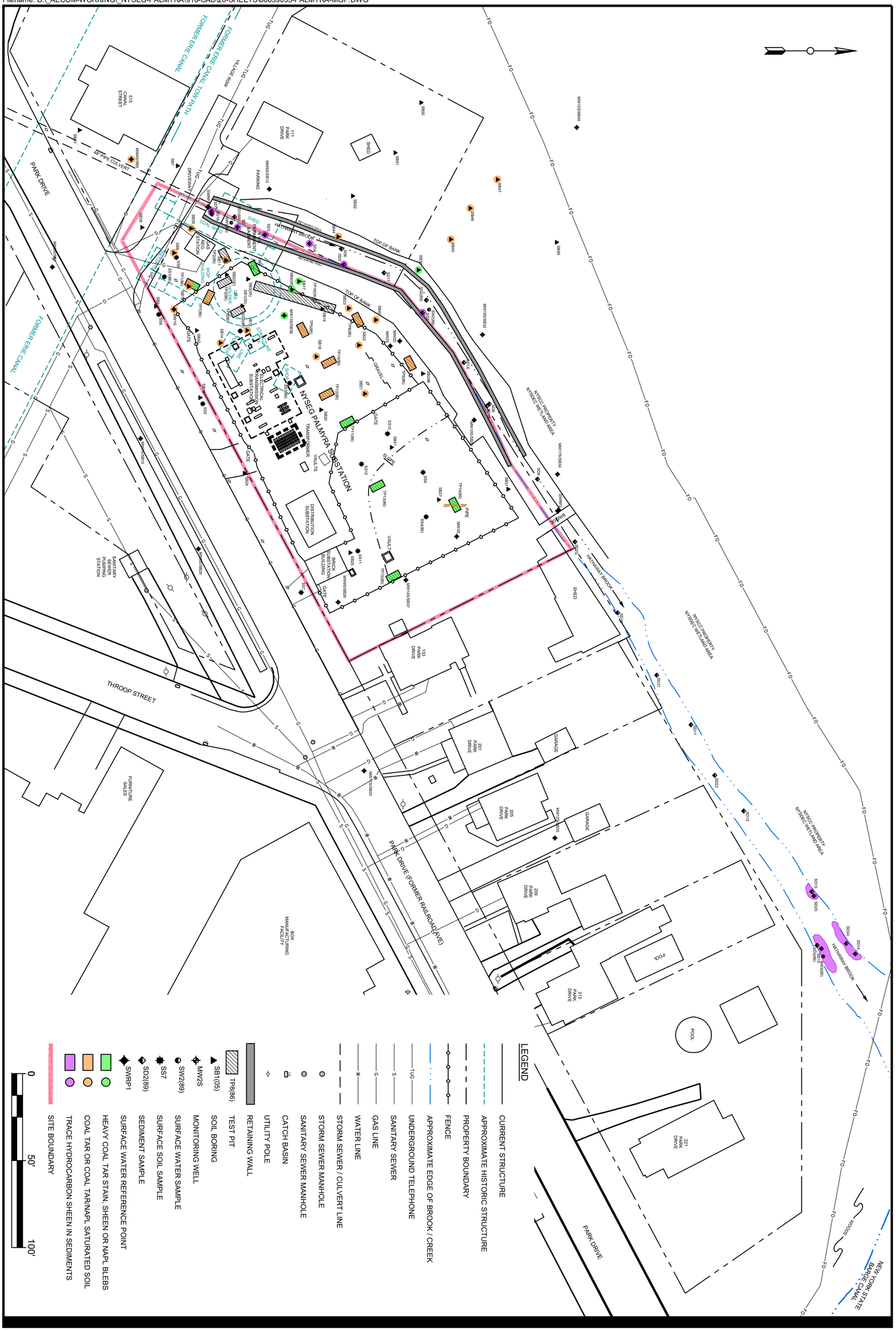


OU-01 (UPLAND) PRE-DESIGN INVESTIGATION AND OU-02 (SEDIMENT) SUPPLEMENTAL INVESTIGATION
NYSEG - PALMYRA MGP

VILLAGE OF PALMYRA, NEW YORK - PROJECT No. 60639035
Date: DECEMBER 2020

EXISTING CONDITIONS PLAN

AECOM

Figure 2

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____ ANSI B 11" x 17"

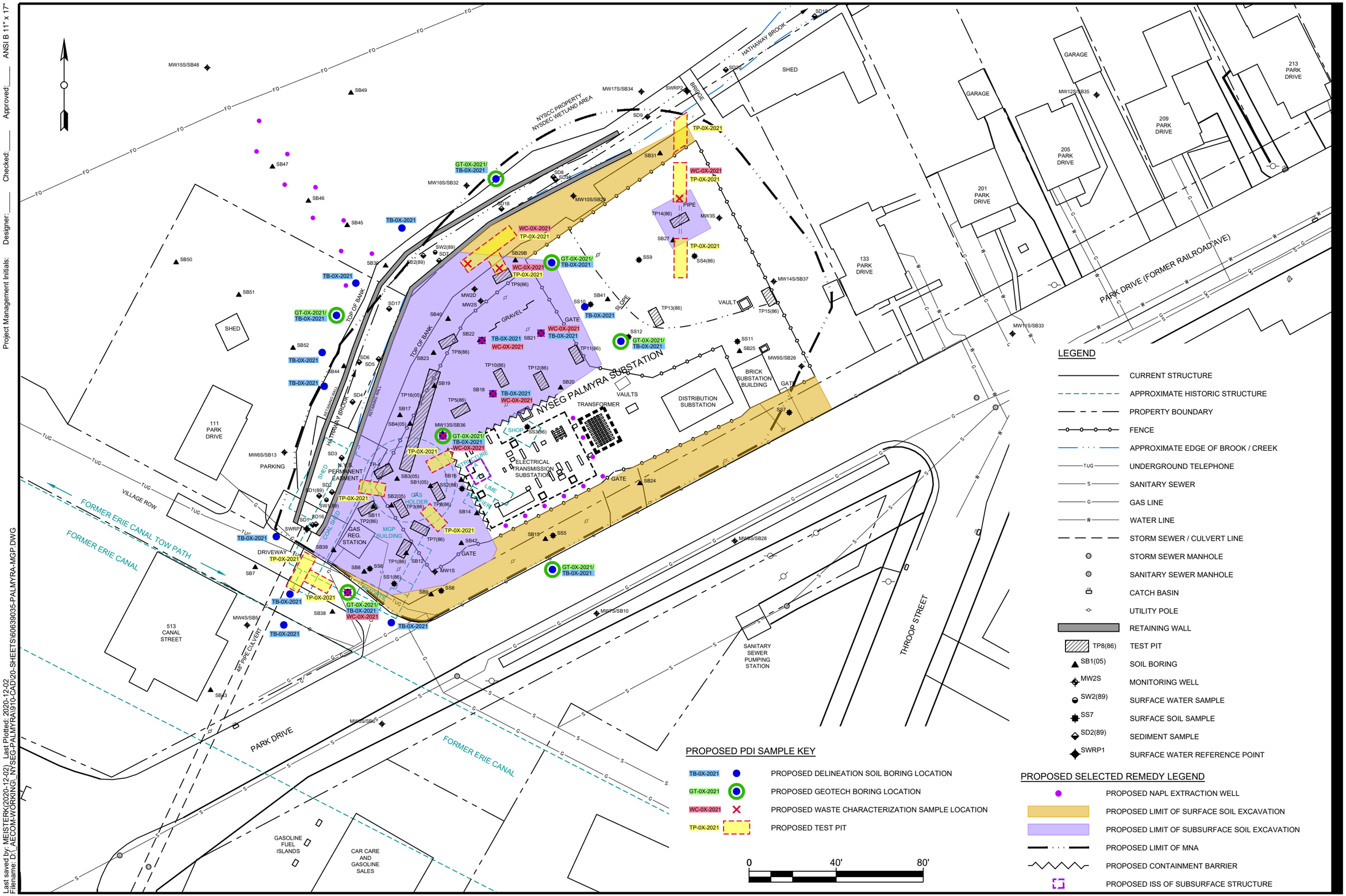
Figure 3

PROPOSED PREDESIGN INVESTIGATION SAMPLE LOCATIONS PLAN

OU-01 (UPLAND) PRE-DESIGN INVESTIGATION AND OU-02 (SEDIMENT) SUPPLEMENTAL INVESTIGATION NYSEG - PALMYRA MGP

VILLAGE OF PALMYRA, NEW YORK - PROJECT No. 60639035

Date: DECEMBER 2020



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AECOM

Figure 4

PROPOSED NEW YORK STATE BARGE CANAL AND GANARGUA CREEK SEDIMENT PROBING INVESTIGATION LOCATIONS PLAN

OU-01 (UPLAND) PRE-DESIGN INVESTIGATION AND OU-02 (SEDIMENT) SUPPLEMENTAL INVESTIGATION
NYSEG - PALMYRA MGP
VILLAGE OF PALMYRA, NEW YORK - PROJECT No. 60639035
Date: DECEMBER 2020

ANSI B 11" x 17"
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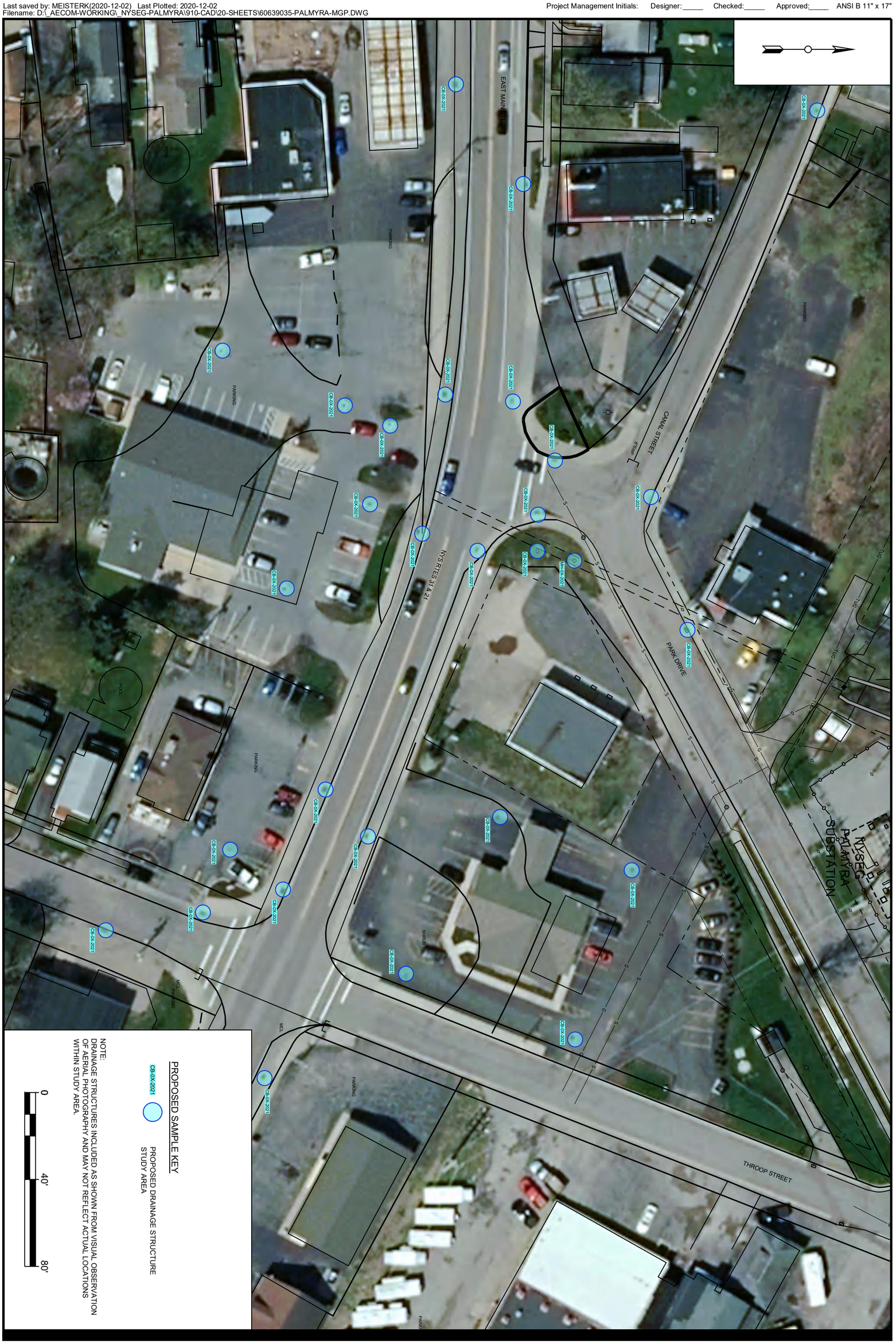

OU-01 (UPLAND) PRE-DESIGN INVESTIGATION AND OU-02 (SEDIMENT) SUPPLEMENTAL INVESTIGATION
NYSEG - PALMYRA MGP

STORM SEWER CATCH BASIN INVESTIGATION SAMPLE LOCATIONS PLAN

VILLAGE OF PALMYRA, NEW YORK - PROJECT No. 60639035
Date: DECEMBER 2020

AECOM

Figure 5

Appendix A

Data Usability Summary Reports Requirements

Appendix A
Guidance for Data Deliverables and the Development of Data Usability Summary Reports

1.0 Data Deliverables

(a) DEC Analytical Services Protocol Category A Data Deliverables:

1. A Category A Data Deliverable as described in the most current DEC Analytical Services Protocol (ASP) includes:

i. a Sample Delivery Group Narrative;

ii. contract Lab Sample Information sheets;

iii. DEC Data Package Summary Forms;

iv. chain-of-custody forms; and,

v. test analyses results (including tentatively identified compounds for analysis of volatile and semi-volatile organic compounds)

2. For a DEC Category A Data Deliverable, a data applicability report may be requested, in which case it will be prepared, to the extent possible, in accordance with the DUSR guidance detailed below.

(b) DEC Analytical Services Protocol Category B Data Deliverables

1. A Category B Data Deliverable is includes the information provided for the Category A Data Deliverable, identified in subdivision (a) above, plus related QA/QC information and documentation consisting of:

i. calibration standards;

ii. surrogate recoveries;

iii. blank results;

iv. spike recoveries;

v. duplicate results;

vi. confirmation (lab check/QC) samples;

vii. internal standard area and retention time summary;

viii. chromatograms;

ix. raw data files; and

x. other specific information as described in the most current DEC ASP.

2. A DEC Category B Data Deliverable is required for the development of a Data Usability Summary Report (DUSR).

2.0 Data Usability Summary Reports (DUSRs)

(a) Background. The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data with the primary objective to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use.

1. The development of the DUSR must be carried out by an experienced environmental scientist, such as the project Quality Assurance Officer, who is fully capable of conducting a full data validation. The DUSR is developed from:

i. a DEC ASP Category B Data Deliverable; or

ii. the *USEPA Contract Laboratory Program National Functional Data Validation Standard Operating Procedures for Data Evaluation and Validation*.

2. The DUSR and the data deliverables package will be reviewed by DER staff. If full third party data validation is found to be necessary (e.g. pending litigation) this can be carried out at a later date on the same data package used for the development of the DUSR.

(b) Personnel Requirements. The person preparing the DUSR must be pre-approved by DER. The person must submit their qualifications to DER documenting experience in analysis and data validation. Data validator qualifications are available on DEC's website identified in the table of contents.

(c) Preparation of a DUSR. The DUSR is developed by reviewing and evaluating the analytical data package. In order for the DUSR to be acceptable, during the course of this review the following questions applicable to the analysis being reviewed must be answered in the affirmative.

1. Is the data package complete as defined under the requirements for the most current DEC ASP Category B or USEPA CLP data deliverables?

2. Have all holding times been met?

3. Do all the QC data; blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used and are they consistent with the most current DEC ASP?

7. Have any quality control (QC) exceedances been specifically noted in the DUSR and have the corresponding QC summary sheets from the data package been attached to the DUSR?

(d) Documenting the validation process in the DUSR. Once the data package has been reviewed and the above questions asked and answered the DUSR proceeds to describe the samples and the analytical parameters, including data deficiencies, analytical protocol deviations and quality control problems are identified and their effect on the data is discussed.