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April 17, 2009

Mr. Michael Haggerty
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway
Albany, New York 12233-7016

Re: Remedial Action Plan
Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York
PBS No. 2-157929
NYSDEC Case Nos. 07-51061

Dear Mr. Haggerty:

Kleinfelder East, Inc. was retained by ExxonMobil Environmental Services Company, on behalf of ExxonMobil Oil Corporation, to submit the enclosed Remedial Action Plan (RAP) for the above-referenced Mobil service station (Site). The RAP has been prepared in accordance with the schedule presented in the February 18, 2009 *Off-Site Subsurface Investigation Report* which was approved by the New York State Department of Environmental Conservation (NYSDEC) on March 25, 2009.

The RAP includes a description of the Site, including a chronology of site activities performed to date, a feasibility assessment summary, a remedial action plan to address subsurface hydrocabons and a remediation system conceptual design. The RAP proposes the installation of an air sparge/soil vapor extraction (AS/SVE) remediation system to address petroleum hydrocarbons remaining in the subsurface following the interim remedial measure (IRM) underground storage tank (UST) removal and over-excavation activities.

IRM activities commenced on January 26, 2009 and included the excavation of five 4,000-gallon capacity gasoline USTs and associated distribution and vent piping, one 1,000-gallon capacity fuel oil UST, twelve previously abandoned 550-gallon capacity USTs and the excavation of petroleum impacted soil. The IRM is being conducted in accordance with the *IRM UST Removal Work Plan* and associated amendments which were approved by the NYSDEC on December 23, 2009.

The RAP has been prepared based on the current conditions at the Site. An evaluation of subsurface conditions will be conducted following the IRM. If the subsurface conditions changed, a Revised RAP will be submitted to the NYSDEC. Upon completion of an assessment of the subsurface conditions following IRM activities and NYSDEC approval of the RAP, the activities outlined will be implemented based on the

schedule presented in section 8.0 of the enclosed report. If you have any questions or require additional information, please contact the undersigned at (631) 218-0612.

Very truly yours,
Kleinfelder East, Inc.

Dennis G. Shin, P.E.
Senior Project Manager

Michael Meyerhoefer
Project Manager

Enclosure

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REMEDIAL ACTION PLAN

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

NYSDEC Case Nos. 07-51061

April 17, 2009

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REMEDIAL ACTION PLAN

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

QUALITY ASSURANCE/QUALITY CONTROL

The following personnel have reviewed this report for accuracy, content, and quality of presentation.

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Senior Project Manager

Date 4/17/09

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1.0 INTRODUCTION

Kleinfelder East, Inc. (Kleinfelder) was retained by ExxonMobil Environmental Services Company (ExxonMobil), on behalf of ExxonMobil Oil Corporation to prepare a Remedial Action Plan (RAP) for Mobil Service Station No. 12827 (17-QDM) located at 150-54 West 145th Street, New York, New York (Site) (Figure 1). The RAP has been prepared in accordance with the schedule presented in the February 18, 2009 *Off-Site Subsurface Investigation Report* which was approved by the New York State Department of Environmental Conservation (NYSDEC) on March 25, 2009. The RAP includes the following:

- Site description.
- Summary of Site activities.
- Summary of Site characterization.
- Description of the interim remedial measure (IRM) currently being executed at the Site.
- Summary of a feasibility study conducted at the Site.
- Proposed remedial action plan and system design.
- Implementation schedule.

The RAP proposes the installation of an air sparge/soil vapor extraction (AS/SVE) remediation system to address hydrocarbons remaining in the subsurface following the ongoing IRM underground storage tank (UST) removal and over-excavation activities.

IRM activities commenced on January 26, 2009 and includes the excavation of five 4,000-gallon capacity gasoline USTs and associated distribution and vent piping, one 1,000-gallon capacity fuel oil UST, twelve previously abandoned 550-gallon capacity USTs and the excavation of petroleum hydrocarbon impacted soil. The IRM is being conducted in accordance with the *IRM UST Removal Work Plan* and associated amendments which were approved by the NYSDEC on December 23, 2009.

The RAP has been prepared based on the current conditions at the Site. An evaluation of subsurface conditions will be conducted following the IRM. If the subsurface conditions changed, a Revised RAP will be submitted to the NYSDEC. Upon completion of an assessment of the subsurface conditions following IRM activities and NYSDEC approval of the RAP, the activities outlined will be implemented based on the schedule presented in section 8.0.

2.0 SITE DESCRIPTION

The Site is an active Mobil service station situated on approximately one-quarter acre parcel of land located on the south side of West 145th Street between Lennox Avenue and Seventh Avenue (Adam Clayton Powell Jr. Boulevard) in New York, New York. The location of the Site is indicated on Figure 1. The Site is covered entirely by concrete and asphalt. The Site consists of one single-story building

containing four automobile service bays and four multi-product dispenser islands. Currently, the Site is inactive as UST replacement activities are being conducted. Gasoline was formerly stored in five 4,000-gallon capacity USTs. The five 4,000-gallon capacity USTs will be replaced with two 10,000-gallon capacity and one 8,000-gallon capacity USTs. Additionally, 12 previously abandoned, 550-gallon capacity gasoline USTs are located on-site. The locations of pertinent Site features are indicated on Figure 2.

The Site is generally covered with asphalt, with the exception of concrete areas above the USTs and around the dispenser islands. Public utilities servicing the Site include subsurface sewer, water, electric, and telephone lines.

The Site is bordered to the south by residential apartment buildings with basements and bordered to the east by an Amerada Hess gasoline service station. West of the Site is a vacant single-story structure formerly operated as a grocery store. The Site is bordered to the north by West 145th Street beyond which are residential apartment buildings containing basements. A Getty service station is located northeast of the Site across West 145th Street.

3.0 SUMMARY OF SITE ACTIVITIES

The following is a summary of activities performed at the Site between November 2007 and present:

November 2, 2007 The New York State Department of Environmental Conservation (NYSDEC) submitted a letter to ExxonMobil requesting that the Site be investigated due to soil and groundwater analytical data that was collected at the adjacent property (2495 Adam Clayton Powell, Jr. Boulevard). NYSDEC Case No. 07-06608 was assigned to the adjacent property on September 13, 2007 as a result of the findings of the Phase II conducted. The NYSDEC Case No. 07-06608 was closed on March 5, 2009.

Specifically, the NYSDEC letter requested tightness testing of USTs and fill lines, and delineation of potential groundwater contamination via installation of monitoring wells. NYSDEC Case No. 07-51061 was assigned to the Site on November 2, 2007 as a result of the investigation on the adjacent property. The NYSDEC Case Number remains open.

November 8, 2007 Crompco Corporation of Plymouth Meeting, Pennsylvania (Crompco), conducted tank and line testing at the Site. The results indicated that the tanks and lines tested tight. The tank test results were submitted to the NYSDEC in a November 19, 2007 correspondence.

December 14, 2007 A *Remedial Investigation Work Plan* (RIWP) proposing the installation of five soil borings/monitoring wells to evaluate subsurface soil and groundwater conditions at the Site was submitted to the NYSDEC. The RIWP was approved by the NYSDEC on January 9, 2008 with a revision to the proposed schedule. The NYSDEC required that the investigation commence within 45 days and the report of findings be submitted within 60 days of the approval.

January 11, 2008 The NYSDEC approved a Remedial Action Work Plan dated January 5, 2008 which was submitted by Galli Engineering on behalf of A&C Development Partners (owners of 2495 Adam Clayton Powell Jr. Boulevard property).

February 20, 2008 A subsurface investigation (SI) was initiated at the Site consisting of the installation of five soil borings completed as monitoring wells MW-1 through MW-5. Laboratory analytical results indicated volatile organic compounds (VOC) concentrations above NYSDEC Recommended Soil Cleanup Objectives (RSCOs) in two of 10 soil samples collected and semi-volatile organic compounds (SVOC) concentrations above NYSDEC RSCOs in five of 10 soil samples collected. Groundwater laboratory analysis indicated VOCs above NYSDEC Water Quality Standards (WQS). The highest dissolved BTEX and MTBE concentrations were detected in monitoring wells MW-2 and MW-3, respectively. Laboratory analysis indicated only three SVOCs above NYSDEC WQS. The methods and results of the SI were submitted to the NYSDEC in an April 18, 2008 *Subsurface Investigation Report* (SIR).

May 22, 2008 Liquid-phase hydrocarbon (LPH) was detected in monitoring well MW-2 (0.72 feet). The NYSDEC was notified via telephone conversation. On-going investigation and remediation of the LPH conducted under the existing NYSDEC Case No. 07-51061. A sample of the LPH detected in MW-2 was collected and analyzed by Accutest Laboratories of Dayton, New Jersey (Accutest), a New York State Department of Health (NYSDOH) approved laboratory (Environmental Laboratory Approval Program [ELAP] No. 10983) for ethanol via USEPA Method 8015B. Additionally, LPH fingerprint was completed on the LPH sample. Laboratory analytical results indicated that ethanol was below laboratory reporting limits (BRL) and gas chromatography fingerprinting indicated that the LPH collected was a match for gasoline.

June 11, 2008 The NYSDEC approved the April 18, 2008 SIR including the recommendations to investigate subsurface anomalies and conduct quarterly groundwater sampling. The NYSDEC approval letter required that additional delineation of soil and groundwater be completed with the installation of wells northeast and south-south east of monitoring well MW-2. The NYSDEC also required that a RAP be submitted upon completion of soil and groundwater delineation.

July 8, 2008 A *Supplemental Subsurface Investigation Work Plan* (SSIWP) was submitted to the NYSDEC in response to the NYSDEC's letter to ExxonMobil dated June 11, 2008. That letter requested additional delineation of soil and groundwater in the vicinity of MW-2 and the submission of a RAP for the Site. The SSIWP proposed additional delineation of hydrocarbons in soil and groundwater on the western portion of the Site and an IRM to address LPH present in MW-2.

July 21, 2008 The NYSDEC submitted an email stating that NYSDEC Case No. 07-51061 had been transferred from the regional office in Long Island City to the central office in Albany. Michael Haggerty replaced Jeffrey Voight as the NYSDEC case manager. The email also approved the July 8, 2008 SSIWP contingent upon the addition of three monitoring wells to determine the extent of LPH in MW-2. Following a discussion with Kleinfelder on July 23, 2008, the NYSDEC approved the SSIWP with the addition of two monitoring wells rather than three monitoring wells.

August 25, 2008 The NYSDEC submitted a letter to ExxonMobil requesting that enhanced fluid recovery (EFR) events be conducted on monitoring well MW-2, the UST distribution system be tested, groundwater samples from monitoring well MW-2

be analyzed for oxygenates and the preparation of a Corrective Action Plan (CAP).

August 27, 2008 A supplemental subsurface investigation (SSI) was initiated at the Site consisting of the excavation of soil test pits to investigate metallic anomalies and the installation of six soil borings/monitoring wells (MW-6 through MW-11). The soil test pits revealed the presence of 12, previously abandoned, concrete encased 550-gallon capacity USTs. Upon discovery of hydrocarbon impacted soil around the abandoned USTs, the NYSDEC was notified and Case No. 08-06417 was assigned to the Site. NYSDEC Case No. 08-06417 was closed on January 26, 2009.

The SSI also consisted of the advancement and installation of six soil borings/monitoring wells (MW-6 through MW-11). Laboratory analytical results indicated that VOC concentrations were above NYSDEC RSCOs in eight of 12 soil samples collected. Monitoring well liquid-level gauging indicated that 0.79 feet, 0.94 feet, and 0.05 feet of LPH was detected in monitoring wells MW-6, MW-10 and MW-11, respectively. Groundwater laboratory analysis indicated VOCs above NYSDEC WQS. A complete description of the methods and results of the SSI were submitted to the NYSDEC in a December 29, 2008 *Supplemental Subsurface Investigation Report* (SSIR) which was approved by the NYSDEC on January 26, 2009.

September 5, 2008 The NYSDEC submitted a letter to ExxonMobil requesting that a SI be conducted on 2495 Adam Clayton Powell Jr. Boulevard to delineate the extent of off-site LPH.

September 12, 2008 A letter was submitted in response to the NYSDEC correspondence dated August 25, 2008. The letter indicated that EFR events would be initiated on a monthly basis at monitoring wells MW-1 and MW-2, that tightness testing of the USTs and associated distribution piping would be conducted, and that groundwater samples collected from monitoring wells MW-1 and MW-2 would be analyzed for tert-amyl methyl ether (TAME), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETEB), tert-amyl alcohol (TAA), tert-butyl alcohol (TBA) and ethanol along with BTEX and MTBE. Lastly, the correspondence indicated that the Site had not yet been fully characterized and a CAP would be submitted once the Site was completely delineated.

September 16, 2008 Crompco conducted tank and line testing at the Site. The results indicated that the tanks and lines tested tight. The tank test results were submitted to the NYSDEC in an October 1, 2008 *Site Status Update Report* (SSUR).

September 29, 2008 Mobile remediation events (MRE) were initiated consisting of EFR and vapor extraction through an internal combustion engine (ICE). Between September 29 and October 30, 2008, eight events were conducted on monitoring wells exhibiting measurable LPH. Approximately 19,701 gallons of groundwater, 227 gallons of LPH and 814 pounds of total petroleum hydrocarbon vapors were extracted through monitoring wells MW-6, MW-10, and MW-11.

October 2, 2008 An *Off-Site Subsurface Investigation Work Plan* (OSIWP) proposing the installation of six soil borings/monitoring wells on 2495 Adam Clayton Powell Jr. Boulevard was submitted to the NYSDEC in response to the September 5, 2008 letter. The NYSDEC approved the OSSIWP on October 2, 2008, however, a request to develop a work plan proposing the installation of off-site wells across West 145th Street was also included.

October 6, 2008 An off-site subsurface investigation (OSSI) was initiated on October 6, 2008 with a site inspection and geophysical investigation. Following execution of the access agreement with A&C Development on October 17, 2008, six soil borings, five of which completed as monitoring wells MW-13 through MW-17 were advanced at the Site.

Laboratory analytical results indicated that VOC concentrations were above NYSDEC RSCOs in six of twelve soil samples collected. Groundwater laboratory analysis indicated VOCs above NYSDEC WQS in the five off-site monitoring wells. A complete description of the methods and results of the SSI were submitted to the NYSDEC in a February 18, 2009 *Off-Site Subsurface Investigation Report* (OSSIR). The OSSIR was approved by the NYSDEC on March 25, 2009.

October 10, 2008 An *UST Removal Work Plan* proposing the removal of 10 of the 12 previously abandoned, concrete encased, 550-gallon capacity USTs, and the excavation of petroleum impacted soil was submitted to the NYSDEC.

October 17, 2008 An access agreement was fully executed between ExxonMobil and A&C Development/2497 Realty Corporation, the owner of the adjacent property at 2495 Adam Clayton Powell Jr. Boulevard. The access agreement referenced a limited scope of work consisting of a property inspection, geophysical investigation, SI with advancement of six soil borings/monitoring wells, monitoring well top of casing survey and sample collection.

October 27, 2008 The NYSDEC submitted a letter to ExxonMobil indicating that the *UST Removal Work Plan* submitted on October 10, 2008 failed to address the NYSDEC requirements to remove source material as an IRM. The NYSDEC required a new work plan in the form of an IRM to remove source material. The NYSDEC also required that any remaining absorbed- and dissolved-phase hydrocarbons not addressed through excavation be addressed aggressively.

October 30, 2008 A *Supplemental Subsurface Investigation Work Plan* (SSIWP), in response to the NYSDEC October 2, 2008 request, was submitted to the NYSDEC proposing the installation of three on-site soil borings/monitoring wells and four off-site soil borings/monitoring wells to delineate the nature and extent of liquid-, adsorbed-, and dissolved-phase hydrocarbons beneath the Site. The SSIWP also proposed the installation of two air sparge (AS) wells and two soil vapor extraction wells (SVE) wells for the purpose of feasibility testing. To date, a NYSDEC response to the SSIWP has not been received.

November 4, 2008 Operation of a temporary LPH recovery system commenced and was connected to monitoring wells MW-6, MW-10, and MW-11. The temporary LPH recovery system was dismantled and removed from the Site on January 23, 2009. During operation, the temporary LPH recovery system removed approximately 622 gallons of LPH from the subsurface.

November 10, 2008 An *IRM UST Removal Work Plan* (Work Plan) was submitted to the NYSDEC proposing the removal of 12 abandoned 550-gallon capacity USTs, five active 4,000-gallon capacity USTs and excavation of petroleum impacted soil to the extent mechanically feasible. The Work Plan was conditionally approved by the NYSDEC on November 24, 2008.

The conditions required by the NYSDEC were that the area of open excavation must be minimized at all times, vapor suppressant foam must be used to reduce

odors/vapors, and ExxonMobil would assist the NYSDEC with Citizen Participation Efforts which included adjacent property manager communication, an evaluation of surrounding building air intake vents and the preparation and distribution of a Fact Sheet.

November 18, 2008 An *Underground Storage Tank Supplemental Subsurface Investigation Work Plan* was submitted to the NYSDEC proposing the installation of six soil borings to characterize the nature and extent of absorbed-phase hydrocarbons immediately adjacent to the previously abandoned, concrete encased, 550-gallon capacity USTs. The work plan was approved by the NYSDEC on November 24, 2008.

November 24, 2008 The UST SSI was initiated at the Site with the installation of six soil borings immediately adjacent to the previously abandoned, concrete encased, 550-gallon capacity USTs. Laboratory analytical data indicated that VOC concentrations were above NYSDEC RSCOs in the eleven soil samples collected. The UST SSI also included the installation of one soil vapor extraction (SVE) and one air sparge (AS) well for the purpose of feasibility testing. A complete description of the methods and results of the UST SSI were presented to the NYSDEC in a December 18, 2008 *IRM UST Removal Work Plan Amendment.*

December 9, 2008 A letter was submitted to the NYSDEC to address the NYSDEC comments in the November 24, 2008 conditional approval of the IRM UST Removal Work Plan. The letter also requested NYSDEC approval for an extension to the 30 day deadline to commence UST removal activities in order to facilitate the community participation efforts requested by the NYSDEC. The letter and extension was approved by the NYSDEC on December 18, 2008.

December 12, 2008 An AS/SVE pilot test was conducted at the Site. The results of the AS/SVE pilot test indicated that AS/SVE is an effective technology for remediating subsurface hydrocarbons. A complete description of the methods and results of the AS/SVE pilot test were presented in an AS/SVE Pilot Test Technical Memorandum included in the December 18, 2008 *IRM UST Removal Work Plan Amendment.*

December 18, 2008 An *IRM UST Removal Work Plan Amendment* (Amendment) was submitted to the NYSDEC. The Amendment indicated that the depth of the excavation would be approximately 18 fbg and the northern wall of sheeting/shoring would not be installed in order to adequately slope the excavation to facilitate the safe loading of soil into dump trucks. The Amendment was approved by the NYSDEC on December 23, 2008.

January 6, 2009 A *Community Air Monitoring* (CAMP) was submitted to the NYSDEC proposing the methods to protect downwind receptors from potential airborne VOC vapors and particulates that may migrate from the Site during ground intrusive construction, investigative and remedial activities. The CAMP was approved by the NYSDEC on January 6, 2009.

January 8, 2009 During an on-site pre-construction meeting with the excavation subcontractor and shoring engineer, it is determined that the sheeting/shoring design as originally proposed was not structurally feasible. The excavation subcontractor and shoring engineer recommended that the shoring be designed as a completely enclosed box for stability. The revision to the sheeting and shoring design was approved by the NYSDEC during a January 14, 2009 meeting and a figure illustrating to the revised shoring layout was submitted to the NYSDEC via email on January 22, 2009.

January 26, 2009 The IRM, including the excavation of USTs and soil commenced.

February 5, 2009 LPH was detected in monitoring well MW-17 (0.05 feet) located on the adjacent property (2495 Adam Clayton Powell Jr. Boulevard). The NYSDEC was notified and NYSDEC Case No. 08-12062 was assigned to the Site. The case was closed on February 6, 2009.

Additionally, monitoring wells MW-13 through MW-15 were inaccessible due to building construction at the adjacent property. An inspection of the construction revealed that an elevated floor was installed within the room that the wells are located. It could not be determined at the time of the groundwater sampling event if the elevated floor was permanent. To date, the status of the monitoring wells is unknown.

February 6, 2009 Kleinfelder and NYSDEC met with Bishop Roberts of the Saint Thomas Liberal Catholic Church located at 137 West 144th Street in New York, New York to discuss the potential to monitor vibrations on the church building during the installation and removal of sheeting and shoring. Bishop Roberts was presented with a draft access agreement to review.

February 12, 2009 An access agreement was fully executed between Kleinfelder and the Lennox Family Center located at 141 West 144th Street in New York, New York in order to monitor vibrations during the installation and removal of sheeting and shoring within the backyard of the building. An inspection of the south side of the retaining wall, which separates the Mobil Service Station from 141 West 144th Street, indicated that the retaining wall was not structurally sound and the vibrations generated from the installation and removal of sheeting and shoring could cause damage to the wall.

March 3, 2009 ExxonMobil and A&C Development/2497 Realty Corp. executed an addendum to the original access agreement including a scope of work to adhere vibration monitors, tell tales and survey reflectors to the east facing of the building located at 2495 Adam Clayton Powell Jr. Boulevard for the purpose of monitoring vibrations during the installation and removal of sheeting and shoring.

March 10, 2009 On-site activities of the IRM ceased due to the structural instability of the retaining wall located between the Mobil service station and the properties to the south. To date, five 4,000-gallon capacity gasoline USTs, one 1,000-gallon capacity fuel oil UST, gasoline distribution and vent piping, approximately 40 cubic yards of a subsurface foundation wall and approximately 939 tons soil have been excavated and removed from the Site. The Site was backfilled to grade.

March 23, 2009 A proposal to proceed with the excavation of the abandoned USTs and over excavation of soil without the use of sheeting and shoring was submitted to the NSYDEC. The proposal was submitted due to the structural instability of the retaining wall located between the Mobil service station and the properties to the south.

The NYSDEC approved the revision to the scope of work pending three contingencies:

1. A SVE/AS system will be installed to address the contaminated soil left behind.
2. Alternative soil vapor treatment may be required upon start-up of the SVE system.

3. Prepare a Corrective Action Plan for the SVE/AS system (including the A&C property).

April 2, 2009 IRM activities resumed with the removal of a portion of the retaining wall. A complete description of the methods and results of the IRM will be submitted to the NYSDEC under separate cover.

4.0 SITE CHARACTERIZATION

The following subsections describe potential sensitive receptors, Site geology/hydrogeology, soil analytical data, and groundwater analytical data.

4.1 Potential Sensitive Receptors

Potential sensitive receptors in the vicinity of the Site include:

- Residential and commercial buildings with basements.
- Subsurface utilities located adjacent to the Site.
- Subway tunnel located within 300 meters of the Site running under Lenox Avenue.

The closest school is PS 194 (Countee Cullen School) located approximately 265 meters southwest of the Site. The closest medical facility is the Alexander Hamilton Child Health center located approximately 407 meters southwest of the Site and the closest daycare facility is the Association of Black Social Workers Day Care Center located approximately 158 meters northeast of the Site. There are no surface water bodies within 300 meters of the Site. The Harlem River is the closest surface water body and is located approximately 410 meters east of the Site. A review of New York City Department of Environmental Protection (NYCDEP) and New York City Department of Health (NYCDOH) records indicates that there are no municipal or privately owned potable water supply wells within 760 meters of the Site. The sources of water supply to the area are the Catskills and Delaware aqueduct systems located in upstate New York.

4.2 Site Geology and Hydrogeology

Regional geology consists predominantly of urban fill material and unconsolidated Pleistocene deposits overlying bedrock comprised of the pre-Cambrian Manhattan Schist formation. The Manhattan schist is micaceous rock composed predominantly of biotite, muscovite, quartz and feldspar. The overlying glacial deposits are comprised of glacial till and stratified drift. The thickness of the glacial deposits across the majority of Manhattan is limited to approximately 25 feet (Arnow, 1953).

SI activities revealed that material from ground surface to approximately 10 fbg consists of medium- to fine-grained sand, coarse to fine gravel and pulverized rock fragments. Deposits observed from approximately 10 fbg to approximately 20 fbg consisted predominately of well-graded coarse- to fine-grained sand with some silt, some sub-rounded to rounded fine to coarse gravel and rock fragments. Deposits observed from approximately 20 to approximately 25 fbg consisted of silty sand lenses. Underlying the silty sand and extending to the terminal depth of the borings, native deposits consisted of well-graded coarse- to fine-grained sand.

The NYSDEC classifies the aquifer in the vicinity of the Site as "GA." The "GA" classification indicates that the aquifer contains fresh, non-saline groundwater. The depth to the uppermost aquifer (Upper Glacial aquifer) is approximately 18 fbg.

On February 5, 2009, the groundwater monitoring well network was gauged with an electronic interface probe (EIP). LPH was detected in monitoring wells MW-6 (0.63 feet), MW-9, MW-10 (0.09 feet), MW-11 (0.06 feet) and MW-17 (0.05 feet). Depth to groundwater ranged from 15.08 fbg in MW-17 to 25.07 fbg in MW-13. Gauging results are included on Table 3. The average horizontal hydraulic gradient is approximately 0.0041 feet per foot (ft/ft). Groundwater elevation is illustrated on Figure 4.

4.3 Soil Analytical Data

From February 2008 to the present, a total of 45 soil samples have been collected during SI activities. Twenty-seven of the 45 samples collected exhibited VOC concentrations above NYSDEC RSCOs. Sixteen samples exhibited SVOC concentrations above NYSDEC RSCOs. Of the samples that exhibited detectable VOC concentrations, BTEX concentrations ranged from 0.269 milligrams per kilogram (mg/kg) in MW-3 (25-27 fbg) to 1,876 mg/kg in MW-10 (18.5 to 20 fbg). MTBE concentrations in soil ranged from below laboratory reporting limits (BRL) to 3.57 mg/kg in MW-3 (25 to 27 fbg). A summary of soil quality data for VOC analysis is presented on Table 1 and illustrated on Figure 3. A summary of soil quality data for SVOC analysis is presented on Table 2.

4.4 Groundwater Analytical Data

Monitoring and sampling of dissolved-phase hydrocarbons is conducted on a quarterly basis using the existing well network consisting of monitoring wells MW-1 through MW-11, and MW-13 through MW-17.

The most recent groundwater samples were collected on February 5, 2009. Monitoring wells MW-13 through MW-15 were inaccessible due to building construction at the adjacent property. An inspection of the construction revealed that an elevated floor was installed within the room that the wells are located. It

could not be determined at the time of the groundwater sampling event if the elevated floor was permanent. To date, the status of the monitoring wells is unknown. In addition to BTEX and MTBE, groundwater samples were analyzed for ethanol and dissolved lead. The sample analytical results reported BTEX concentrations ranging from below laboratory reporting limits (BRL) in MW-4 to 61,689 micrograms per liter (µg/L) in MW-13, and MTBE concentrations ranging from BRL in MW-13 to 1,000 µg/L in MW-1. Laboratory analytical results indicated that ethanol concentrations were BRL in the seven groundwater samples collected. Additionally, laboratory analytical results indicated that dissolved lead was below the NYSDEC WQS for the seven groundwater samples collected. Dissolved lead concentrations ranged from below laboratory reporting limits (BRL) in MW-2, MW-4, MW-5 and MW-8 to 7.8 micrograms per liter (µg/L) in MW-13. A summary of groundwater quality data is provided on Table 3. The groundwater quality analytical data from the February 5, 2009 groundwater sampling event is illustrated on Figure 4.

4.5 Liquid Phase Hydrocarbon Analytical Data

A sample of LPH detected in monitoring wells MW-6, MW-9, MW-10, MW-11 and MW-17 was collected and analyzed by Accutest for specific gravity, MTBE via USEPA Method 8260B, and ethanol via USEPA method 8015B. Additionally, gas chromatography LPH fingerprinting was completed on each LPH sample. Laboratory analytical results indicate that MTBE ranged from BRL in MW-10 and MW-17 to 58 milligrams per kilogram (mg/kg) in MW-6. Additionally, ethanol concentrations ranged from BRL in MW-6, MW-10 and MW-17 to 0.855 mg/kg in MW-11. Lastly, gas chromatography fingerprinting indicates that the LPH in the five samples collected is a positive match for gasoline.

5.0 INTERIM REMEDIAL MEASURE

IRM activities commenced on January 26, 2009 and is being conducted in accordance with the NYSDEC approved *IRM UST Removal Work Plan* and associated amendments which were prepared in response to the NYSDEC October 27, 2008 letter to ExxonMobil. The October 27, 2008 correspondence stated that "the NYSDEC requires the source to be removed and the remaining contamination (both on-site and off-site) to be dealt with aggressively". IRM activities included the excavation of five 4,000-gallon capacity gasoline USTs and associated distribution and vent piping, one 1,000-gallon capacity fuel oil UST, 12 previously abandoned 550-gallon capacity USTs and the excavation of petroleum hydrocarbon impacted soil. To date approximately 2,260 tons of soil has been excavated and removed from the Site. A Site Plan illustrating locations of the removed USTs and approximate extent of excavation is available on Figure 5.

Following completion of IRM activities, new gasoline dispensing infrastructure will be installed. The new UST and distributions system will consist of one 8,000 gallon-capacity double-walled fiberglass UST and

two 10,000-gallon capacity double-walled fiberglass USTs. Double walled fiberglass distribution, fill, and vent piping will also be installed. A Site Plan illustrating the location of the new gasoline distribution system is available on Figure 6.

A complete description of the methods and results of the IRM will be submitted to the NYSDEC under separate cover.

6.0 FEASIBILITY STUDY INVESTIGATION

The following subsections describe the methodology and results of the AS/SVE feasibility study conducted at the Site in December 2008.

6.1 AS/SVE Feasibility Study

On December 10, 2008, a SVE/AS feasibility study was conducted at the Site. Soil vapor extraction point VP-1 was utilized as an extraction well and air sparge point AS-1 was utilized as an injection well. Monitoring wells MW-1, MW-2, MW-7, MW-8, MW-13, and MW-17 were utilized to measure vacuum influence during the feasibility test.

A 1.5-horsepower (HP) regenerative blower (Gast Model R4P115-50N) was used to apply vacuum to soil vapor extraction point VP-1 and a 5.5-HP air compressor was used to supply air to sparge point AS-1.

Vacuum was applied to soil vapor extraction well VP-1 in three, 30-minute, stepped intervals (SVE Interval 1, SVE Interval 2, SVE Interval 3) with increased applied vacuum at each subsequent interval. During each interval, the following parameters were monitored and recorded approximately every 15 minutes:

- Applied vacuum at the extraction well (VP-1) was measured in inches of water column (iwc) with a Dwyer Magnehlic® vacuum gauge.
- Extracted differential pressure was measured with a Dwyer DS-300 Flow Sensor pitot tube.
- Extracted percent LEL was measured with a MultiRAE Plus photoionization detector (PID).
- Extracted VOC concentrations were measured with a PID.
- Vacuum influence in monitoring points MW-1, MW-2, MW-7, MW-8, MW-13, and MW-17 was measured with a Dwyer digital manometer to evaluate vacuum influence at different radial distances and in different directions from extraction well (VP-1).

At approximately 90 minutes into the feasibility study, air sparging at sparge point AS-1 was initiated. Ambient air was injected into sparge point AS-1 in two stepped intervals (SVE/AS Interval 1, SVE/AS

Interval 2), with increased applied pressure and air injection flow at the subsequent interval. The two SVE/AS intervals lasted for approximately 60 and 120 minutes, respectively. In addition to the parameters monitoring during the SVE study, the following parameters were monitored and recorded approximately every 15 minutes:

- Applied air sparge pressure at the injection well (AS-1) was measured by an in-line analog pressure gauge.
- Injected air flow rate was measured by an in-line flow rotameter.
- Depth to water in monitoring points MW-1, MW-2, MW-7, and MW-8 was measured with an electronic interface probe (EIP).
- Dissolved oxygen (DO) concentration in monitoring points MW-1, MW-2, and MW-8 was measured with YSI DO probes.

In addition to the parameters stated above, one air sample was collected during each feasibility study interval using a Tedlar® bag and submitted to Accutest for analysis of BTEX, MTBE, and total petroleum hydrocarbons (TPH) in accordance with USEPA Method TO-3.

6.2 AS/SVE Feasibility Study Results

The results from the feasibility study conducted at the Site on December 10, 2008 indicated that SVE radius of influence (ROI) ranged from approximately 35 to 52 feet, while sparge ROI was approximately 15 feet. The results also indicate that AS/SVE technology is a feasible technology to remediate residual adsorbed- and dissolved-phase hydrocarbons beneath the Site. Feasibility study results were submitted to the NYSDEC in a SVE/AS Pilot Study Technical Memorandum included as Attachment B to the December 18, 2008 *IRM UST Removal Work Plan Amendment*.

Laboratory analytical data was omitted from the SVE/AS Pilot Study Technical Memorandum because analysis had not been completed at the time of submission; however, the data has become available and is presented below. Hydrocarbon recovery rates were calculated using the formula shown below.

Hydrocarbon Recovery (lbs/hr) =
Soil Vapor Concentration (mg/m^3) * Air Flow Rate (scfm) * $3.74x10^{-6}$ (conversion factor)

Where:

lbs/hr =	pounds per hour
mg/m^3 =	milligrams per cubic meter
scfm =	standard cubic feet per minute

A summary of laboratory analytical data and corresponding calculated recovery rates from the feasibility study are presented below on Table 4. An AS/SVE laboratory analytical report is included as Appendix A.

Table 4: AS/SVE Pilot Test Hydrocarbon Recovery Results

Parameter	SVE Test Hydrocarbon Recovery								
	0 to 30 minutes 2 iwc, 13.1 scfm			30 to 60 minutes 10 iwc, 32.4 scfm			60 to 90 minutes 15 iwc, 53.9 scfm		
	Vapor Conc. (mg/m^3)	Removal Rate (lbs/hr)	Removal Rate (lbs/day)	Vapor Conc. (mg/m^3)	Removal Rate (lbs/hr)	Removal Rate (lbs/day)	Vapor Conc. (mg/m^3)	Removal Rate (lbs/hr)	Removal Rate (lbs/day)
Benzene	351	0.02	0.41	355	0.04	1.03	282	0.06	1.36
Toluene	2,480	0.12	2.92	2,460	0.30	7.15	2,100	0.42	10.16
Ethylbenzene	367	0.02	0.43	357	0.04	1.04	305	0.06	1.48
Total Xylenes	1,450	0.07	1.70	1,420	0.17	4.13	1,210	0.24	5.85
BTEX	4,648	0.23	5.47	4,592	0.56	13.35	3,897	0.79	18.85
MTBE	<0.36	0.00	0.00	<0.36	0.00	0.00	<0.36	0.00	0.00
TPH	39,500	1.94	46.45	39,800	4.82	115.75	33,900	6.83	164.01

Parameter	SVE/AS Test Hydrocarbon Recovery					
	90 to 150 minutes 18.5 iwc, 55.7 scfm			150 to 270 minutes 18.5 iwc, 54.1 scfm		
	Vapor Conc. (mg/m^3)	Removal Rate (lbs/hr)	Removal Rate (lbs/day)	Vapor Conc. (mg/m^3)	Removal Rate (lbs/hr)	Removal Rate (lbs/day)
Benzene	256	0.05	1.28	412	0.08	2.00
Toluene	2,090	0.44	10.45	2,920	0.59	14.18
Ethylbenzene	383	0.08	1.91	560	0.11	2.72
Total Xylenes	1,550	0.32	7.75	2,280	0.46	11.07
BTEX	4,279	0.89	21.39	6,172	1.25	29.97
MTBE	<0.36	0.00	0.00	<0.36	0.00	0.00
TPH	32,400	6.75	161.99	47,100	9.53	228.72

The results from the feasibility study were used to develop parameters for a system design as presented in Section 7.0 of this RAP. As a result of the IRM excavation currently being conducted, subsurface geologic conditions may change at the Site. Additional feasibility testing may be necessary to revise the design parameters based on actual Site conditions at the time the system will be implemented.

7.0 REMEDIAL ACTION PLAN

A description of the remedial action to implement an AS/SVE system at the Site is presented in the following sections. The RAP has been prepared based on Site conditions at the time of the AS/SVE feasibility study. An evaluation of subsurface conditions following completion of the IRM will be conducted. If subsurface conditions changed, a Revised RAP will be submitted to the NYSDEC.

7.1 Technology Selection

Remedial activities have commenced at the Site with implementation of the IRM which included the excavation and removal of source material, specifically the gasoline distribution infrastructure and petroleum hydrocarbon impacted soil. Based on subsurface conditions prior to the implementation of the IRM, and an evaluation of the approximate extent of soil excavation, an additional remedial technology will be utilized to address remaining subsurface hydrocarbons.

Based on the results of the AS/SVE feasibility study presented in section 6.0 of this report, AS/SVE is a favorable technology to address remaining subsurface hydrocarbons following IRM activities. The combined use of SVE and air sparge technologies (under the proper conditions) promotes both physical and biochemical processes that result in the removal and degradation of dissolved- and adsorbed-phase petroleum hydrocarbons from the subsurface. The results of the feasibility study indicate that AS/SVE technology is effective and can be implemented at the Site. Additionally, the Site conditions (permeable geology, adsorbed-phase hydrocarbon impacts, and limited space availability on Site), also contribute to the recommendation of AS/SVE technology to remediate the subsurface via in-situ methods.

The RAP has been prepared based on the current conditions at the Site. An evaluation of subsurface conditions following completion of the IRM will be conducted. If subsurface conditions changed, a Revised RAP will be submitted to the NYSDEC.

7.2 Air Sparge Overview

Air sparge systems introduce ambient air into the saturated zone typically via use of a compressor. This sparged air typically bubbles up through the groundwater and soil, effectively increasing the oxygen concentrations of the subsurface, thus enhancing both physical and biochemical activity. Increased oxygen concentrations in the subsurface enhance the growth of in-situ aerobic petroleum degrading bacteria that consume petroleum hydrocarbons in their metabolic processes. The physical action of the sparged air rising through the subsurface (groundwater and soil) promotes the volatilization of dissolved- and adsorbed-phase petroleum hydrocarbons into the rising air. Once separated from the groundwater and/or soil, soil gas is extracted from the subsurface by a SVE system.

Typically, air sparge systems are used in conjunction with SVE systems so that the sparged vapors can be recovered for treatment. Air sparging is most effective at sites impacted by volatile contaminants and that exhibit a permeable aquifer matrix. Based on the historical groundwater sampling data and subsurface investigations, this Site has shown concentrations of dissolved volatile contaminants above NYSDEC guidance values, and the subsurface soil lithology is consistent with that of relatively permeable

geology. Therefore, air sparge technology is deemed an applicable technology for this Site.

7.3 SVE Overview

SVE is a commonly used remediation technique for the treatment of adsorbed-phase petroleum hydrocarbons in the vadose zone. SVE systems typically use regenerative air blowers to apply vacuum at extraction wells, allowing for the recovery of soil vapor from unsaturated soils. As air moves through soil in the vadose zone, VOCs, including adsorbed-phase hydrocarbons, are transferred into the vapor stream for recovery and treatment. SVE systems could also promote aerobic bioremediation due to the introduction of oxygen into subsurface soils by promoting air flow from the ambient atmosphere to the subsurface.

Overall, SVE systems have been proven effective in unsaturated soils of moderate to high air permeability for compounds which have high vapor pressures (>1 millimeter of mercury) and/or that are aerobically biodegradable. As groundwater levels fluctuate, SVE can remediate the petroleum hydrocarbons that are exposed in the capillary fringe as well. However, using SVE without groundwater pumping or air sparging often may not remediate adsorbed- and dissolved-phase hydrocarbons below the groundwater table.

The fine- to coarse-grained sands that were identified in the subsurface at the Site have a relatively high permeability and the constituents to be remediated (BTEX and MTBE) have a relatively high vapor pressure. Therefore, the Site conditions are deemed favorable for the application of SVE technology to extract hydrocarbons from the subsurface.

7.4 Site-Specific Description

Using the results of the feasibility study conducted on December 10, 2008, ROIs of 35 feet for SVE, and 15 feet for AS were selected for the system design. Therefore, the air sparge portion of the AS/SVE system will consist of 13 sparge points (AS-1 through AS-13). The proposed SVE portion of the remediation system will consist of eight soil vapor extraction wells (SVE-1 through SVE-8) to remediate the hydrocarbon impacts identified during investigation activities.

Each sparge point will consist of approximately 28 feet of 2-inch diameter schedule 80 polyvinyl chloride (PVC) well casing and 2 feet of 2-inch diameter 0.020-inch slot well screen installed to a total depth of 30 fbg. Each SVE well will consist of 9 feet of 4-inch diameter schedule 40 (PVC) well casing with 9 feet of 0.020-inch slot well screen to a terminal depth of approximately 18 feet. SVE well SVE-1 and sparge point AS-1 were previously installed to facilitate the feasibility study. In the event that the existing wells

are damaged or destroyed during the IRM activities, SVE well SVE-1 and sparge point AS-1 would be reinstalled. The locations, depths, and screen slot size of the remedial wells may be adjusted based on field observations.

The proposed system wells will be advanced via vacuum guzzler from grade to approximately 8 fbg, and then followed by a drill rig equipped with hollow-stemmed augers to the terminal depths. The annular space around each well will be backfilled with a sand filter pack to approximately 2 feet above the screened section followed by an approximately 2-foot thick bentonite seal. The remaining annular space in the remediation boreholes will be grouted to 3 fbg.

The locations of the proposed sparge points and SVE wells with their associated conceptual ROIs are presented on Figures 7 and 8, respectively.

7.5 System Layout

The proposed system trenching layout and location of the AS/SVE system is illustrated on Figure 9. The actual location of the system may be moved due to zoning and/or permit requirements and the required size of the equipment enclosure. The size of the equipment enclosure may change based on equipment limitations and manufacturer requirements.

Lateral piping from the wells to the system manifold is proposed to be sub-grade. The SVE lateral piping will consist of 3-inch diameter schedule 40 PVC and the sparge lateral piping will consist of 1-inch diameter schedule 80 PVC pipe. The wellhead construction details are presented on Figure 10. The actual locations of SVE laterals and associated piping may be modified and/or removed based upon the locations of subsurface obstructions.

The system equipment will be enclosed within a chain-link fenced area with locking swing gates and warning signs. The equipment within the fenced enclosure will be positioned in a way to protect components from potential traffic hazards (e.g. PVC stub-ups to be located behind the remediation system container box). The electric utility meter will be located in a position that would be accessible by the public utility company for inspection and service.

7.6 System Operation

AS/SVE technology is designed to remediate the subsurface through removal of petroleum hydrocarbons adsorbed to soils and dissolved in groundwater. The goal of the system is to maximize hydrocarbon recovery and remediate soil and groundwater to either NYSDEC standards and guidance values or asymptotic levels.

Results of the AS/SVE feasibility studies were used to estimate a design SVE ROI of 35 feet and a sparge ROI of 15 feet. The SVE system will be designed with eight SVE wells to remediate the adsorbed-phase hydrocarbons from the vadose zone. Each SVE well will operate at a flow rate of approximately 43 scfm at an applied vacuum of 18.5 iwc at each wellhead. Friction losses associated with lateral piping, fittings and equipment on the vacuum side of the blower is estimated to be approximately 5.0 iwc. Friction losses associated with piping, fittings, and equipment on the pressure side of the blower is estimated to be approximately 48.9 iwc. Therefore, considering vacuum required at the well head and friction losses, the system design requires a blower capable of a total flow of approximately 344 scfm and total pressure/vacuum output of approximately 72.4 iwc.

The sparge system will be operated using compressed air at a flow rate of approximately 10 scfm per well, at a wellhead pressure of approximately 4.4 pounds per square inch (psi). The sparge system is designed to operate 13 sparge points concurrently with a total system pressure (including losses) of approximately 8 psi.

The Process and Instrumentation Diagrams (P&ID) for the proposed system are illustrated on Figures 11 through 13.

7.7 Off-Gas Treatment

The SVE effluent will be treated with a catalytic oxidizer (Cat/ox) with a destructive removal efficiency of up to 99.5% and discharged through a 20-foot high emission stack. Air discharges will be monitored on a monthly basis to verify that air emissions are within NYSDEC regulatory limits. Influent and effluent air samples will be collected monthly using Tedlar® bags for laboratory analysis of BTEX, MTBE and total petroleum hydrocarbons (TPH) in accordance with USEPA Method TO-3.

Following the decrease of off-gas concentrations over time, two granular activated carbon (GAC) units may replace the Cat/ox, and discharge through the 20-foot high emission stack. Air discharges will continue to be monitored on a monthly basis to verify that air emissions are within the NYSDEC regulatory limits. The GAC units will be configured in series and a sample will be collected from the influent, midfluent, and effluent. Once breakthrough is identified in the midfluent samples, the carbon in the units will replaced.

7.8 Critical Equipment/Control Logic

The following critical equipment (CE) have been identified for the SVE/AS system. CE are shown on the P&ID (Figures 10 and 11) in red.

Device	Function
Moisture Separator High Level Switch	Deactivates SVE motor if a high liquid level is present in the SVE moisture separator
Cat/ox SVE Interlock	Deactivates SVE motor if Cat/ox alarm condition exists
SVE Vacuum Relief Valve	Alleviates excessive vacuum in the event of blockage
AS High Temperature Switch	Deactivates AS motor if high temperature is sensed in air flow
AS Pressure Relief Valve	Alleviates excess pressure in sparge discharge pipe in the event of blockage
SVE/AS Motor Interlock	AS motor cannot operate without the SVE motor running, shuts AS motor down if SVE motor fails
SVE Low Vacuum Switch	Deactivates SVE motor if there is a loss in vacuum
SVE High Pressure Switch	Deactivates SVE motor if there is high pressure

7.9 Operation, Maintenance, and Monitoring

The system parameters will be monitored and adjusted both at startup and at least once a month to optimize petroleum hydrocarbon recovery. Due to the presence of LPH and subsurface soil vapor VOC concentrations identified during the feasibility study, the system will initially operate SVE without air sparge. Air sparge operation will commence when observed LPH presence is reduced and when soil vapor concentrations are reduced such that the SVE system can operate without dilution air.

The AS/SVE system components will be maintained in accordance with the manufacturer's guidance and equipment manuals. This will include, but is not limited to, cleaning and replacing filters, replacing oil in the sparge compressor, greasing compressor bearings, replacing catalyst within the oxidizer, replacing wellhead plugs and caps, maintaining warning sign information, and maintaining system security.

On a monthly basis, the parameters that will be measured to monitor system performance will be system uptime, SVE flow rate, air sparge flow rate, and VOC concentrations in the extracted vapor stream. An influent and effluent air sample will be collected via Tedlar® bag during each month of system operation and submitted to Accutest for laboratory analysis of BTEX, MTBE, and TPH via USEPA Method TO-3.

To monitor effectiveness of the remedial actions and determine the nature (i.e., steady state, migrating, or shrinking) of the dissolved-phase BTEX and MTBE mass downgradient of the Site (beyond the influence of the AS/SVE), groundwater sampling and monitoring will continue to be performed on a quarterly basis. Groundwater samples from on- and off-site monitoring wells are currently collected on a quarterly basis (February, May, August, and November). Prior to groundwater sampling, LPH thicknesses are measured and recorded. Depth to water (DTW) and depth to bottom (DTB) measurements are recorded from each monitoring well to calculate appropriate purge volumes. The DTW measurements are compared to the top of casing elevation of each monitoring well to determine water-table elevations. These elevations are mapped and contoured to determine the Site-specific groundwater flow direction and hydraulic gradients. Prior to sample collection, each well is purged of three to five well volumes using a down well pump, hand bailers, or polyethylene tubing equipped with a check valve. Groundwater samples are then collected using a submersible pump, disposable bailers, or polyethylene tubing and check valve, and transferred into laboratory supplied 40-milliliter (ml) vials. Groundwater samples are then placed in a cooler filled with ice and submitted for laboratory analysis in accordance with USEPA Method 8260B for BTEX and MTBE.

A Site Status Update Report (SSUR) summarizing the results of each groundwater sampling event will be submitted to the NYSDEC on a quarterly basis. In addition, the SSURs will summarize the remedial system operation as well as influent and effluent air concentrations.

8.0 PROJECT SCHEDULE

Following completion of the IRM, the gasoline distribution system will be replaced. The activities outlined above will be implemented within 60 days of NYSDEC written approval of this RAP or completion of the gasoline distribution system (whichever occurs last). The NYSDEC will be notified of delays in building/variance permitting, electrical service activation, or any unforeseen delays encountered with the implementation of the RAP.

9.0 CONCLUSION

The proposed AS/SVE system is designed to remediate petroleum hydrocarbons remaining in the subsurface following completion of the ongoing IRM activities. The system design is conceptual in nature and may be altered based on changed conditions resulting from the ongoing IRM activities as well as specific vendor-supplied equipment and recommendations. An evaluation of subsurface conditions following completion of the IRM will be conducted. If subsurface conditions changed, a Revised RAP will be submitted to the NYYSDEC.

Upon completion of an assessment of the subsurface conditions following IRM activities and NYSDEC approval of the RAP, the activities outlined will be implemented based on the schedule presented in section 8.0 of this report. Groundwater monitoring and sampling will continue on a quarterly basis and remedial system O&M will be conducted on a bi-weekly basis. Groundwater quality and system performance data will be summarized and presented to the NYSDEC on a quarterly basis.

10.0 REFERENCES

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11.0 LIMITATIONS

Kleinfelder performed the services for this project in accordance with the Standard Procurement Agreement with the ExxonMobil Oil Corporation (signed on June 21, 2007), and consistent with professional standard of care defined as that level of services provided by similar professionals under like circumstances. No guarantee or warranty is expressed or implied. Because regulatory criteria may change, acceptable concentrations of contaminants present at the time of investigation may in the future become subject to different regulatory standards.

This report may be used only by the client, in accordance with our contract, only for the purposes stated, and within a reasonable time from its issuance. If the intended period for usage is greater than one year from the issuance date, ExxonMobil recognizes that land use, site conditions (both on and off site) or other factors may change over time, and additional work may be required. Any party other than ExxonMobil, or their assignees who wish to use this report, shall notify both ExxonMobil and Kleinfelder prior to such intended use to obtain written approval from both parties. Based on the intended use of the

report, Kleinfelder or ExxonMobil may require that additional work be performed and an updated report be issued.

TABLES

Table 1
SOIL ANALYTICAL DATA - VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through December 2, 2008

Sample ID		MW-1		MW-2		MW-3		MW-4		MW-5	
Sample Depth (fbg)		16-18	18-20	16-18	18-20	19-21	25-27	14-16	22-24	16-18	22-24
Sample Date		2/6/2008	2/6/2008	2/5/2008	2/5/2008	2/7/2008	2/8/2008	2/8/2008	2/8/2008	2/6/2008	2/7/2008
Parameter	NYSDEC RSCO										
Benzene	**0.08**	<0.0046	0.0129	<0.010	<0.054	0.0200	0.0030	<0.0011	<0.0012	<0.0012	0.0064
Toluene	**1.5**	0.0028 J	0.0356	0.0204	20.8	0.375	0.102	0.00097 J	0.00086 J	0.0040	0.0662
Ethylbenzene	**5.5**	<0.0046	0.0136	0.0130	74.7	0.241	0.0350	0.0011	0.00073 J	0.0010 J	0.0812
Total Xylenes	**1.2**	0.0063 J	0.0849	0.152	533	0.899	0.129	0.0017 J	0.0024	0.199	0.521
Total BTEX	**~**	0.0091	0.1470	0.185	629	1.535	0.269	0.0038	0.0040	0.204	0.675
MTBE	**0.12**	<0.0046	0.0246	<0.010	<0.054	<0.0030	3.57	<0.0011	0.0704	0.0014	0.0091
n-Butylbenzene	**10.0**	0.0068 J	<0.0068	0.176	20.0	0.0941	0.0039 J	<0.0053	0.0051 J	<0.0058	0.112
sec-Butylbenzene	**10.0**	<0.023	<0.0068	0.0433 J	7.77	0.0159	0.0011 J	<0.0053	0.0061	0.0048 J	0.0487
tert-Butylbenzene	**10.0**	<0.023	<0.0068	<0.051	<0.27	<0.015	<0.0059	<0.0053	<0.0060	<0.0058	0.0021 J
Isopropylbenzene	**2.3**	<0.023	0.0013 J	0.0111 J	15.2	0.0547	0.0030 J	<0.0053	0.0030 J	0.0021 J	0.0858
p-Isopropyltoluene	**10.0**	<0.023	<0.0068	0.0256 J	4.25	0.0074 J	<0.0059	<0.0053	<0.0060	0.0030 J	0.0053 J
Naphthalene	**13.0**	0.219	0.0196	1.29	45.5	0.0479	0.0046 J	<0.0053	<0.0060	<0.0058	0.0783
n-Propylbenzene	**3.7**	<0.023	0.0033 J	0.0784	55.4	0.155	0.0062	<0.0053	0.0051 J	0.0013 J	0.167
1,2,4-Trimethylbenzene	**10.0**	0.0268	0.0190	1.51	418	0.358	0.0025 J	<0.0053	0.0018 J	0.00091 J	0.178
1,3,5-Trimethylbenzene	**3.3**	0.0047 J	0.0055 J	0.375	130	0.0477	0.0103	<0.0053	0.00053 J	0.108	0.164

Table 1
SOIL ANALYTICAL DATA - VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through December 2, 2008

Sample ID		MW-6		MW-7		MW-8		MW-9		MW-10	
Sample Depth (fbg)		12.5-15	15-17.5	15-19	19-20	12.5-15	17.5-20	15-17.5	17.5-20	16-18.5	18.5-20
Sample Date		9/23/2008	9/23/2008	9/23/2008	9/23/2008	9/22/2008	9/22/2008	9/22/2008	9/22/2008	9/24/2008	9/24/2008
Parameter	NYSDEC RSCO										
Benzene	**0.08**	<0.55	0.459 J	<0.0014	<0.065	0.00069 J	0.0013 J	2.77	<0.31	<0.0014	2.93
Toluene	**1.5**	18.2	36.3	0.0017	0.167	0.0185	0.0335	183	13.9	<0.0014	295
Ethylbenzene	**5.5**	49.8	36.2	0.00068 J	0.938	0.0084	0.0267	154	19.3	<0.0014	228
Total Xylenes	**1.2**	299	240	0.0034	7.30	0.0599	0.254	891	121	<0.0027	1,350
Total BTEX	**~**	367	313	0.0058	8.41	0.0875	0.316	1,231	154	BRL	1,876
MTBE	**0.12**	<0.55	0.338 J	<0.0014	<0.065	0.0016	0.0020	0.266 J	0.114 J	<0.0014	<0.26
n-Butylbenzene	**10.0**	11.6	4.63	0.0064 J	1.21	0.0023 J	0.0262	14.3	3.28	<0.0068	29.2
sec-Butylbenzene	**10.0**	4.37	1.82 J	0.0011 J	0.360	0.00060 J	0.0046 J	6.04	1.32 J	<0.0068	11.9
tert-Butylbenzene	**10.0**	<2.8	<2.6	<0.0069	<0.32	<0.0058	<0.0074	<1.6	<1.6	<0.0068	<1.3
Isopropylbenzene	**2.3**	8.53	4.40	<0.0069	0.337	0.00060 J	0.0035 J	17.6	2.69	<0.0068	31.7
p-Isopropyltoluene	**10.0**	2.46 J	0.983 J	0.00090 J	0.217 J	<0.0058	0.0034 J	3.09	0.700 J	<0.0068	6.18
Naphthalene	**13.0**	32.3	13.5	0.166	4.93	0.0448	0.223	38.4	10.1	<0.0068	68.4
n-Propylbenzene	**3.7**	30.6	14.8	0.00078 J	1.49	0.0027 J	0.0221	57.7	10.2	<0.0068	87.0
1,2,4-Trimethylbenzene	**10.0**	196	99.3	0.0215	14.8	0.0499	0.838	328	73.0	<0.0068	577
1,3,5-Trimethylbenzene	**3.3**	72.6	32.5	0.0038 J	4.35	0.0110	0.0978	106	22.1	<0.0068	187

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SOIL ANALYTICAL DATA - VOLATILE ORGANIC COMPOUNDS

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New York, New York

February 5, 2008 through December 2, 2008

Sample ID		MW-11		SB-12	MW-13		MW-14			MW-15	
Sample Depth (fbg)		15-17.5	17.5-20	4-6	18-20	22-24	12-16	17-20	22-24	16-18	18-20
Sample Date		9/23/2008		10/31/08	11/6/08		11/4/08			11/3/08	
Parameter	NYSDEC RSCO										
Benzene	**0.08**	<0.21	<0.24	<0.0012	<0.0013	<0.058	<0.055	<0.060	<0.0052	<0.064	<0.056
Toluene	**1.5**	0.268	0.192 J	<0.0012	<0.0013	1.44	<0.055	0.371	<0.0052	0.122	3.76
Ethylbenzene	**5.5**	2.33	1.74	<0.0012	<0.0013	11.2	<0.055	3.51	<0.0052	0.483	19.2
Total Xylenes	**1.2**	19.3	14.4	0.0435	0.0015 J	89.2	0.0403 J	30.0	0.0134	4.62	183
Total BTEX	**~**	21.9	16.3	0.0435	0.0015	101.8	0.0403	33.9	0.0134	5.23	206
MTBE	**0.12**	<0.21	<0.24	<0.0012	<0.0013	<0.058	<0.055	<0.060	<0.0052	<0.064	<0.056
n-Butylbenzene	**10.0**	1.70	1.67	<0.0059	<0.0067	5.16	0.174 J	5.12	0.0348	0.781	12.9
sec-Butylbenzene	**10.0**	0.589 J	0.499 J	0.0020 J	<0.0067	1.74	0.0326 J	1.47	0.0178 J	0.224 J	4.31
tert-Butylbenzene	**10.0**	<1.1	<1.2	<0.0059	<0.0067	<0.29	<0.28	<0.30	<0.026	<0.32	<0.28
Isopropylbenzene	**2.3**	0.769 J	0.584 J	<0.0059	<0.0067	2.77	<0.28	1.56	0.0091 J	0.172 J	5.20
p-Isopropyltoluene	**10.0**	0.346 J	0.313 J	<0.0059	<0.0067	0.946	<0.28	0.888	0.0066 J	0.134 J	2.37
Naphthalene	**13.0**	6.20	7.02	0.0154	<0.0067	16.7	2.45	18.8	<0.026	3.12	34.2
n-Propylbenzene	**3.7**	3.16	2.48	<0.0059	<0.0067	10.2	0.0347 J	6.63	0.0339	0.700	22.4
1,2,4-Trimethylbenzene	**10.0**	28.3	24.5	0.124	<0.0067	80.0	1.07	62.3	0.0861	7.93	224
1,3,5-Trimethylbenzene	**3.3**	8.68	7.24	0.0416	<0.0067	25.0	0.249 J	18.1	0.0378	2.44	72.0

Table 1
SOIL ANALYTICAL DATA - VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through December 2, 2008

Sample ID		MW-16		MW-17		SB-1		SB-2	SB-3	
Sample Depth (fbg)		16-18	18-20	11-13	13-15	16-18	18-20	16-18	14-16	16-18
Sample Date		11/3/08		10/30/08		12/2/08		12/2/08	12/1/08	
Parameter	NYSDEC RSCO									
Benzene	**0.08**	<0.0011	<0.0012	<0.056	<0.068	<0.052	1.16	<0.53	0.837	0.407 J
Toluene	**1.5**	<0.0011	<0.0012	0.0342 J	0.235	1.58	159	22.4	101	46.1
Ethylbenzene	**5.5**	<0.0011	<0.0012	0.171	1.07	3.60	146	23.1	88.0	38.3
Total Xylenes	**1.2**	<0.0022	<0.0024	2.10	7.36	26.5	902	166	586	263
Total BTEX	**~**	BRL	BRL	2.31	8.67	31.7	1,208	212	776	348
MTBE	**0.12**	<0.0011	<0.0012	<0.056	<0.068	<0.052	<0.60	<0.53	0.110	<0.55
n-Butylbenzene	**10.0**	<0.0055	<0.0060	0.732	0.714	1.73	15.7	4.99	10.9	5.96
sec-Butylbenzene	**10.0**	<0.0055	<0.0060	0.191 J	0.258 J	0.509	4.29	1.39 J	3.74	1.60 J
tert-Butylbenzene	**10.0**	<0.0055	<0.0060	<0.28	<0.34	<0.26	<3.0	<2.7	<0.29	<2.8
Isopropylbenzene	**2.3**	<0.0055	<0.0060	0.0852 J	0.355	0.751	13.6	3.24	10.4	4.59
p-Isopropyltoluene	**10.0**	<0.0055	<0.0060	0.166 J	0.131 J	0.294	2.26 J	0.782 J	1.97	0.883 J
Naphthalene	**13.0**	<0.0055	<0.0060	4.18	1.92	6.19	44.8	18.1	33.5	22.4
n-Propylbenzene	**3.7**	<0.0055	<0.0060	0.245 J	1.29	2.63	41.6	10.9	33.1	14.9
1,2,4-Trimethylbenzene	**10.0**	<0.0055	<0.0060	6.66	8.54	29.4	370	101	255	150
1,3,5-Trimethylbenzene	**3.3**	<0.0055	<0.0060	2.11	2.77	7.23	96.7	31.8	80.7	38.0

Table 1
SOIL ANALYTICAL DATA - VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through December 2, 2008

Sample ID		SB-4			SB-5	SB-6	
Sample Depth (fbg)		12-14	14-16	16-18	18-20	14-16	16-18
Sample Date		12/1/08			12/3/08	12/2/08	
Parameter	NYSDEC RSCO						
Benzene	**0.08**	2.58	0.514	0.0480 J	1.26	0.0723	<0.051
Toluene	**1.5**	316	77.4	12.5	116	5.90	2.22
Ethylbenzene	**5.5**	131	72.0	15.3	96.0	4.62	2.85
Total Xylenes	**1.2**	1240	444	103	733	29.9	20.1
Total BTEX	**~**	1,690	594	131	946	40.5	25.2
MTBE	**0.12**	<0.66	0.0932	<0.062	<0.61	<0.055	<0.051
n-Butylbenzene	**10.0**	16.5	11.3	4.67	12.1	0.935	1.06
sec-Butylbenzene	**10.0**	4.44	4.07	1.47	3.05	0.289	0.318
tert-Butylbenzene	**10.0**	<3.3	<0.30	<0.31	<3.0	<0.27	<0.25
Isopropylbenzene	**2.3**	14.4	10.1	2.80	9.62	0.614	0.518
p-Isopropyltoluene	**10.0**	2.32 J	2.07	0.781	1.68 J	0.154 J	0.180 J
Naphthalene	**13.0**	54.9	27.4	12.1 J	39.5	2.60	3.08
n-Propylbenzene	**3.7**	45.8	31.4	9.44	29.9	1.98	1.77
1,2,4-Trimethylbenzene	**10.0**	485	196	66.7	295	15.6	16.6
1,3,5-Trimethylbenzene	**3.3**	110	63.6	20.4	76.0	4.87	4.90

Notes:

~ - no standard or guidance value exists

<1.0 - Not detected at or above the laboratory reporting limit shown

BTEX - benzene, toluene, ethylbenzene, and total xylenes

BRL - below laboratory reporting limit

Concentrations are presented in milligrams per kilogram (mg/kg)

fbg - feet below grade

MTBE - methyl tertiary-butyl ether

Total Xylenes - summation of o-xylene and m & p-xylenes

J - Indicates an estimated value

mg/kg - milligrams per kilogram (parts per million)

Shading - Reported concentration detected above the applicable standard(s) or guidance value(s)

NYSDEC RSCO - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives for Gasoline Contaminated and Fuel Oil Contaminated Soils, August 22, 2001; and NYSDEC Memorandum: Soil Cleanup Consolidation -Further Clarifications, July 2001

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Table 2
SOIL ANALYTICAL DATA - SEMI-VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through November 4, 2008

Sample ID		MW-1		MW-2		MW-3		MW-4		MW-5	
Sample Depth (fbg)		16-18	18-20	16-18	18-20	19-21	25-27	14-16	22-24	16-18	22-24
Sample Date		2/6/2008	2/6/2008	2/5/2008	2/5/2008	2/7/2008	2/8/2008	2/8/2008	2/8/2008	2/6/2008	2/7/2008
Parameter	NYSDEC RSCO										
Acenaphthene	**50**	0.0322 J	<0.15	0.0312 J	0.364	<0.16	<0.15	<0.15	<0.16	0.128 J	0.0700 J
Anthracene	**50**	<0.14	<0.15	<0.15	0.343	<0.16	<0.15	0.0803 J	<0.16	0.290	<0.15
Benzo(a)anthracene	**0.224**	0.0611 J	<0.15	0.0760 J	0.298	<0.16	<0.15	0.239	<0.16	0.832	<0.15
Benzo(b)fluoranthene	**0.22**	<0.14	<0.15	0.150	0.219	<0.16	<0.15	0.247	<0.16	0.563	<0.15
Benzo(k)fluoranthene	**0.22**	<0.14	<0.15	0.0323 J	0.114 J	<0.16	<0.15	0.127 J	<0.16	0.394	<0.15
Benzo(g,h,i)perylene	**50**	<0.14	<0.15	0.0351 J	0.104 J	<0.16	<0.15	0.181	<0.16	0.382	<0.15
Benzo(a)pyrene	**0.061**	0.0344 J	<0.15	0.0491 J	0.156	<0.16	<0.15	0.192	<0.16	0.597	<0.15
Chrysene	**0.4**	0.0571 J	<0.15	0.0773 J	0.263	<0.16	<0.15	0.247	<0.16	0.835	<0.15
Dibenzo(a,h)anthracene	**0.0143**	<0.14	<0.15	<0.15	<0.14	<0.16	<0.15	0.0456 J	<0.16	<0.15	<0.15
Fluoranthene	**50**	0.127 J	<0.15	0.152	0.789	<0.16	<0.15	0.430	<0.16	1.55	<0.15
Fluorene	**50**	0.0772 J	<0.15	0.0722 J	0.770	<0.16	<0.15	0.0346 J	<0.16	0.164	<0.15
Indeno(1,2,3-cd)pyrene	**3.2**	<0.14	<0.15	<0.15	0.0700 J	<0.16	<0.15	0.130 J	<0.16	0.319	<0.15
Naphthalene	**13**	0.296	<0.15	0.724	34.6	<0.16	<0.15	<0.15	<0.16	0.670	0.387
Phenanthrene	**50**	0.232	<0.15	0.196	1.58	<0.16	<0.15	0.348	<0.16	1.48	<0.15
Pyrene	**50**	0.155	<0.15	0.180	0.875	<0.16	<0.15	0.466	<0.16	1.82	<0.15

Table 2
SOIL ANALYTICAL DATA - SEMI-VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through November 4, 2008

Sample ID		MW-6		MW-7		MW-8		MW-9		MW-10	
Sample Depth (fbg)		12.5-15	15-17.5	15-19	19-20	12.5-15	17.5-20	15-17.5	17.5-20	16-18.5	18.5-20
Sample Date		9/23/2008	9/23/2008	9/23/2008	9/23/2008	9/22/2008	9/22/2008	9/22/2008	9/22/2008	9/24/2008	9/24/2008
Parameter	NYSDEC RSCO										
Acenaphthene	**50**	0.296	0.177	<0.034	0.0867	<0.039	0.218	0.205	0.0522	<0.043	0.302
Anthracene	**50**	0.376	0.308	<0.034	<0.040	<0.039	0.0197 J	<0.040	<0.040	<0.043	0.119
Benzo(a)anthracene	**0.224**	0.538	0.541	<0.034	<0.040	<0.039	<0.038	<0.040	<0.040	<0.043	0.104
Benzo(b)fluoranthene	**0.22**	0.273	0.431	<0.034	0.0433	<0.039	0.0490	0.0272 J	<0.040	<0.043	0.114
Benzo(k)fluoranthene	**0.22**	0.348	0.373	<0.034	0.0306 J	<0.039	0.0288 J	<0.040	<0.040	<0.043	0.0460
Benzo(g,h,i)perylene	**50**	0.175	0.304	<0.034	0.0271 J	<0.039	0.0261 J	0.0214 J	<0.040	<0.043	0.0610
Benzo(a)pyrene	**0.061**	0.370	0.495	<0.034	0.0408	<0.039	0.0441	0.0232 J	<0.040	<0.043	0.0956
Chrysene	**0.4**	0.518	0.608	<0.034	<0.040	<0.039	0.0469	<0.040	<0.040	<0.043	0.123
Dibenzo(a,h)anthracene	**0.0143**	0.0637	0.122	<0.034	<0.040	<0.039	<0.038	<0.040	<0.040	<0.043	0.0229 J
Fluoranthene	**50**	1.39	1.30	<0.034	0.113	<0.039	0.13	<0.040	<0.040	<0.043	0.416
Fluorene	**50**	0.418	0.225	<0.034	0.0385 J	<0.039	0.292	0.239	<0.040	<0.043	0.387
Indeno(1,2,3-cd)pyrene	**3.2**	0.174	0.278	<0.034	0.0217 J	<0.039	0.0214 J	<0.040	<0.040	<0.043	0.0451
Naphthalene	**13**	7.00	3.69	<0.034	2.08	<0.039	6.23	21.9	3.73	<0.043	13.8
Phenanthrene	**50**	1.81	1.36	<0.034	0.282	<0.039	0.443	0.293	0.0484	<0.043	0.823
Pyrene	**50**	1.47	1.41	<0.034	0.118	<0.039	0.165	0.0791	<0.040	<0.043	0.420

Table 2
SOIL ANALYTICAL DATA - SEMI-VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through November 4, 2008

Sample ID		MW-11		SB-12	MW-13		MW-14		MW-15	
Sample Depth (fbg)		15-17.5	17.5-20	4-6	18-20	22-24	12-16	17-20	16-18	18-20
Sample Date		9/23/2008	9/23/2008	10/31/08	11/6/08		11/4/08		11/3/08	
Parameter	NYSDEC RSCO									
Acenaphthene	**50**	0.0692	0.596	0.149	<0.040	0.0940	0.0501	<0.036	0.0949	0.124
Anthracene	**50**	<0.035	0.276	0.305	<0.040	0.0668	0.0644	0.104	0.164	0.0826
Benzo(a)anthracene	**0.224**	<0.035	0.206	0.845	<0.040	0.0632	0.0968	0.0895	0.550	0.0349 J
Benzo(b)fluoranthene	**0.22**	0.0385	0.112	0.781	<0.040	0.0444	0.0739	0.0759	0.585	0.0326 J
Benzo(k)fluoranthene	**0.22**	<0.035	0.126	0.539	<0.040	0.0292 J	0.0475	0.0312 J	0.358	0.0276 J
Benzo(g,h,i)perylene	**50**	0.0203 J	0.0869	0.564	<0.040	0.0271 J	0.0421	0.0435	0.431	0.0327 J
Benzo(a)pyrene	**0.061**	0.0281 J	0.139	0.926	<0.040	0.0446	0.0711	0.0635	0.606	0.0226 J
Chrysene	**0.4**	0.0196 J	0.203	0.764	<0.040	0.0517	0.0860	0.0826	0.598	0.0538
Dibenzo(a,h)anthracene	**0.0143**	<0.035	<0.036	0.132	<0.040	<0.036	<0.035	<0.036	0.0956	<0.035
Fluoranthene	**50**	0.0274 J	0.755	1.91	<0.040	0.167	0.252	0.255	1.12	0.170
Fluorene	**50**	<0.035	0.806	0.0958	<0.040	0.142	0.0829	0.238	0.0748	0.188
Indeno(1,2,3-cd)pyrene	**3.2**	0.0154 J	0.0696	0.621	<0.040	<0.036	<0.035	<0.036	0.325	0.0190 J
Naphthalene	**13**	3.42	31.8	0.0384	0.0449	0.956	0.0401	1.90	0.206	6.88
Phenanthrene	**50**	0.157	1.63	1.12	<0.040	0.305	0.309	0.494	0.772	0.332
Pyrene	**50**	0.0711	0.760	1.68	<0.040	0.145	0.227	0.239	1.21	0.147

Table 2
SOIL ANALYTICAL DATA - SEMI-VOLATILE ORGANIC COMPOUNDS

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York

February 5, 2008 through November 4, 2008

Sample ID		MW-16		MW-17	
Sample Depth (fbg)		16-18	18-20	11-13	13-15
Sample Date		11/3/08		10/30/08	
Parameter	NYSDEC RSCO				
Acenaphthene	**50**	<0.039	<0.036	0.129	<0.039
Anthracene	**50**	0.0238 J	<0.036	0.368	0.0198 J
Benzo(a)anthracene	**0.224**	0.106	<0.036	0.128	<0.039
Benzo(b)fluoranthene	**0.22**	0.131	<0.036	0.0647	<0.039
Benzo(k)fluoranthene	**0.22**	0.0436	<0.036	0.0511	<0.039
Benzo(g,h,i)perylene	**50**	0.0630	0.0462	0.0567	<0.039
Benzo(a)pyrene	**0.061**	0.152	0.0430	0.0761	<0.039
Chrysene	**0.4**	0.115	<0.036	0.136	0.0230 J
Dibenzo(a,h)anthracene	**0.0143**	<0.039	<0.036	0.0324 J	<0.039
Fluoranthene	**50**	0.185	<0.036	0.532	0.0544
Fluorene	**50**	<0.039	<0.036	0.216	0.0299 J
Indeno(1,2,3-cd)pyrene	**3.2**	0.0508	0.0292 J	0.0493	<0.039
Naphthalene	**13**	<0.039	<0.036	0.0610	0.207
Phenanthrene	**50**	0.0975	<0.036	0.820	0.0915
Pyrene	**50**	0.180	<0.036	0.442	0.0466

Notes:

~ - no standard or guidance value exists

<1.0 - Not detected at or above the laboratory reporting limit shown

BTEX - benzene, toluene, ethylbenzene, and total xylenes

BRL - below laboratory reporting limit

Concentrations are presented in milligrams per kilogram (mg/kg)

fbg - feet below grade

MTBE - methyl tertiary-butyl ether

Total Xylenes - summation of o-xylene and m & p-xylenes

J - Indicates an estimated value

mg/kg - milligrams per kilogram (parts per million)

Shading - Reported concentration detected above the applicable standard(s) or guidance value(s)

NYSDEC RSCO - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives for Gasoline Contaminated and Fuel Oil Contaminated Soils, August 22, 2001; and NYSDEC Memorandum: Soil Cleanup Consolidation -Further Clarifications, July 2001

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Table 3

MONITORING WELL GAUGING AND GROUNDWATER ANALYTICAL DATA

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York
February 20, 2008 through February 5, 2009

		Gauging Data					Analytical Data								
Well ID	**Date**	**Top of Casing Elevation (feet)**	**Depth to Water (feet)**	**Depth to Hydro-carbon (feet)**	**Hydro-carbon Thickness (feet)**	**Corrected GW Elevation (feet)**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethyl-benzene (µg/L)**	**Total Xylenes (µg/L)**	**Total BTEX (µg/L)**	**MTBE (µg/L)**	**Ethyl Alcohol (µg/L)**	**Lead, Filtered (µg/L)**	**Comments**
NYSDEC Standards		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**1**	**5**	**5**	**5**	**~**	**~**	**~**	**25**	
NYSDEC Guidance Values		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**~**	**~**	**~**	**~**	**~**	**10**	**~**	**~**	
MW-1	02/20/2008	22.02	19.23	ND	ND	2.79	74.3	284	71.7	595	1025	15.4	<200	NA	
	05/22/2008	22.02	19.35	ND	ND	2.67	3240	4740	2400	12200	22580	635	<5000	NA	
	08/14/2008	22.02	19.45	ND	ND	2.57	4730	5610	2520	12500	25360	1050	NA	NA	
	09/30/2008	22.02	19.45	ND	ND	2.57	3550	3220	1780	8210	16760	711	<100	NA	
	11/20/2008	22.02	19.50	ND	ND	2.52	487	835	110	1760	3192	114	<500	NA	
	02/05/2009	22.02	19.70	ND	ND	2.32	3990	17700	5250	29000	55940	1000	<5000	5.9	
MW-2	02/20/2008	22.28	19.48	ND	ND	2.80	452	6580	3290	18100	28422	111	<5000	NA	
	05/22/2008	22.28	20.22	19.50	0.72	2.57	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	08/14/2008	22.28	20.00	19.62	0.38	2.55	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	09/30/2008	22.28	19.72	ND	ND	2.56	2940	12500	3230	18600	37270	625	<100	NA	
	11/20/2008	22.28	19.75	ND	ND	2.53	2940	5730	2380	13200	24250	632	<5000	NA	
	02/05/2009	22.28	19.97	ND	ND	2.31	4330	15600	4450	27900	52280	285	<5000	<3.0	
MW-3	02/20/2008	20.14	17.40	ND	ND	2.74	36.4	6.9 J	323	86.3	453	2400	<1000	NA	
	05/22/2008	20.14	17.61	ND	ND	2.53	39.7	8.1	534	64.1	646	5.2	<500	NA	
	08/14/2008	20.14	17.61	ND	ND	2.53	33.7	7.2	467	66.2	574	3.2	NA	NA	
	09/30/2008	20.14	17.64	ND	ND	2.50	19.4	5.6	307	52.9	385	8.7	<100	NA	
	11/20/2008	20.14	17.69	ND	ND	2.45	20.5	8.9	245	53.4	328	1.9	<100	NA	
	02/05/2009	20.14	17.83	ND	ND	2.31	18.4	6.9	385	62.8	473	1.4	<100	3.7	
MW-4	02/20/2008	18.85	15.68	ND	ND	3.17	2.2	1.0	0.44 J	2.0	5.6	3.3	<100	NA	
	05/22/2008	18.85	15.52	ND	ND	3.33	0.64 J	0.58 J	0.70 J	4.0	5.9	1.6	<100	NA	
	08/14/2008	18.85	15.17	ND	ND	3.68	<1.0	<1.0	<1.0	<1.0	BRL	1.6	NA	NA	
	09/30/2008	18.85	15.13	ND	ND	3.72	0.28 J	<1.0	<1.0	<1.0	0.28	1.4	<100	NA	
	11/20/2008	18.85	15.15	ND	ND	3.70	<1.0	1.4	0.39 J	2.4	4.2	1.1	<100	NA	
	02/05/2009	18.85	15.31	ND	ND	3.54	<1.0	<1.0	<1.0	<1.0	BRL	1.8	<100	<3.0	

Table 3 (Continued)

MONITORING WELL GAUGING AND GROUNDWATER ANALYTICAL DATA

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York
February 20, 2008 through February 5, 2009

		Gauging Data					Analytical Data								
Well ID	**Date**	**Top of Casing Elevation (feet)**	**Depth to Water (feet)**	**Depth to Hydro-carbon (feet)**	**Hydro-carbon Thickness (feet)**	**Corrected GW Elevation (feet)**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethyl-benzene (µg/L)**	**Total Xylenes (µg/L)**	**Total BTEX (µg/L)**	**MTBE (µg/L)**	**Ethyl Alcohol (µg/L)**	**Lead, Filtered (µg/L)**	**Comments**
NYSDEC Standards		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**1**	**5**	**5**	**5**	**~**	**~**	**~**	**25**	
NYSDEC Guidance Values		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**~**	**~**	**~**	**~**	**~**	**10**	**~**	**~**	
MW-5	02/20/2008	20.17	17.50	ND	ND	2.67	2.9	0.68 J	1.4	2.0	7.0	1.9	<100	NA	
	05/22/2008	20.17	17.60	ND	ND	2.57	1.1	0.22 J	0.53 J	0.63 J	2.5	0.60 J	<100	NA	
	08/14/2008	20.17	17.74	ND	ND	2.43	1.3	<1.0	<1.0	<1.0	1.3	1.0	NA	NA	
	09/30/2008	20.17	17.64	ND	ND	2.53	34.0	0.34 J	0.77 J	0.59 J	35.7	14.0	<100	NA	
	11/20/2008	20.17	17.55	ND	ND	2.62	97.3	3.3	35.1	6.7	142.4	12.2	<100	NA	
	02/05/2009	20.17	17.48	ND	ND	2.69	108	4.6	66.1	22.1	201	9.1	<100	<3.0	
MW-6	09/30/2008	20.57	18.68	17.89	0.79	2.53	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	11/20/2008	21.07	19.07	18.44	0.63	2.51	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	02/05/2009	21.07	18.96	18.10	0.86	2.81	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
MW-7	09/30/2008	21.93	19.37	ND	ND	2.56	579	5550	1380	8440	15949	31.0 J	<100	NA	
	11/20/2008	21.91	19.38	ND	ND	2.53	381	1270	163	2950	4764	32.8	<1000	NA	
	02/05/2009	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	Well inaccessible - frozen shut
MW-8	09/30/2008	22.10	19.57	ND	ND	2.53	1520	11300	2320	12900	28040	367	<100	NA	
	11/20/2008	22.13	19.62	ND	ND	2.51	525	1550	474	3020	5569	213	<1000	NA	
	02/05/2009	22.13	19.81	ND	ND	2.32	904	894	635	3790	6223	224	<500	<3.0	
MW-9	09/30/2008	22.10	19.59	ND	ND	2.51	5740	29800	6450	34100	76090	7720	<100	NA	
	11/20/2008	22.09	19.63	ND	ND	2.46	3760	18000	4900	22300	48960	5340	<5000	NA	
	02/05/2009	22.09	20.31	19.73	0.58	2.19	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
MW-10	09/30/2008	22.63	20.89	19.95	0.94	2.50	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	11/20/2008	23.20	20.79	20.70	0.09	2.48	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	02/05/2009	23.20	21.17	20.17	1.00	2.84	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
MW-11	09/30/2008	21.58	19.04	18.99	0.05	2.58	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	11/20/2008	22.19	19.75	19.69	0.06	2.49	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
	02/05/2009	22.19	19.44	19.21	0.23	2.94	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected
MW-13	11/20/2008	27.35	24.86	ND	ND	2.49	1700	23400	7820	42300	75220	<200	<20000	NA	
	02/05/2009	27.35	25.07	ND	ND	2.28	959	22400	5630	32700	61689	<100	<10000	7.8	

Table 3 (Continued)

MONITORING WELL GAUGING AND GROUNDWATER ANALYTICAL DATA

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York
February 20, 2008 through February 5, 2009

		Gauging Data					Analytical Data								
Well ID	**Date**	**Top of Casing Elevation (feet)**	**Depth to Water (feet)**	**Depth to Hydro-carbon (feet)**	**Hydro-carbon Thickness (feet)**	**Corrected GW Elevation (feet)**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethyl-benzene (µg/L)**	**Total Xylenes (µg/L)**	**Total BTEX (µg/L)**	**MTBE (µg/L)**	**Ethyl Alcohol (µg/L)**	**Lead, Filtered (µg/L)**	**Comments**
NYSDEC Standards		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**1**	**5**	**5**	**5**	**~**	**~**	**~**	**25**	
NYSDEC Guidance Values		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**~**	**~**	**~**	**~**	**~**	**10**	**~**	**~**	
MW-14	11/20/2008	23.35	20.88	ND	ND	2.47	609	6750	3990	23900	35249	53.6	<2500	NA	
	02/05/2009	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	Well inaccessible - Building construction
MW-15	11/20/2008	23.30	20.83	ND	ND	2.47	239	1030	976	4230	6475	8.8 J	<1000	NA	
	02/05/2009	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	Well inaccessible - Building construction
MW-16	11/20/2008	23.26	20.76	ND	ND	2.50	327	1900	1460	7560	11247	<20	<2000	NA	
	02/05/2009	NM	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS	NS	NS	Well inaccessible - Building construction
MW-17	11/20/2008	17.32	14.85	ND	ND	2.47	871	17600	8260	40500	67231	<100	<10000	NA	
	02/05/2009	17.32	15.08	14.99	0.09	2.24	NS	NS	NS	NS	NS	NS	NS	NS	LPH detected

Table 3 (Continued)

MONITORING WELL GAUGING AND GROUNDWATER ANALYTICAL DATA

Mobil Service Station No. 12827 (17-QDM)
150-54 West 145th Street
New York, New York
February 20, 2008 through February 5, 2009

Notes:

~ - no standard or guidance value exists

<1.0 - Not detected at or above the laboratory reporting limit shown

µg/L - micrograms per liter (parts per billion)

BRL - Below laboratory reporting limits

BTEX - Sum of benzene, toluene, ethylbenzene, and total xylenes

Corrected GW Elevation - calculated using the following formula:
(top of casing elevation - depth to water) + (hydrocarbon thickness * hydrocarbon specific gravity)

Depth to Water - measured in feet below land surface from top of casing

GW - Groundwater

Hydrocarbon - liquid-phase hydrocarbon (LPH)

J - Indicates an estimated value

MTBE - methyl tertiary-butyl ether

N/A - Not applicable

NA - Not analyzed

ND - Not detected

NM - Not monitored

NS - Not sampled

NSVD - Not surveyed to vertical datum

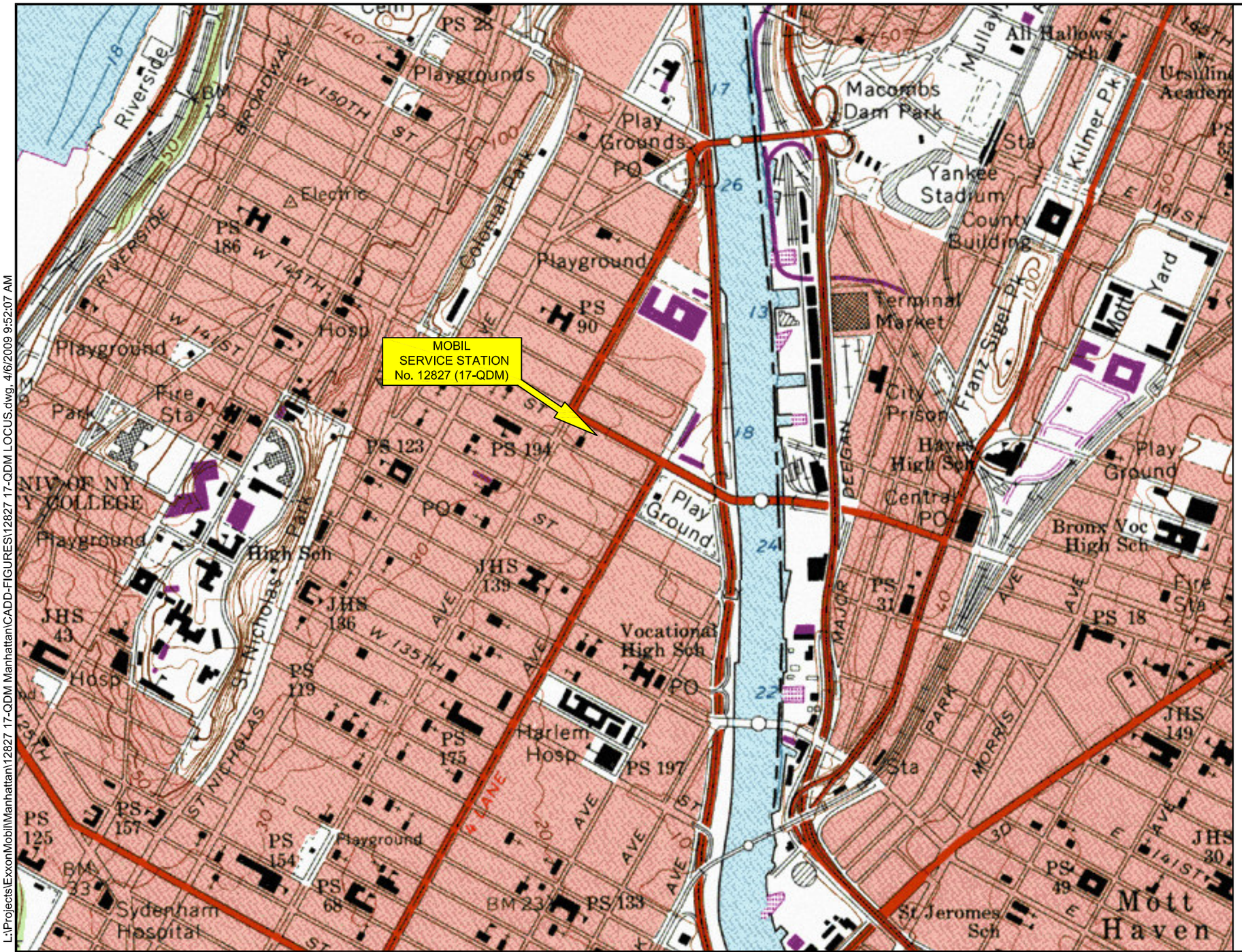
NYSDEC Standards and Guidance Values - New York State Department of Environmental Conservation Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values, June 1998 and Addendum April 2000

Shading - Reported concentration detected above the applicable standard(s) or guidance value(s)

Total Xylenes - summation of o-xylene and m & p-xylenes

Kleinfelder
One Corporate Drive, Suite 201, Bohemia, NY

FIGURES



0 450 900 1,800

APPROXIMATE SCALE (feet)

N

LATITUDE: 40° 49' 15.40" N

LONGITUDE: 73° 56' 16.97" W

USGS 7.5' SERIES TOPOGRAPHIC MAP,
"CENTRAL PARK, NY QUADRANGLE
PHOTOREVISED 1979"

QUADRANGLE
LOCATION

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PROJECT NO.	100529
DRAWN:	04/06/2009
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FILE NAME:	

LOCUS PLAN

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
NEW YORK, NEW YORK

FIGURE
1

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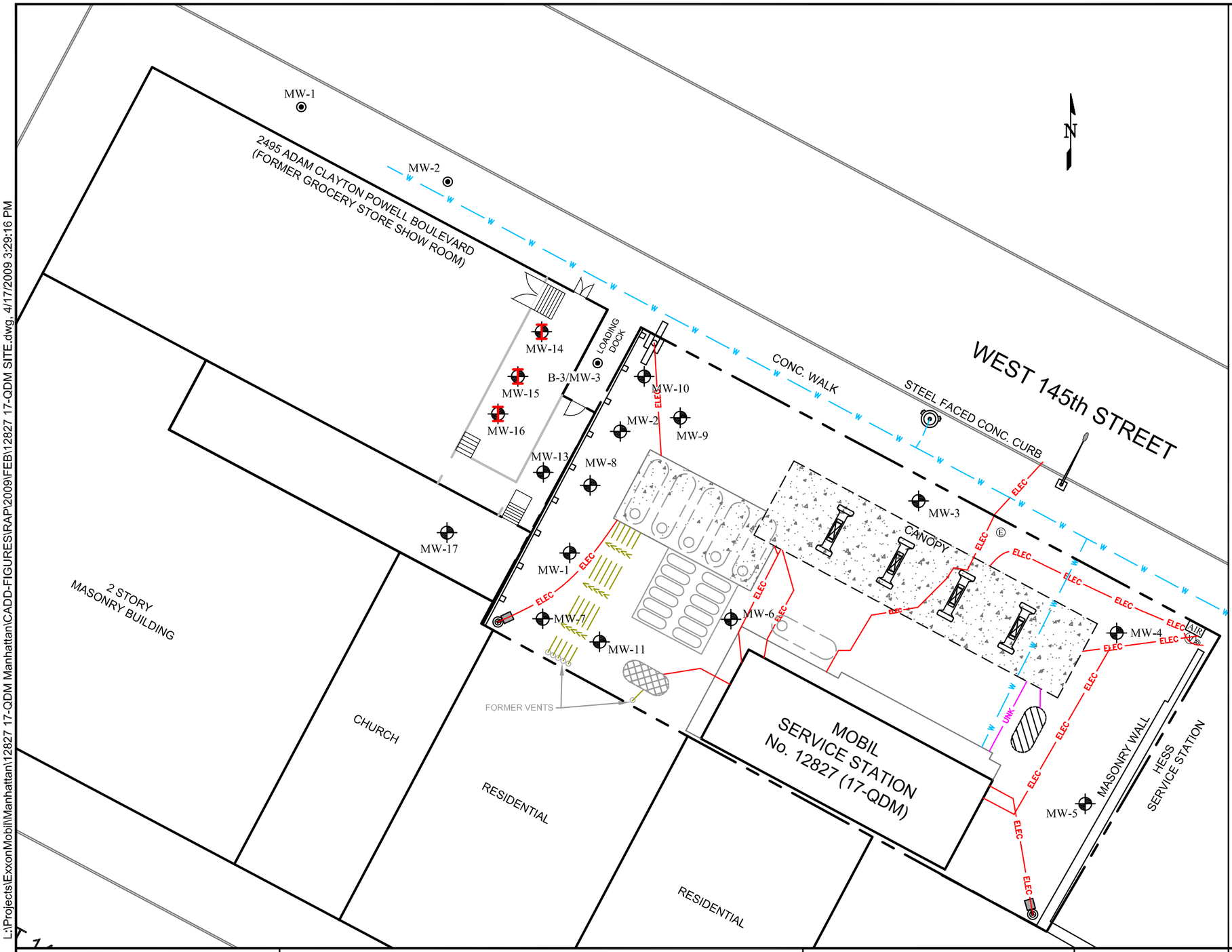

LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- A&C DEVELOPMENT MONITORING WELL LOCATION
- PROPERTY LINE
- ELEC — UNDERGROUND ELECTRIC LINES
- V — UNDERGROUND VENT LINE
- UNK — UNDERGROUND UNKNOWN UTILITY LINE
- W — UNDERGROUND WATER SUPPLY LINE
- GUARD RAIL
- V — VACUUM
- E — ELECTRIC VAULT
- AIR — AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST
- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK

0 15 30 60
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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PROJECT NO.	100529
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DRAWN BY:	ASD
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FILE NAME:	

SITE PLAN

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
2

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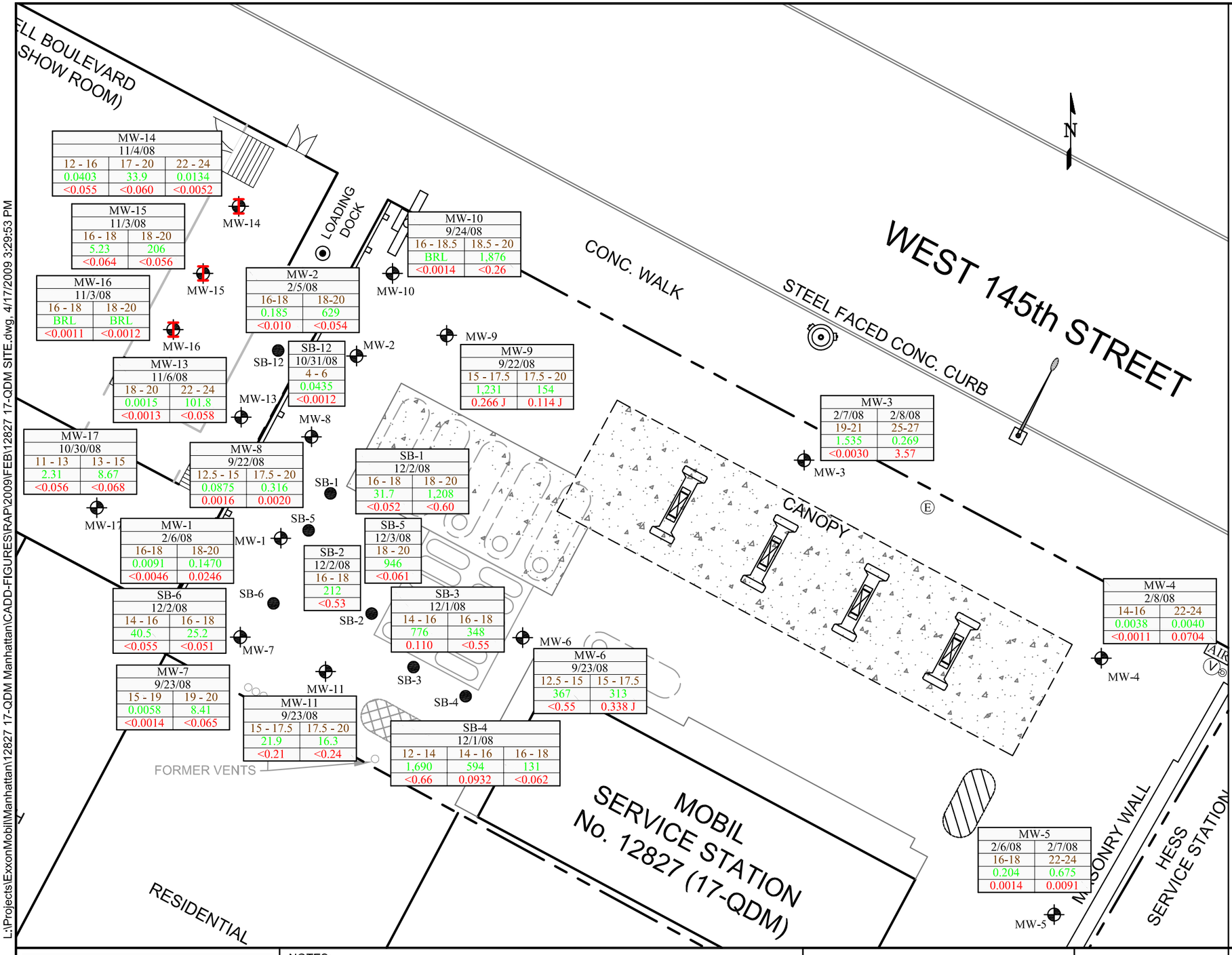

LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- A&C DEVELOPMENT MONITORING WELL LOCATION
- SOIL BORING LOCATION
- PROPERTY LINE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST
- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK

SB-12
10/31/08
4 - 6
0.0435
<0.0012

- SOIL BORING IDENTIFICATION
- SAMPLE DATE
- SAMPLE DEPTH (fbg)
- TOTAL BTEX CONCENTRATION (mg/kg)
- MTBE CONCENTRATION (mg/kg)

BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
MTBE	METHYL TERTIARY-BUTYL ETHER
mg/kg	MILLIGRAMS PER KILOGRAM
fbg	FEET BELOW GRADE
BRL	BELOW LABORATORY REPORTING LIMITS
J	INDICATES AN ESTIMATED VALUE

0 10 20 40
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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FILE NAME:	

HYDROCARBON DISTRIBUTION IN SOIL

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
3

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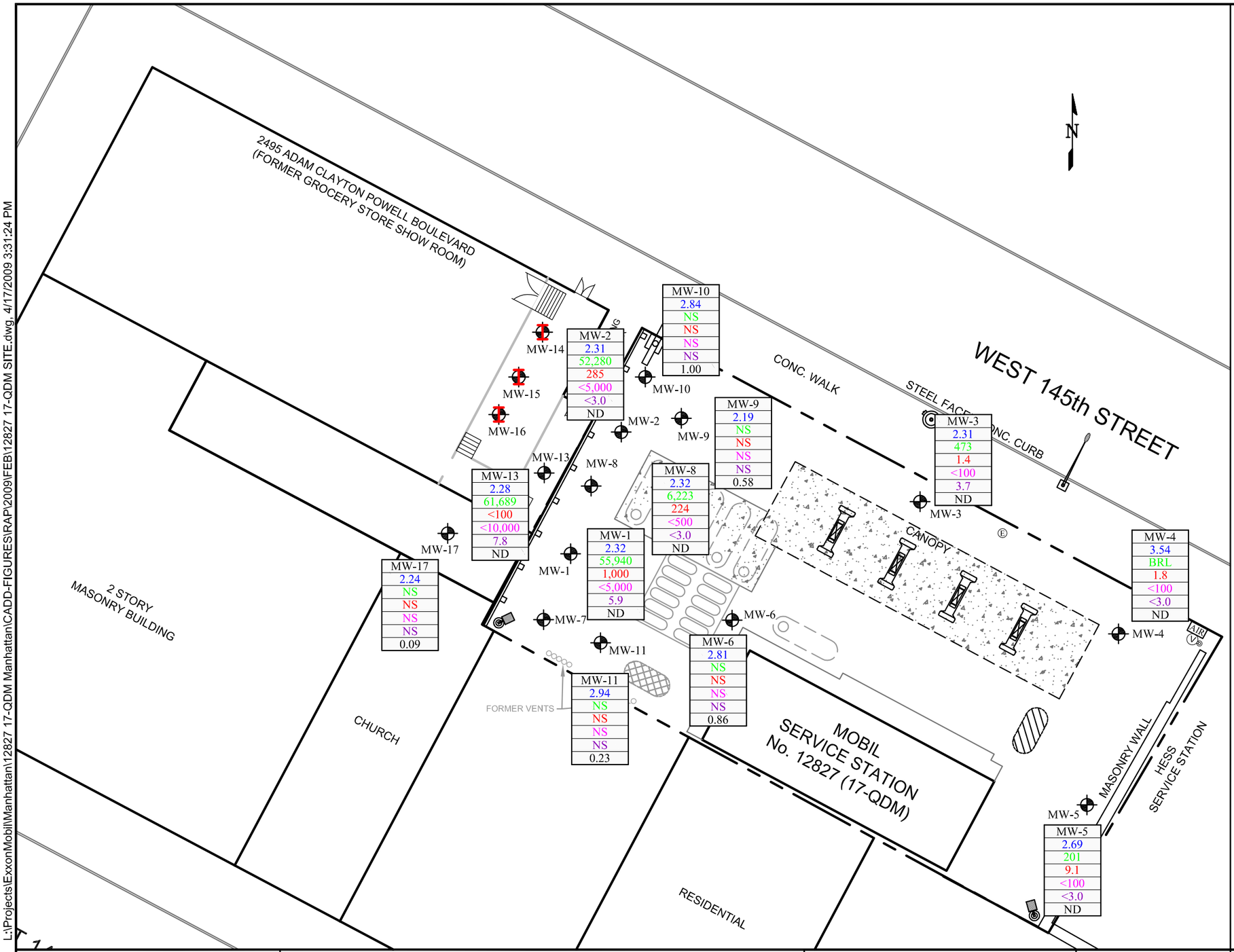

LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- PROPERTY LINE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST
- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK

MW-1	MONITORING WELL IDENTIFICATION
2.32	WATER-TABLE ELEVATION (ft)
55,940	TOTAL BTEX CONCENTRATION (µg/L)
1,000	MTBE CONCENTRATION (µg/L)
<5,000	ETHANOL CONCENTRATION (µg/L)
5.9	LEAD, FILTERED (µg/L)
ND	LPH THICKNESS (ft)
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
MTBE	METHYL TERTIARY-BUTYL ETHER
µg/L	MICROGRAMS PER LITER
NS	NOT SAMPLED
NM	NOT MEASURED
LPH	LIQUID-PHASE HYDROCARBON
BRL	BELOW LABORATORY REPORTING LIMITS

0 15 30 60
SCALE (feet)

NOTES:
1. GROUNDWATER SAMPLES WERE COLLECTED ON FEBRUARY 5, 2009.
2. MONITORING WELLS MW-7 AND MW-14 THROUGH MW-16 WERE NOT ACCESSIBLE AND THEREFORE WERE NOT SAMPLED. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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GROUNDWATER ELEVATION AND HYDROCARBON DISTRIBUTION MAP FEBRUARY 5, 2009

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
4

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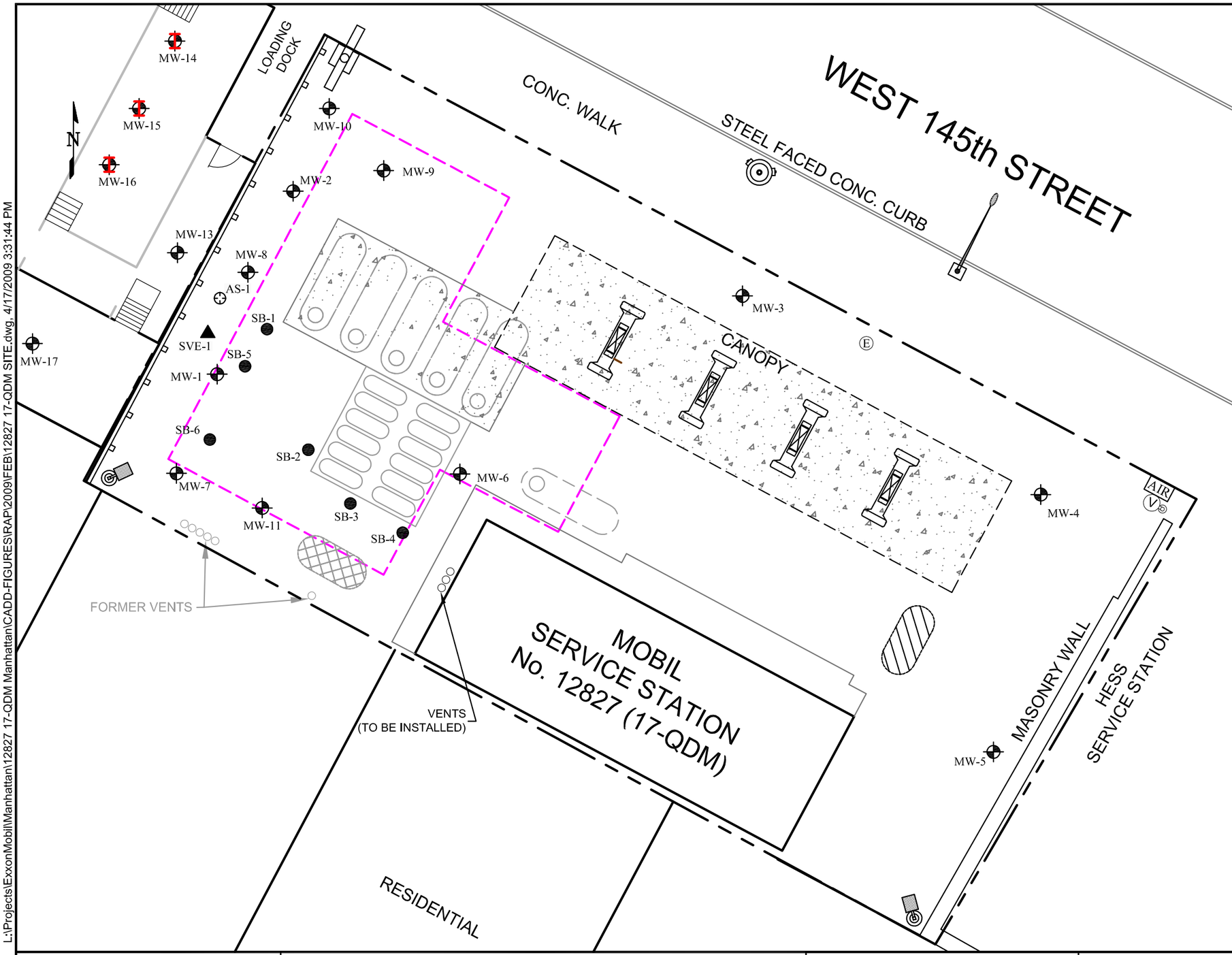

LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SPARGE WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- PROPERTY LINE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST (TO BE REMOVED)
- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK
- APPROXIMATE EXTENT OF OVER EXCAVATION

0 10 20 40
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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APPROXIMATE EXTENTS OF OVER EXCAVATION

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
5

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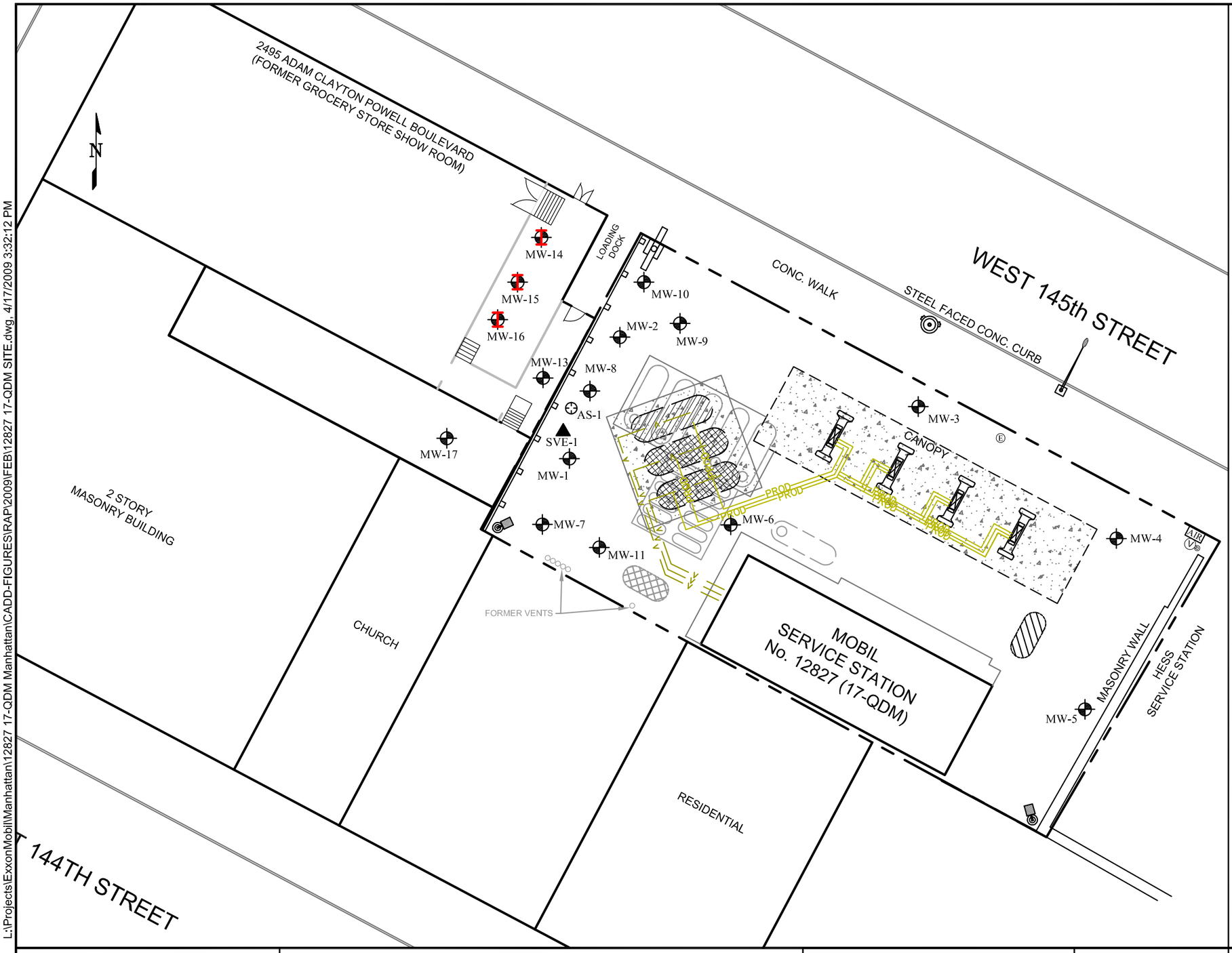

LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- SPARGE WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- PROPERTY LINE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST
- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK
- 8,000-GALLON DOUBLE-WALL FIBERGLASS UST SUPER (TO BE INSTALLED)
- 10,000-GALLON DOUBLE-WALL FIBERGLASS UST REGULAR (TO BE INSTALLED)
- PROD — UNDERGROUND PRODUCT PIPING (TO BE INSTALLED)
- V — UNDERGROUND VENT LINE (TO BE INSTALLED)

0 15 30 60
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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FILE NAME:	

SITE PLAN WITH NEW GASOLINE DISTRIBUTION INFRASTRUCTURE

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
6

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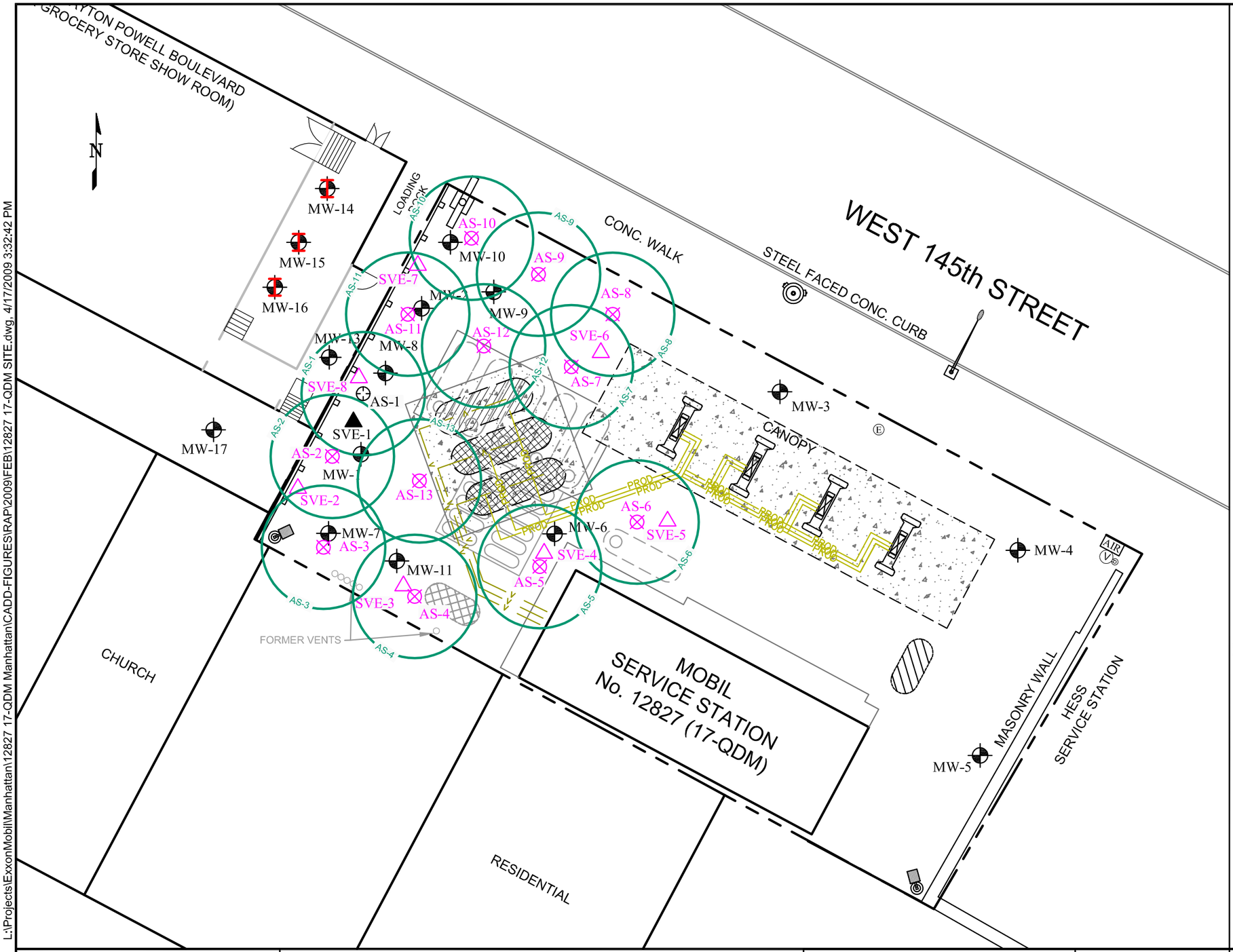

LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- SPARGE WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- PROPERTY LINE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
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- SIGN
- DISPENSER ISLAND
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- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK
- 8,000-GALLON DOUBLE-WALL FIBERGLASS UST SUPER (TO BE INSTALLED)
- 10,000-GALLON DOUBLE-WALL FIBERGLASS UST REGULAR (TO BE INSTALLED)
- PROD — UNDERGROUND PRODUCT PIPING (TO BE INSTALLED)
- V — UNDERGROUND VENT LINE (TO BE INSTALLED)
- PROPOSED SOIL VAPOR EXTRACTION WELL
- PROPOSED AIR SPARGE WELL
- SPARGE RADIUS OF INFLUENCE (15 FEET)

0 25 50
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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SITE PLAN WITH CONCEPTUAL AIR SPARGE RADII OF INFLUENCE

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
7

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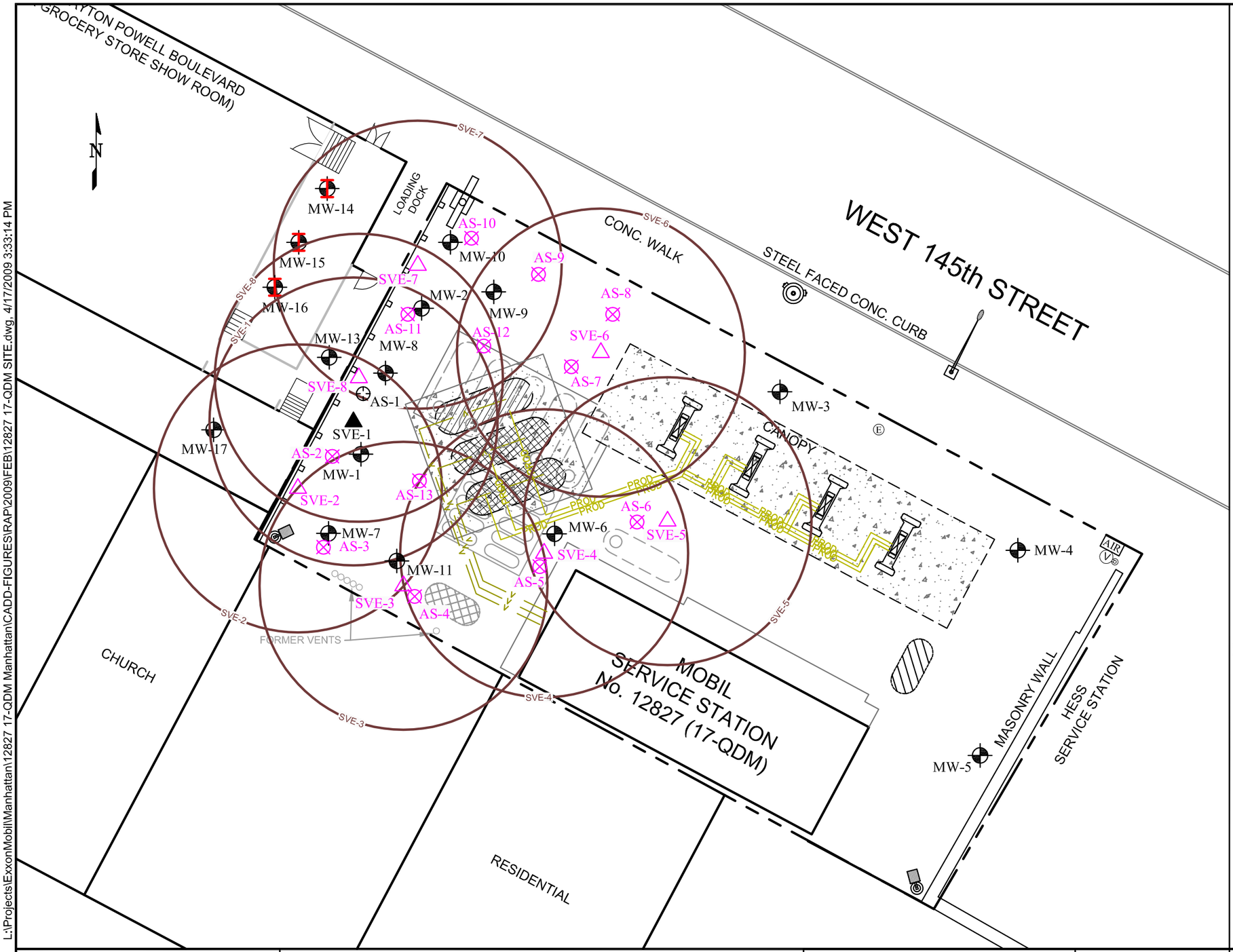
BOHEMIA, NY



LEGEND

- MONITORING WELL LOCATION
- INACCESSIBLE MONITORING WELL LOCATION
- SPARGE WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- PROPERTY LINE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST
- FORMER 550-GALLON UST
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST
- CONCRETE
- UST — UNDERGROUND STORAGE TANK
- 8,000-GALLON DOUBLE-WALL FIBERGLASS UST SUPER (TO BE INSTALLED)
- 10,000-GALLON DOUBLE-WALL FIBERGLASS UST REGULAR (TO BE INSTALLED)
- PROD — UNDERGROUND PRODUCT PIPING (TO BE INSTALLED)
- V — UNDERGROUND VENT LINE (TO BE INSTALLED)
- PROPOSED SOIL VAPOR EXTRACTION WELL
- PROPOSED AIR SPARGE WELL
- SOIL VAPOR EXTRACTION RADIUS OF INFLUENCE (35 FEET)

0 25 50
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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SITE PLAN WITH CONCEPTUAL SVE RADII OF INFLUENCE

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
8

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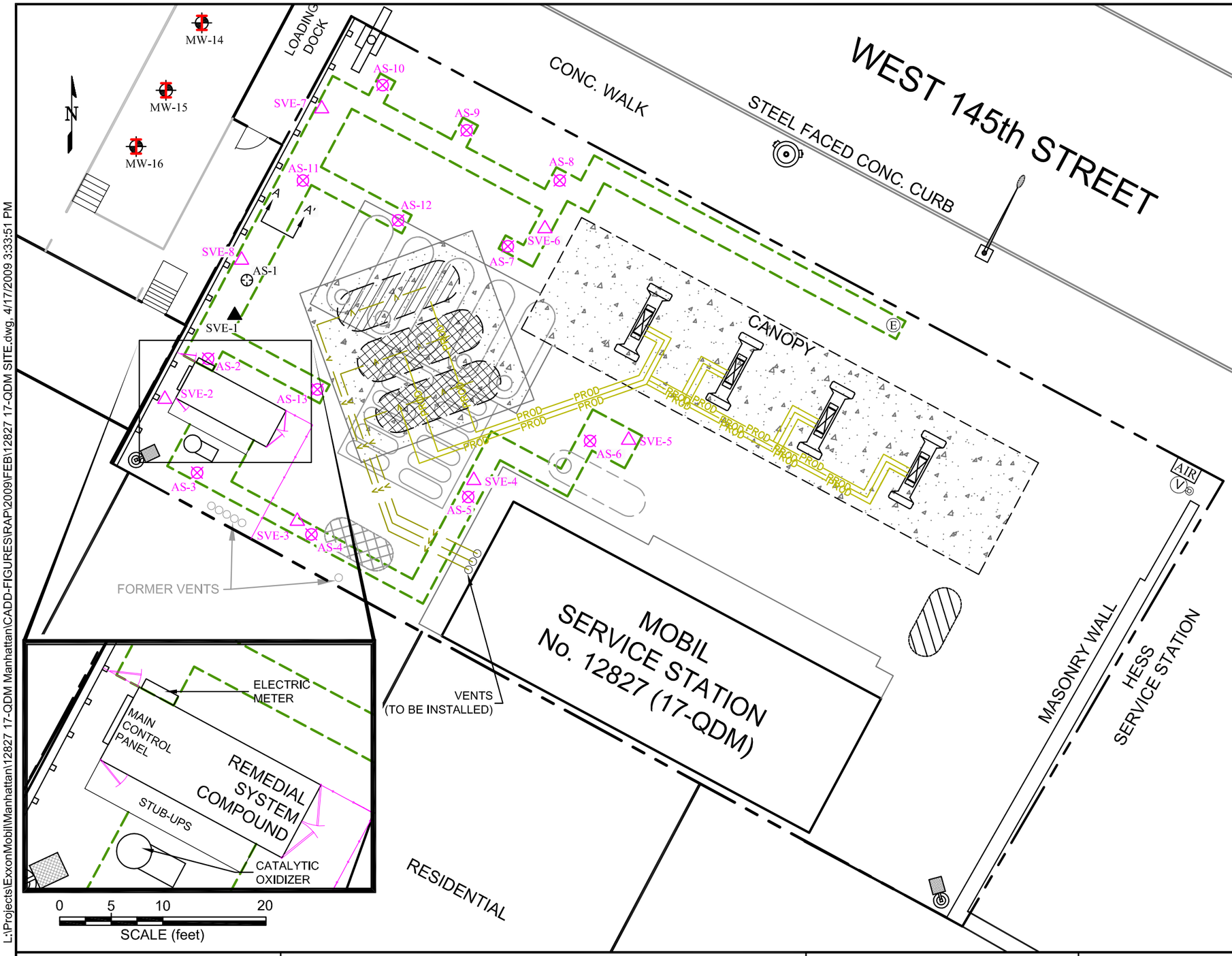
BOHEMIA, NY



LEGEND

- SPARGE WELL LOCATION
- SOIL VAPOR EXTRACTION WELL
- INACCESSIBLE MONITORING WELL LOCATION
- PROPERTY LINE
- PROPOSED CHAINLINK FENCE
- GUARD RAIL
- ELECTRIC VAULT
- VACUUM
- AIR PUMP
- FIRE HYDRANT
- AREA LIGHT
- SIGN
- DISPENSER ISLAND
- STREET LIGHT
- FORMER 4,000-GALLON GASOLINE UST (TO BE REMOVED)
- FORMER 550-GALLON UST (TO BE REMOVED)
- 1,000-GALLON USED OIL UST
- FORMER 1,000-GALLON FUEL OIL UST (TO BE REMOVED)
- CONCRETE
- UST — UNDERGROUND STORAGE TANK
- 8,000-GALLON DOUBLE-WALL FIBERGLASS UST SUPER (TO BE INSTALLED)
- 10,000-GALLON DOUBLE-WALL FIBERGLASS UST REGULAR (TO BE INSTALLED)
- PROD — UNDERGROUND PRODUCT PIPING (TO BE INSTALLED)
- V — UNDERGROUND VENT LINE (TO BE INSTALLED)
- PROPOSED SOIL VAPOR EXTRACTION WELL
- PROPOSED AIR SPARGE WELL
- PROPOSED TRENCHING
- A A' — CROSS SECTION A - A' (SEE FIGURE 9)

0 10 20 40
SCALE (feet)

NOTES:

1. MONITORING WELLS MW-14, MW-15 AND MW-16 WERE INACCESSIBLE ON FEBRUARY 5, 2009 DUE TO CONSTRUCTION ACTIVITIES IN THE ADJACENT PROPERTY. THE STATUS OF THE MONITORING WELLS IS CURRENTLY UNKNOWN.

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PROPOSED REMEDIAL SYSTEM LAYOUT

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
9

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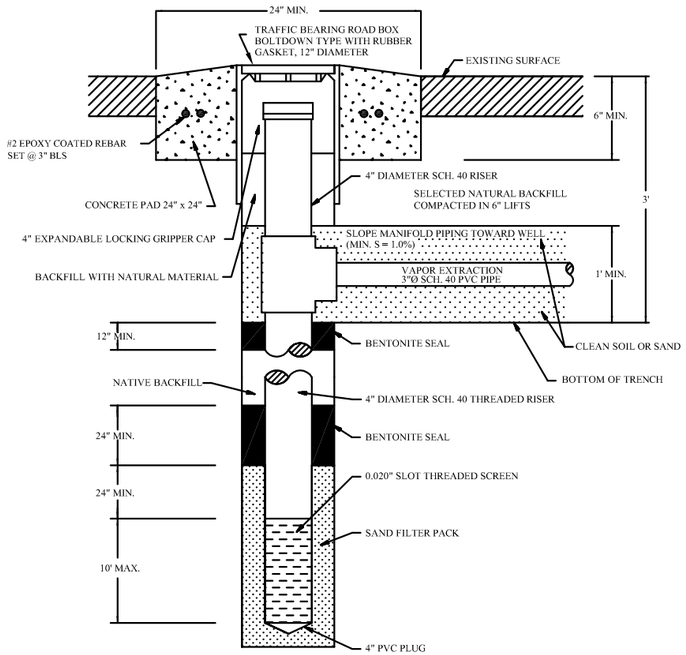
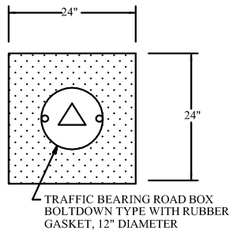


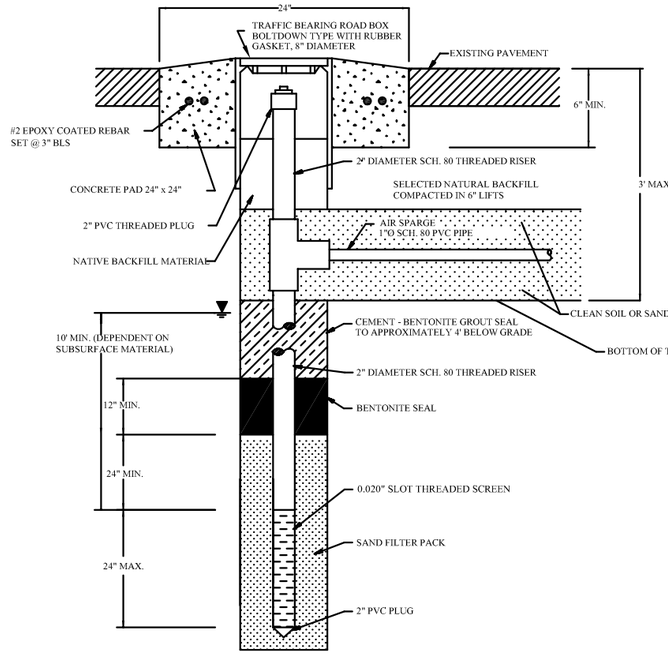
SOIL VAPOR EXTRACTION WELLHEAD DETAIL

NOT TO SCALE



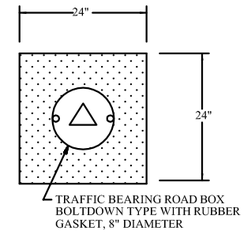
SOIL VAPOR EXTRACTION WELL MONUMENT DETAIL

NOT TO SCALE



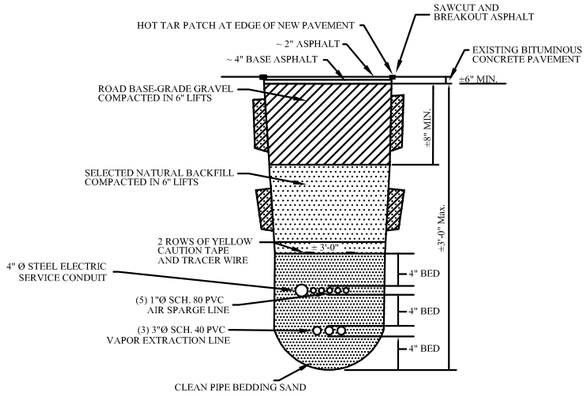
SPARGE POINT WELLHEAD DETAIL

NOT TO SCALE



SPARGE POINT MONUMENT DETAIL

NOT TO SCALE



TYPICAL TRENCH DETAIL
CROSS-SECTION A-A' (SEE FIGURE 8)

NOT TO SCALE

NOTE: 1.) DETAILS ARE APPROXIMATE AND NOT TO SCALE ACTUAL BED THICKNESS AND TRENCH DIMENSIONS WILL BE DETERMINED IN IN THE FIELD AT THE TIME OF CONSTRUCTION.
2.) NUMBER OF PIPES AND WIDTH OF TRENCH WILL VARY. REFER TO PIPING LAYOUT IN PLAN.

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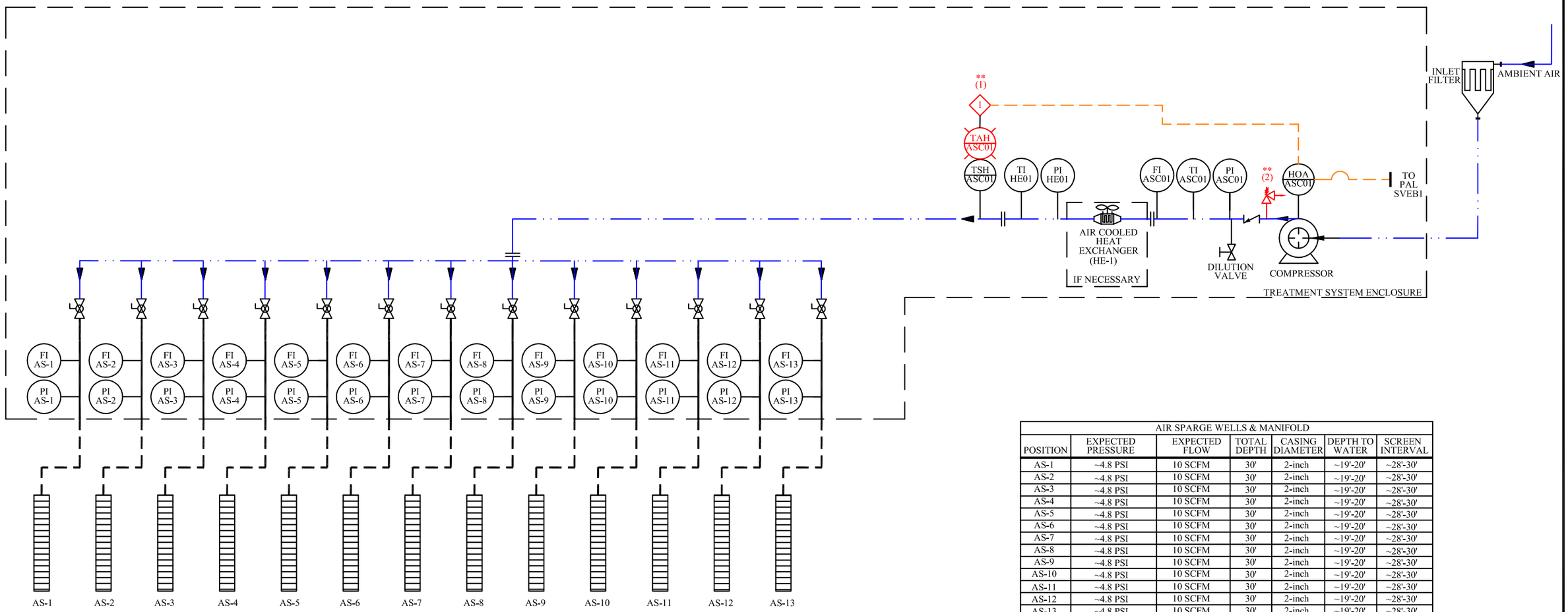
AS / SVE WELLHEAD CONSTRUCTION AND TRENCHING DETAILS

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
10



AIR SPARGE WELLS & MANIFOLD						
POSITION	EXPECTED PRESSURE	EXPECTED FLOW	TOTAL DEPTH	CASING DIAMETER	DEPTH TO WATER	SCREEN INTERVAL
AS-1	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-2	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-3	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-4	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-5	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-6	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-7	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-8	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-9	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-10	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-11	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-12	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'
AS-13	~4.8 PSI	10 SCFM	30'	2-inch	~19'-20'	~28'-30'

NOTE: AIR SPARGE WELL CONSTRUCTION INCLUDES TWO-INCH DIAMETER 0.020 SLOT SCH 80 WELL SCREEN

AIR SPARGE COMPRESSOR			
POSITION	EXPECTED PRESSURE	EXPECTED TEMP.	EXPECTED FLOW
PI-ASC01	~8 PSI		
TI-HE01		150°F	
FI-ASC01			~110 SCFM

NOTE: EQUIPMENT VENDOR SHALL SIZE THE AIR SPARGE COMPRESSOR/BLOWER TO DELIVER 65-130 SCFM TO FIFTEEN OF THE SPARGE WELLS AT ANY TIME

** CRITICAL EQUIPMENT

INTERLOCK/FAILSAFE SCHEDULE		
I.D.	DEVICE	FUNCTION
(1)	AS HIGH TEMP	DEACTIVATES AS MOTOR IF HIGH TEMP IS SENSED IN AIR FLOW
(2)	AS PRESSURE RELIEF VALVE	ALLEVIATE EXCESSIVE PRESSURE IN SPARGE DISCHARGE PIPE IN THE EVENT OF BLOCKAGE
(3)	MOISTURE SEPARATOR HIGH LEVEL SWITCH	DEACTIVATES SVE MOTOR IF A HIGH LIQUID LEVEL IS PRESENT IN THE SVE MOISTURE SEPARATOR
(4)	CATOX/SVE INTERLOCK	DEACTIVATES SVE MOTOR IF CATOX ALARM CONDITION EXISTS
(5)	SVE VACUUM RELIEF VALVE	ALLEVIATE EXCESSIVE VACUUM IN THE EVENT OF BLOCKAGE
(6)	SVE/AS MOTOR INTERLOCK	AS MOTOR CANNOT OPERATE WITHOUT THE SVE MOTOR RUNNING, SHUTS AS MOTOR DOWN IF SVE MOTOR FAILS
(7)	SVE LOW VACUUM SWITCH	DEACTIVATES SVE AND AIR SPARGE MOTOR IF THERE IS A LOSS IN VACUUM
(8)	SVE HIGH PRESSURE SWITCH	DEACTIVATES SVE MOTOR IF THERE IS HIGH PRESSURE

NOTES:

ACTUAL TI-ASC01 TEMPERATURE IS DEPENDENT ON COMPRESSOR SPECIFIED BY VENDOR. (IF TEMPERATURE IS LESS THAN RECOMMENDED TEMPERATURES FOR ALL VENDOR SUPPLIED EQUIPMENT THEN A HEAT EXCHANGER IS NOT NECESSARY.)

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AIR SPARGE PROCESS AND INSTRUMENTATION DIAGRAM

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
11

L:\Projects\ExxonMobil\Manhattan\12827 17-QDM Manhattan\CADD-FIGURES\RAP\2009\FEB\FIG 11 AS P&ID.dwg, 4/17/2009 3:34:54 PM

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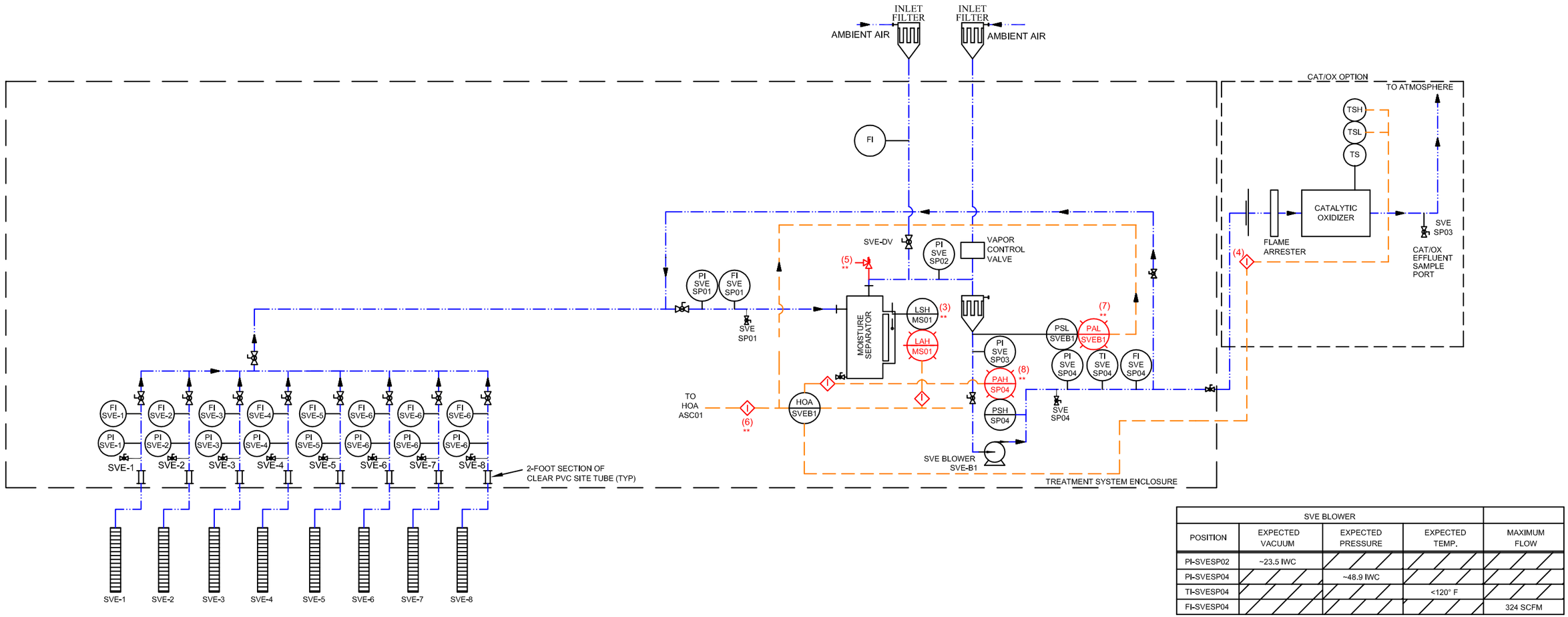

SVE BLOWER				
POSITION	EXPECTED VACUUM	EXPECTED PRESSURE	EXPECTED TEMP.	MAXIMUM FLOW
PI-SVESP02	~23.5 IWC			
PI-SVESP04		~48.9 IWC		
TI-SVESP04			<120° F	
FI-SVESP04				324 SCFM

NOTES: 1. SOIL VAPOR EXTRACTION WELL CONSTRUCTION INCLUDES 0.020 SLOT PVC WELL SCREEN.

** CRITICAL EQUIPMENT

INTERLOCK/FAILSAFE SCHEDULE		
I.D.	DEVICE	FUNCTION
(1)	AS HIGH TEMP	DEACTIVATES AS MOTOR IF HIGH TEMP IS SENSED IN AIR FLOW
(2)	AS PRESSURE RELIEF VALVE	ALLEVIATE EXCESSIVE PRESSURE IN SPARGE DISCHARGE PIPE IN THE EVENT OF BLOCKAGE
(3)	MOISTURE SEPARATOR HIGH LEVEL SWITCH	DEACTIVATES SVE MOTOR IF A HIGH LIQUID LEVEL IS PRESENT IN THE SVE MOISTURE SEPARATOR
(4)	CATOX/SVE INTERLOCK	DEACTIVATES SVE MOTOR IF CATOX ALARM CONDITION EXISTS
(5)	SVE VACUUM RELIEF VALVE	ALLEVIATE EXCESSIVE VACUUM IN THE EVENT OF BLOCKAGE
(6)	SVE/AS MOTOR INTERLOCK	AS MOTOR CANNOT OPERATE WITHOUT THE SVE MOTOR RUNNING, SHUTS AS MOTOR DOWN IF SVE MOTOR FAILS
(7)	SVE LOW VACUUM SWITCH	DEACTIVATES SVE MOTOR IF THERE IS A LOSS IN VACUUM
(8)	SVE HIGH PRESSURE SWITCH	DEACTIVATES SVE MOTOR IF THERE IS HIGH PRESSURE

VAPOR EXTRACTION WELLS							
WELL I.D.	EXPECTED VACUUM	MAXIMUM FLOW	TOTAL DEPTH	CASING DIAMETER	DEPTH TO WATER	SCREEN INTERVAL	EXPOSED SCREEN
SVE-1	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-2	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-3	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-4	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-5	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-6	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-7	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'
SVE-8	18.5 IWC	43 SCFM	18'	4-inch	~19'-20'	9'-18'	9'

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SVE PROCESS AND INSTRUMENTATION DIAGRAM

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54 WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE
12

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BOHEMIA, NY

CONTROL VALVE BODIES

- BALL VALVE
- GATE VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- SWING CHECK VALVE
- DIAPHRAGM VALVE
- BALL CHECK VALVE
- NEEDLE VALVE
- 3 WAY VALVE
- 4 WAY VALVE
- FOOT VALVE
- SAMPLE VALVE
- SAMPLE PORT
- PRESSURE REGULATOR

ACTUATORS/ REGULATORS

- GEAR ACTUATOR
- PRESSURE RELIEF
- DIAPHRAGM ACTUATOR
- HYDRAULIC ACTUATOR
- SOLENOID ACTUATOR (S)
- MOTOR ACTUATOR (M)
- DIGITAL ACTUATOR (D)
- WATER ACTUATOR (W)
- THERMORSTAT (T)
- REGULATOR
- FLOW INDICATOR
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE

MEASURING DEVICE SYMBOLS

- SINGLE PORT PITOT TUBE
- AVERAGING PITOT TUBE
- POSITIVE DISPLACEMENT FLOW INDICATOR
- VORTEX SENSOR
- SONIC FLOW METER
- ROTAMETER FLOW INDICATOR
- TARGET TYPE SENSOR
- WEIR
- VENTURI TYPE FLOW ELEMENT
- FLOW NOZZLE
- ORIFICE PLATE FLOW ELEMENT

FITTINGS & PIPING

- VICTAULIC CONNECTOR
- FLANGED CONNECTION
- SCREWED CONNECTION
- UNION
- COUPLING
- RUPTURE DISK
- REDUCER
- STRAINER
- FLOW RESTRICTOR
- FLEX HOSE
- CAM LOCK
- REMOVABLE CLEAR PIPE
- EXPANSION JOINT/SLEEVE
- HOSE CONNECTION
- PNEUMATIC QUICK CONNECT
- PLUG
- PIPE CAP
- SLIP UPDRAFT VENT CAP
- ELBOW - TURNED UP
- ELBOW - TURNED DOWN
- ELBOW - 90°
- ELBOW - 45°
- ELBOW - LONG RADIUS (LR)
- REDUCING ELBOW (2 x 4)
- TEE REDUCING (2 x 6 x 4)
- TEE (OUTLET UP)
- TEE (OUTLET DOWN)
- TEE

SYMBOL & LEGEND SHEET EQUIPMENT

- LEVEL SWITCH FLOATS
- BAG FILTER
- LIQUID RING PUMP
- CENTRIFUGAL PUMP
- ROTARY VANE COMPRESSOR
- DISPLACEMENT PUMP
- PRODUCT DRUM
- AIR FILTER
- POSITIVE DISPLACEMENT BLOWER
- BLOWER
- PROPORTIONING PUMP
- CENTRIFUGAL BLOWER PUMP
- HEAT EXCHANGER/ CONDENSER
- HEATER
- OIL-WATER SEPARATOR
- PACKED COLUMN AIR STRIPPING TOWER
- PISTON COMPRESSOR
- WELL WITH PUMP
- SKIMMER PUMP
- DIAPHRAGM PUMP
- SILENCER
- VAPOR-PHASE CARBON (VGAC)
- LIQUID-PHASE CARBON (FRP)
- LIQUID-PHASE CARBON (STEEL)
- MOISTURE SEPARATOR
- LOW PROFILE AIR STRIPPER
- MAKEUP WATER SOURCE
- LIQUID RING PUMP HOLDING TANK

INSTRUMENTATION

INSTRUMENT TYPE → PI
SYSTEM DESIGNATION → VE1 → SYSTEM POSITION NUMBER

- REFERENCE POINT FOR DESIGN ONLY NOT ACTUAL INSTALLED INSTRUMENT. OPTIONAL FIELD MOUNTED INSTRUMENT TO BE INSTALLED AT THIS LOCATION IF CHOSEN.
- LOCAL MOUNTED INSTRUMENT
- INSTRUMENTS WITH INPUTS OR OUTPUTS AT THE SITE CONTROL PANEL
- PILOT LIGHT OR ALARM INDICATOR

INSTRUMENT TYPE/DESIGNATION

PI	PRESSURE INDICATOR
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
DPS	DIFFERENTIAL PRESSURE SWITCH
DPI	DIFFERENTIAL PRESSURE INDICATOR
PC	PRESSURE CONTROL
PAH	PRESSURE ALARM HIGH
PAL	PRESSURE ALARM LOW
FI	FLOW INDICATOR
FM	FLOW METER
FQI	FLOW METER (TOTALIZING)
FS	FLOW SWITCH
TI	TEMPERATURE INDICATOR
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
TT	TEMPERATURE TRANSDUCER
TAH	TEMPERATURE ALARM HIGH
TAL	TEMPERATURE ALARM LOW
LSLL	LEVEL SWITCH LOW LOW
LSL	LEVEL SWITCH LOW
LSM	LEVEL SWITCH MIDRANGE
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
VSL	VACUUM SWITCH LOW
LAL	LEVEL ALARM LOW
LAH	LEVEL ALARM HIGH
CP	CAPACITIVE SENSOR/PROBE
S	SAMPLE PORT
FRP	FIBERGLASS REINFORCED PLASTIC

SYSTEM DESIGNATION

ASW	AIR SPARGE WELL & MANIFOLD
VEW	VAPOR EXTRACTION WELL & MANIFOLD
DPW	DUAL-PHASE WELL & MANIFOLD
ERW	ELECTRIC RECOVERY WELL & PUMP
PRW	PNEUMATIC RECOVERY WELL & PUMP
VER	VAPOR EXTRACTION REGENERATIVE BLOWER
VEP	VAPOR EXTRACTION POSITIVE DISPLACEMENT
ASV	AIR SPARGE ROTARY VANE COMPRESSOR
ASB	AIR SPARGE POSITIVE DISPLACEMENT BLOWER
DPO	DUAL-PHASE SEALED LIQUID RING PUMP
DPL	DUAL-PHASE LIQUID RING PUMP
DPB	DUAL-PHASE POSITIVE DISPLACEMENT BLOWER
OW	OIL- WATER SEPARATOR SYSTEM
STL	AIR STRIPPER LOW PROFILE
VC	VAPOR-PHASE CARBON
LC	LIQUID-PHASE CARBON

VALVE ABBREVIATIONS

N.C. - NORMALLY CLOSED
N.O. - NORMALLY OPEN
MAN - MANUAL

MATERIAL SPECIFICATION

PV	-	POLYVINYL CHLORIDE
GM	-	GALVANIZED METAL
RC	-	RIGID COPPER
IR	-	IRON
ABS	-	ACRYLONITRILE BUTADIENE STYRENE
FL	-	FLEX

PROCESS LINE INDICATORS

- FLOW DIRECTION
- WATER
- AIR
- CONTROL
- PNEUMATIC
- INTRINSICALLY SAFE LINE
- CONNECTING LINE
- CROSSOVER LINE

PROCESS LINE ABBREVIATIONS

ES	-	ELECTRIC SUPPLY
GS	-	GAS SUPPLY
HS	-	HYDRAULIC SUPPLY
NS	-	NITROGEN SUPPLY
SS	-	STEAM SUPPLY
W	-	WATER SUPPLY
V	-	VACUUM
VR	-	VAPOR REMOVAL
TF	-	TOTAL FLUIDS
AP	-	ACCESS PIPE / CONDUIT
SA	-	SPARGE AIR
PN	-	PNEUMATIC SUPPLY

LINE DESIGNATION:

2 - VR - 01 - PV

- 2 — SIZE IN INCHES
- VR — PROCESS
- 01 — LINE NUMBER
- PV — MATERIAL SPECIFICATION

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PROCESS AND INSTRUMENTATION DIAGRAM

MOBIL SERVICE STATION No. 12827 (17-QDM)
150-54TH WEST 145TH STREET
MANHATTAN, NEW YORK

FIGURE 13

BOHEMIA, NY

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APPENDIX A

AS/SVE Feasibility Study Laboratory Analytical Report

New Jersey ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

12/24/08

Technical Report for

ExxonMobil Corporation

GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY

PO#4509492381 WBS#08

Accutest Job Number: JA7611

Sampling Date: 12/10/08

Report to:

Kleinfelder
One Corporate Drive Suite 201
Bohemia, NY 11716
SScaretta@Kleinfelder.com; SOToole@kleinfelder.com

ATTN: Stephanie Schilero

Total number of pages in report: **11**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

David N. Speis
VP Ops, Laboratory Director

Client Service contact: Amanda Kissell 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, PA, RI, SC, TN, VA, WV

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Sample Summary

ExxonMobil Corporation

Job No: JA7611

GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY
Project No: PO#4509492381 WBS#08

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JA7611-1	12/10/08	10:00	JC	12/11/08	AIR	Air	SVE-1 (STEP 1)
JA7611-2	12/10/08	10:30	JC	12/11/08	AIR	Air	SVE-1 (STEP 2)
JA7611-3	12/10/08	11:00	JC	12/11/08	AIR	Air	SVE-1 (STEP 3)
JA7611-4	12/10/08	12:15	JC	12/11/08	AIR	Air	AS-1 (STEP 1)
JA7611-5	12/10/08	14:30	JC	12/11/08	AIR	Air	AS-2 (STEP 2)

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID: SVE-1 (STEP 1)
Lab Sample ID: JA7611-1 **Date Sampled:** 12/10/08
Matrix: AIR - Air **Date Received:** 12/11/08
Method: EPA TO-3 **Percent Solids:** n/a
Project: GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR74525.D	1	12/12/08	TCH	n/a	n/a	GQR3384
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	110	0.050	0.0099	ppmv	E	351	0.16	mg/m3
108-88-3	92.14	Toluene	658	0.050	0.0093	ppmv	E	2480	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	84.4	0.050	0.011	ppmv		367	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	333	0.10	0.0059	ppmv	E	1450	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.10	0.0092	ppmv		ND	0.36	mg/m3
	72	TPH as Equiv Pentane	13400	5.0	0.073	ppmv		39500	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	89%		71-129%
460-00-4	4-Bromofluorobenzene	97%		71-129%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID: SVE-1 (STEP 2)
Lab Sample ID: JA7611-2 **Date Sampled:** 12/10/08
Matrix: AIR - Air **Date Received:** 12/11/08
Method: EPA TO-3 **Percent Solids:** n/a
Project: GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR74527.D	1	12/12/08	TCH	n/a	n/a	GQR3384
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	111	0.050	0.0099	ppmv	E	355	0.16	mg/m3
108-88-3	92.14	Toluene	653	0.050	0.0093	ppmv	E	2460	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	82.2	0.050	0.011	ppmv		357	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	326	0.10	0.0059	ppmv	E	1420	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.10	0.0092	ppmv		ND	0.36	mg/m3
	72	TPH as Equiv Pentane	13500	5.0	0.073	ppmv		39800	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	89%		71-129%
460-00-4	4-Bromofluorobenzene	102%		71-129%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID: SVE-1 (STEP 3)
Lab Sample ID: JA7611-3 **Date Sampled:** 12/10/08
Matrix: AIR - Air **Date Received:** 12/11/08
Method: EPA TO-3 **Percent Solids:** n/a
Project: GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR74528.D	1	12/12/08	TCH	n/a	n/a	GQR3384
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	88.4	0.050	0.0099	ppmv		282	0.16	mg/m3
108-88-3	92.14	Toluene	557	0.050	0.0093	ppmv	E	2100	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	70.2	0.050	0.011	ppmv		305	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	279	0.10	0.0059	ppmv	E	1210	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.10	0.0092	ppmv		ND	0.36	mg/m3
	72	TPH as Equiv Pentane	11500	5.0	0.073	ppmv		33900	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	89%		71-129%
460-00-4	4-Bromofluorobenzene	99%		71-129%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID: AS-1 (STEP 1)
Lab Sample ID: JA7611-4 **Date Sampled:** 12/10/08
Matrix: AIR - Air **Date Received:** 12/11/08
Method: EPA TO-3 **Percent Solids:** n/a
Project: GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR74529.D	1	12/12/08	TCH	n/a	n/a	GQR3384
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	80.1	0.050	0.0099	ppmv		256	0.16	mg/m3
108-88-3	92.14	Toluene	555	0.050	0.0093	ppmv	E	2090	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	88.2	0.050	0.011	ppmv		383	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	358	0.10	0.0059	ppmv	E	1550	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.10	0.0092	ppmv		ND	0.36	mg/m3
	72	TPH as Equiv Pentane	11000	5.0	0.073	ppmv		32400	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	89%		71-129%
460-00-4	4-Bromofluorobenzene	96%		71-129%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID: AS-2 (STEP 2)
Lab Sample ID: JA7611-5 **Date Sampled:** 12/10/08
Matrix: AIR - Air **Date Received:** 12/11/08
Method: EPA TO-3 **Percent Solids:** n/a
Project: GSCNYB: 17-QDM, 150-54 West 145th Street, New York, NY

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR74531.D	1	12/12/08	TCH	n/a	n/a	GQR3384
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	129	0.050	0.0099	ppmv	E	412	0.16	mg/m3
108-88-3	92.14	Toluene	775	0.050	0.0093	ppmv	E	2920	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	129	0.050	0.011	ppmv	E	560	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	526	0.10	0.0059	ppmv	E	2280	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.10	0.0092	ppmv		ND	0.36	mg/m3
	72	TPH as Equiv Pentane	16000	5.0	0.073	ppmv		47100	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	89%		71-129%
460-00-4	4-Bromofluorobenzene	99%		71-129%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

ACCUTEST AIR Laboratories

2235 Route 130 Dayton, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

Accutest Job #: JA7611

EXXONMOBIL CORPORATION - Regional Laboratory Program (NY, NJ)

Client Information		Facility Information	
Consultants Company Name:	KLEINFELDER EAST, INC.	Project Name:	MOBIL SERVICE STATION NO. 17-QDM
Address	ONE CORPORATE DRIVE SUITE 201	Street	150-54 145TH STREET
City / State / Zip	BOHEMIA NY 11716	City / State	NEW YORK NY
Project Contact:	MICHAEL MEYERHOEFER	ExxonMobil Manager:	CHARLES KOLB
Sampler's Name:	JASON CHAN	ExxonMobil Manager's Phone #:	
Phone # / Ext. / Fax #:	631-218-0612	Location ID# / WBS#	12827
AFE #		PO# / Line#	

Analytical Information: 8260 ☐ 624 ☐ 8021 ☐ 602 ☐ BTEX ☐ / BENZENE ☐ MTBE ☐ TBA ☐ / NAPHTHALENE ☐; 8260 ☐ 624 ☐ TCL ☐ PPL ☐ MTBE ☐ TBA ☐ / NAPHTHALENE ☐ +10 ☐ +15 ☐; 8260 ☐ 8021 ☐ STARS LIST; 8270 ☐ 625 ☐ TCL ☐ PPL ☐ BN ☐ PAH ☐ / STARS LIST ☐ +15 ☐; Lead 6010 ☐ 200.7 ☐ 200.9 (DW) ☐ / Total ☐ Dissolved ☐; Air - TO3 BTEX ☑ MTBE ☑ TPH ☐ / Methane ☐ REPORT IN MG/M3; Air TO14: BTEX ☐ FULL LIST ☐; TPH-GRO 8015B; TPH-DRO 8015B; TPH 418.1 ☐ OOA-25 ☐

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled by	Matrix	# of bottles	HCL	NaOH	HNO3	H2SO4	None	NaHSO4	MEOH	Encore	Air - TO3
-1	SVE-1 (STEP 1)	12/10/08	10:00	JC	AIR	1					X				X
-2	SVE-1 (STEP 2)	12/10/08	10:30	JC	AIR	1					X				X
-3	SVE-1 (STEP 3)	12/10/08	11:00	JC	AIR	1					X				X
-4	AS-1 (STEP 1)	12/10/08	12:15	JC	AIR	1					X				X
-5	AS-1 (STEP 2)	12/10/08	14:30	JC	AIR	1					X				X

Turnaround Time (Business days) — Approved By:/Date

- ☑ Std. 10 Business Days
- ☐ 8 Day RUSH
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY

Emergency T/A is for FAX or Lablink Data

Data Deliverable Information

- ☑ Commercial "A"
- ☐ Commercial "B"
- ☐ NJ Reduced
- ☐ NJ Full
- ☐ Other
- ☐ FULL CLP
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format ______

Commercial "A" = Results only

Comments / Remarks

TEDLARS

866314270578

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:
1 [signature]	12/10/08 19:00	1 [signature]	2 [signature]	12-11-08 0945	2 [signature]
Relinquished by: 3	Date Time:	Received by: 3	Relinquished by: 4	Date Time:	Received by: 4
Relinquished by: 5	Date Time:	Received by: 5	Seal #	Preserved where applicable ☐	On Ice ☐ Temp.

JA7611: Chain of Custody
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