December 21, 2023 (revised February 14, 2024)

Mr. Michael Keller
Project Manager
Professional Engineer 1 (Environmental)
New York State Department of Environmental Conservation
Department of Environmental Remediation, Region 9
Buffalo, NY 14203-2915

Re: 2101 Kenmore Avenue Site
BCP Site No. C915391
Tonawanda, New York
Interim Remedial Measures Work Plan

Dear Mr. Keller,

On behalf of Wood and Brooks Properties LLC, Roux Environmental Engineering and Geology, D.P.C. (Roux) has prepared this Interim Remedial Measures (IRM) Work Plan for the 2101 Kenmore Avenue Site (C915391), Tonawanda New York (see Figure 1) to provide details for completion of IRMs to address known remedial areas that conflict with municipally approved stormwater infrastructure for the project.

Wood and Brooks LLC executed a Brownfield Cleanup Agreement with the NYS Department of Environmental Conservation (NYSDEC) in April 2023 and completed Remedial Investigation activities in September 2023. A Remedial Investigation Alternatives Analysis Report (RI-AAR) was submitted in November 2023, and is currently in the public review period.

As detailed in the RI/AA, the SB-H and SS-2 areas (see Figures 2 and 3) will require remediation to achieve the Track 4 Restricted Residential Use cleanup proposed for the Site. Based on the project need to properly manage stormwater on-Site, the stormwater infrastructure needs to be installed at this time. The locations of the SB-H and SS-2 areas conflict with the stormwater system layout, so Wood and Brooks is requesting to complete the remediation of these areas as IRMs to allow for installation of the subgrade stormwater system.

This IRM Work Plan is specific to the SB-H and SS-2 areas. Additional remedial activities are required as described in the RI-AAR and will be detailed in the Remedial Action Work Plan (RAWP), including cover system construction after Department issuance of the Decision Document and RAWP approval.

Remedial Investigation Results – SB-H and SS-2 Areas

Based on the findings of the RI, elevated arsenic and polycyclic aromatic hydrocarbons (PAHs) were identified in the SB-H and associated delineation boring DTP-H1 through DTP-H3, and elevated PAHs were identified in the shallow surface soils at the SS-2 location. As described int the RI-AAR, the planned remedial activities included the excavation and offsite disposal for both locations.

In addition to the SB-H and SS-2 area, an existing stockpile, located on top of the SS-2 will be loaded and transported offsite for landfill disposal. The existing stockpile was generated from the interior building utility activities and exploratory utility assessments (e.g. valves assessment). Roux field personnel periodically inspected the utility trenches during the Remedial Investigation field activities. No visual, olfactory or elevated photoionization detector (PID) readings were noted.

Interim Remedial Measures

The planned IRMs include the loading of the existing stockpile of soil-fill currently located on the SS-2 area; excavation and offsite disposal of the SB-H area, excavation and offsite disposal of the SS-2 area; completion of oversight and community air monitoring activities; collection of post-excavation confirmatory samples; excavation and offsite disposal of excess soils removed during installation of stormwater infrastructure; and backfilling to redevelopment subgrades. Details are provided below.

IRM Preparation Activities

- Utility Clearances - Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor a minimum of three (3) business days in advance of the work and informed of the intent to perform excavation work at the Site.

- Waste Characterization and Disposal Facility Approvals – Pre-characterization of the soil/fill will allow for direct loading and off-site transportation at the time of the excavation. Based on the waste characterization sampling results, impacted soil will be managed according to all federal, state, and local waste disposal regulations.

IRM Excavation Activities

Roux personnel will be onsite completing oversight, CAMP, and post-excavation confirmatory sample collection during IRM activities. Roux personnel will screen excavated spoils for the presence of volatile organics using a photoionization detector (PID), as a procedure for ensuring the health and safety of personnel at the Site. All remedial activities will be completed in accordance with the Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) included in Appendix E of the Department-approved RIWP July 2023 (HASP and CAMP attached electronically).

- Removal of Existing Stockpile - Prior to subgrade IRM excavation activities, the existing stockpile will be loaded and transported offsite for landfill disposal. Copies of the disposal documents will be provided to the Department.

- Off-site recycling of Asphalt and Concrete – The SB-H area is currently covered by an existing asphalt parking lot. If the contractor is able to remove and segregate the asphalt cover, it will be recycled offsite at a registered C&D recycling facility. Copies of the facility information and recycling documentation will be provided to the Department. If asphalt is not able to be segregated, it will be disposed with the underlying soils to the landfill.

- SB-H IRM Excavation Area
  An approximate 1,250 sq ft area will be excavated to approximately 7 feet below ground surface (fbgs) to address the SB-H area. RI results for this area showed approximately 4-5 feet of impacted fill material underlain by clay. RI results for the fill-clay interface showed elevated results. In order to achieve the remedial SCOs/SSALs, approximately 1-2 ft of the underlying clay is expected to require removal and offsite disposal. Confirmatory post-excavation bottom and sidewall samples will be collected as described below. Extents of the excavation and sample locations will be documented.

- SS-2 Excavation Area
  A portion of the SS-2 remedial area is located above the stormwater system (see Figures 2 and 3). RI results indicate that shallow surface soils exceed the cover system soil criteria for Restricted Residential Use sites and requires excavation and removal to allow for future Track 4 Restricted Residential Use cover system construction, including hardscape areas and 24-inch minimum clean cover material above demarcation layer.

  Excavation will be completed to the subgrade depths to allow for infrastructure construction per the municipally-approved construction drawings, and/or DER-10 compliant cover system construction. Confirmatory post-excavation bottom and sidewall samples will be collected as described below. Extents of the excavation and sample locations will be documented.

- Surplus Soil-Fill Removal
  Based on the municipally approved civil drawings, construction of the subgrade stormwater system will generate additional spoils after completion of the IRMs. Based on the RI results, the surplus soils will require additional assessment and/or handling. At this time the Site does not have an area for reuse onsite below the planned cover system, and therefore, the surplus spoils will be transported offsite for disposal. Any potential reuse will be in accordance with Department pre-approval.

IRM Remedial Objectives and Site-Specific Action Levels

As detailed in the Alternatives Analysis, the proposed remedial alternative for the Site is a Track 4 Restricted Residential Use cleanup. This approach requires institutional controls (e.g., groundwater and land use restrictions, Site Management Plan, and Environmental Easement) and engineering controls (e.g., integrated cover system) as components of the final remedy to reduce future potential exposure to impacted soil/fill that remains after remedial activities.

The planned IRM excavation aims to achieve the 6NYCRR Part 375 Commercial Use Soil Cleanup Objectives (CSCOs) for subgrade soil-fill. Additionally, site-specific action levels (SSALs) were developed for the Site. These SSALs will be applicable to soil/fill that exceed SCOs, have the potential to impact groundwater, or otherwise represent an unacceptable risk to public health or the environment in the context of reasonable anticipated future use under a Track 4 cleanup approach, and guide the determination of remedial requirements. The SSALs are not applicable to soil/fill that will remain as or to be imported for use as the engineering control (e.g., site-wide engineered cover system).

The SSALs were developed based on the treatment and/or removal of source areas, including areas that have a greater potential for contaminant migration, and the feasibility of achieving the SSALs based on the nine factors outlined in 6 NYCRR Part 375-1.8(f). The SSALs only apply to a Track 4 cleanup with a cover system to be installed over all areas with remaining contamination. Materials used for the soil cover system will need to meet the RRSCOs Import Criteria per DER-10. Track 4 sites also require an SMP and Environmental Easement.

The following SSALs were developed and used to designate soil/fill areas requiring remediation.

- Total PAHs > 500 mg/kg; this alternative Soil Cleanup Level was employed in lieu of individual restricted residential SCOs, per NYSDEC Commissioner Policy on Soil Cleanup Guidance (CP-51).
- Total Arsenic > 25 mg/kg; This SSAL will apply to remaining in-place soils free of visually identifiable non-native fill materials (i.e., native soils).

An arsenic SSAL for the Site is supported by the dermal contact values as listed in the Part 375 Technical Support document, Table 5.3.6-1(a) Exposure Pathway Specific Soil Cleanup Objectives. Future post remedial exposure scenarios would be limited to construction workers completing short-term disturbances to remaining soils beneath the cover system. Furthermore, utilizing a SSAL of 25 ppm for arsenic in subsurface soils is appropriate for excavation activities in accordance with DER-31 Green Remediation limiting additional emissions related to expanded excavation and transportation hauling to landfill.

Post-Excavation Confirmatory Sampling

Post excavation confirmatory soil samples will be collected from the excavated areas sidewalls and bottom in accordance with DER-10. A minimum of one sample per 30 linear feet of sidewall and one sample for each 900 square feet of excavation bottom will be collected in accordance with DER-10. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report (DUSR) by an independent, third-party data validation expert. Expedited turnaround times may be requested for the analytical results to minimize the time that the excavation(s) remains open. Quality Assurance (QA) samples will be collected to support the verification sample data evaluation. Dedicated equipment will be used to avoid the need for equipment blanks. Post-excavation confirmatory analytical results will be summarized in the FER. Samples will be collected as follows.

Based on the RI results, post-excavation confirmatory samples will be analyzed for arsenic and SVOCs PAHs from the SB-H area; and, analyzed for SVOCs-PAHs form the SS-2 area.

Backfill

Prior to importing any backfill material a NYSDEC Import Request will be prepared and submitted to the Department for approval for each import material and source.

Material planned for backfill in the hotspot excavation areas and subgrade stormwater is expected to use clean No. 1 stone and 2-inch run-of-crush stone. Once the source of the stone is determined an Import Request will be prepared and submitted for approval.

If backfill areas are not planned for future buildings and/or hardscape elements, a demarcation layer will be placed between any remaining in-place soil/fill and the approved cover material for a Track 4 Restricted Residential Use site.

IRM excavations specific to this work plan are in areas planned for future hardscape cover elements, including concrete and/or asphalt covered areas. It should be noted that IRM excavation backfill will be completed to subgrade elevations and that the final cover system surfaces (e.g., asphalt paving) will be completed after Department approval of the Remedial Action Work Plan (RAWP).

Support Documents

IRM remedial activities will be completed in accordance with the approved Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) included in Appendix E of the Department-approved RIWP July 2023 (HASP and CAMP attached electronically).

Real-time community air monitoring will be performed during remedial activities at the Site. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring). Weekly CAMP summary reports will be provided to the Department. If exceedances of the CAMP levels are recorded during IRM activities, the Department will be notified that day (within 24 hrs).

Reporting

The Department will be notified prior to beginning intrusive activities. Daily field logs will be completed documenting the work activities completed, samples collected (if any), CAMP, and/or corrective action if necessary.

The IRM activities performed under this work plan will be documented with the additional remedial activities in the Final Engineering Report. Details regarding the work will include the following:

- Map showing the areas remediated, including significant site features and limits of excavation areas.
- Map showing location of all verification and other sampling locations with sample identification labels/codes.
- Tabular comparison of verification sample analytical results to Track 4 RRSCOs and/or SSALs. An explanation shall be provided for any results exceeding acceptance criteria.
- Disposal and import documentation.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from this Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the Site activities were carried out in accordance with this Work Plan.

Copies of IRM post-excavation confirmatory laboratory reports, summary tables, excavation figures, and CAMP data will be provided to the Department as they become available during the IRM activities.

Please contact us if you have any questions or require additional information.

Sincerely,

ROUX ENVIRONMENTAL ENGINEERING AND GEOLOGY, D.P.C.

Nathan Munley
Principal Scientist

ROUX

References

NYS Department of Environmental Conservation. *DER-10 Technical Guidance for Site Investigation and Remediation.* May 2010.

NYS Department of Environmental Conservation. *DER-31 Green Remediation.* August 11, 2010 (revised January 20, 2011).

NYS Department of Environmental Conservation. *6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 and 375-6.* Effective December 14, 2006.

NYS Department of Environmental Conservation and NYS Department of Health. New York State Brownfield Cleanup Program, Development of Soil Cleanup Objectives, Technical Support Documents. June 2006.

Vosnakis, Kelly A.S.; et. al. (2010). "*Background Versus Risk-Based Screening Levels – An Examination of Arsenic Background Soil Concentrations in Seven States," Proceedings of the Annual International Conference on Soils, Sediments, Water and Energy: Vol. 14, Article 10.*

TABLES

ROUX

TABLE 1
SUMMARY OF DB-H DELINEATION SOIL/FILL SAMPLE ANALYTICAL RESULTS
INTERIM REMDIAL MEASURES WORK PLAN
2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

Parameter [1]	Restricted-Residential Use SCOs[2]	SSAL[3]	Sample Locations					
			DTP-H1 (1-2.5 FT)	DTP-H2 (1-2.5 FT)	DTP-H3 (1-2.5 FT)	DTP-H1 (2.5-4 FT)	DTP-H2 (2.5-3.5 FT)	DTP-H3 (2.5-4 FT)
			Fill			Native		
Sample Date			9/27/23					
Metals - mg/kg								
Arsenic	**16**	**25**	**23**	9.37	**53.6**	5.53	7.96	**28.2**

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. SSAL = Site Specific Action Level

Definitions:

mg/kg = milligrams per kilogram

J = Result is less than the RL but greater or equal to the MDL and the concentration is an approximate value.

BOLD	= Result exceeds Restricted Residential Use SCOs.
BOLD	= Result exceeds SSAL.

ROUX

TABLE 2
SUMMARY OF RI SURFACE SOIL/FILL SAMPLE ANALYTICAL RESULTS
INTERIM REMEDIAL MEASURES WORK PLAN
2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

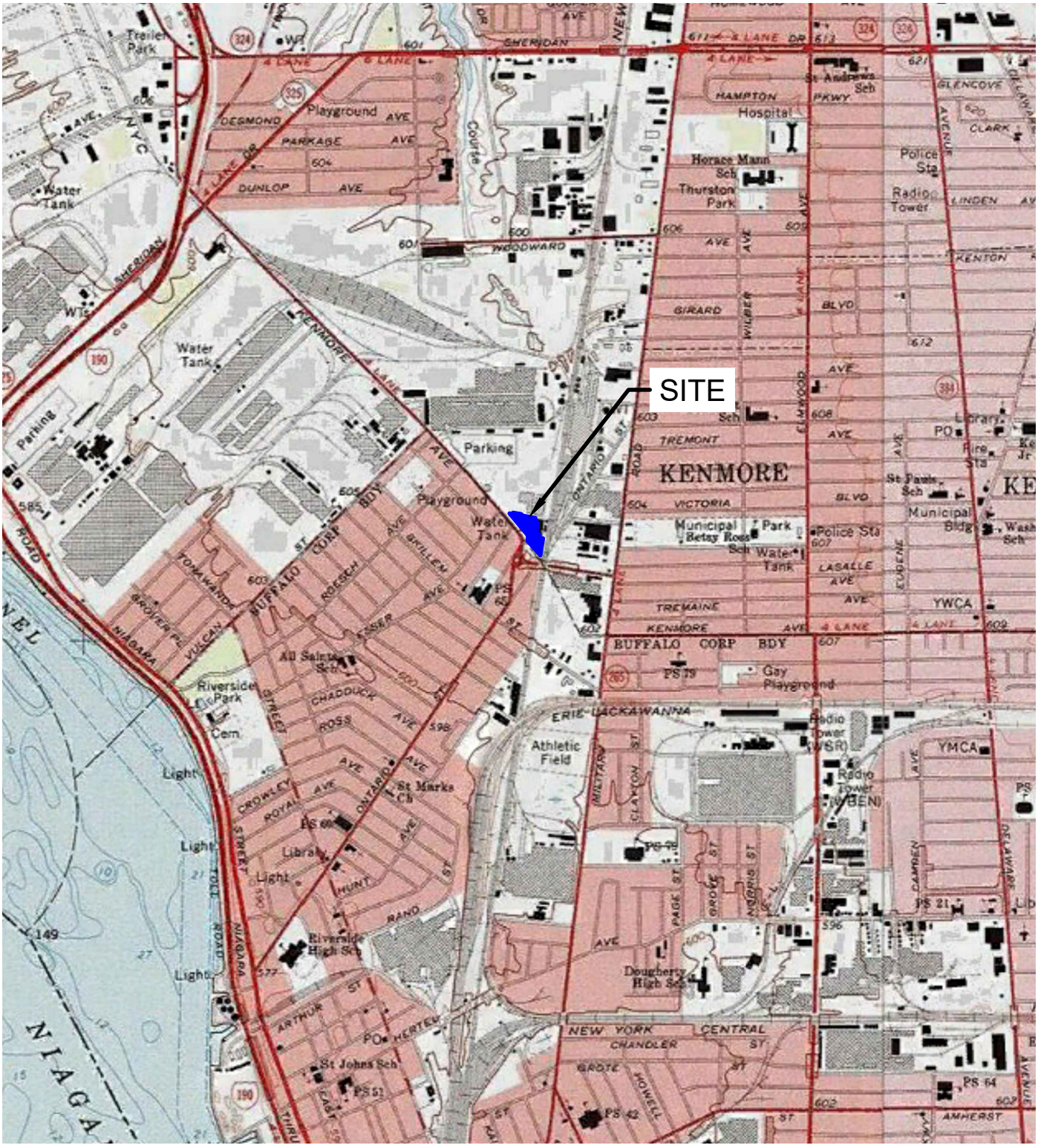
Parameter[1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs [2]	Industrial Use SCOs [2]	Sample Location
Sample Date					SS-2
					9/1/2023
Volatile Organic Compounds (VOCs) - mg/Kg [3]					
Total VOCs	--	--	--	--	ND
Total TICs	--	--	--	--	0.12 J
Semi-Volatile Organic Compounds (SVOCs) - mg/kg [3]					
2-Methylnaphthalene	--	--	--	--	0.077 J
Acenaphthene	20	100	500	1000	0.17
Acenaphthylene	100	100	500	1000	0.47
Acetophenone	--	--	--		ND
Anthracene	100	100	500	1000	0.65
Benzaldehyde	--	--	--		ND
Benzo(a)anthracene	1	1	5.6	11	2.6
Benzo(a)pyrene	1	1	1	1.1	2.7
Benzo(b)fluoranthene	1	1	5.6	11	3.5
Benzo(ghi)perylene	100	100	500	1000	1.8
Benzo(k)fluoranthene	0.8	3.9	56	110	1.2
Bis(2-ethylhexyl) phthalate	--	--	--	--	0.14 J
Carbazole	--	--	--	--	0.34
Chrysene	1	3.9	56	110	2.8
Dibenzo(a,h)anthracene	0.33	0.33	0.56	1.1	0.43
Dibenzofuran	7	59	350	1000	0.13 J
Fluoranthene	100	100	500	1000	4.8
Fluorene	30	100	500	1000	0.24
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	11	2.1
Naphthalene	12	100	500	1000	0.13 J
Phenanthrene	100	100	500	1000	2.5
Pyrene	100	100	500	1000	3.9
Total PAHs	--	--	--	--	29.99
Total SVOCs	--	--	--	--	30.677
Total TICs	--	--	--	--	12 J
Metals - mg/kg					
Aluminum	--	--	--	--	9220
Antimony	--	--	--	--	0.566 J
Arsenic	13	16	16	16	5.75
Barium	350	400	400	10000	71.4
Beryllium	7.2	72	590	2700	0.647
Cadmium	2.5	4.3	9.3	60	0.499 J
Calcium	--	--	--	--	31400
Chromium	30	180	1500	6800	19.5
Cobalt	--	--	--	--	5.82
Copper	50	270	270	10000	41.9
Iron	--	--	--	--	22800
Lead	63	400	1000	3900	76.6
Magnesium	--	--	--	--	12100
Manganese	1600	2000	10000	10000	494
Mercury	0.18	0.81	2.8	5.7	0.094
Nickel	30	310	310	10000	18.8 J
Potassium	--	--	--	--	887
Selenium	3.9	180	1500	6800	0.6 J
Silver	2	180	1500	6800	ND
Sodium	--	--	--	--	124 J
Thallium	--	--	--		ND
Vanadium	--	--	--	--	15.9
Zinc	109	10000	10000	10000	260

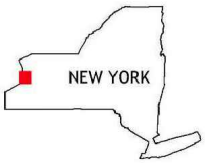
Notes:
1. Only those parameters detected at a minimum of one sample location are presented in this table; other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs.

Definitions:
TICs = Tentatively Identified Compounds
ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter; Parameter not analyzed for.
J = Estimated value; The target analyte concentration is below the quantitation limit (RL) but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for TICs. For calculated parameters, this represents that one or more values used in calculation were estimated.
P = The RPD between the results for the two columns exceeds method-specific criteria.
I = The lower value for the two columns has been reported due to obvious interference.

Bold	= Result exceeds Unrestricted Use SCOs.
Bold	= Result exceeds Restricted Residential Use SCOs.
Bold	= Result exceeds Commercial Use SCOs.
Bold	= Result exceeds Industrial use SCOs.

FIGURES





Title:

SITE LOCATION AND VICINITY MAP

2101 KENMORE AVENUE SITE

BCP SITE NO. C915391

BUFFALO, NEW YORK

INTERIM REMEDIAL MEASURES WORK PLAN

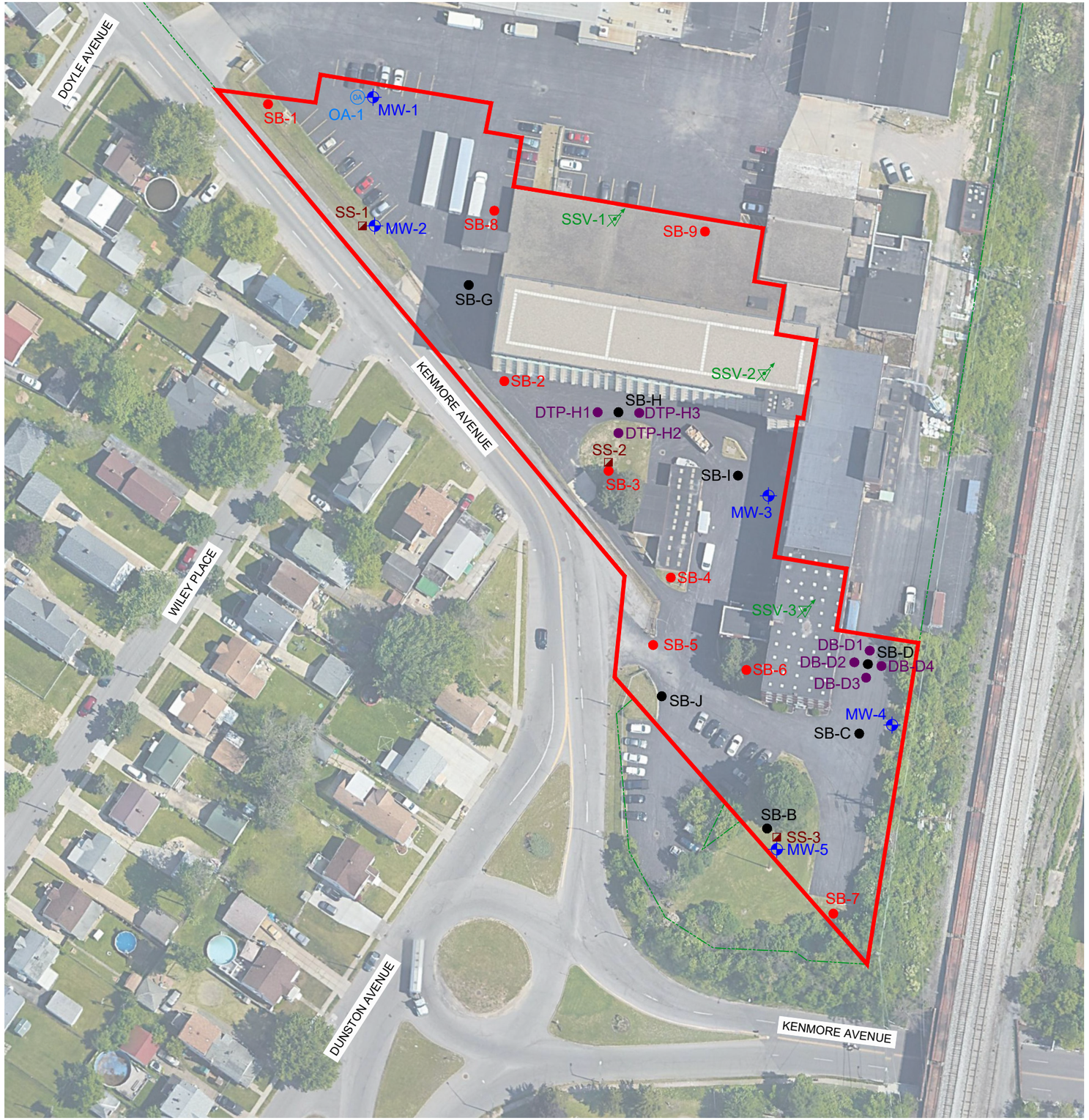
Prepared for:

WOOD AND BROOKS PROPERTIES LLC

ROUX

Compiled by: CMS	Date: SEPTEMBER 2023	FIGURE
Prepared by: CMS	Scale: AS SHOWN	1
Project Mgr: NTM	Project: 0688-022-001	
File: FIGURE 1; SITE LOCATION AND VICINITY MAP.DWG		

F:\CAD\BENCHMARK\FRONTIER INSULATION\RAWP\FIGURE 1; SITE LOCATION AND VICINITY MAP.DWG



LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- SB-B ● SOIL BORING (JULY 2021)
- MW-1 ⊕ RI MONITORING WELL/SOIL BORING
- SB-1 ● RI SOIL BORING
- DB-D1 ● RI DELINEATION SOIL BORING/TEST PIT
- SS-1 ◪ RI SURFACE SOIL SAMPLE
- SSV-1 RI SUBSLAB VAPOR SAMPLE
- OA-1 (OA) RI OUTDOOR AIR SAMPLE

N

80' 0 80'

Title:

PREVIOUS INVESTIGATION LOCATIONS

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
BUFFALO, NEW YORK

INTERIM REMEDIAL MEASURES WORK PLAN

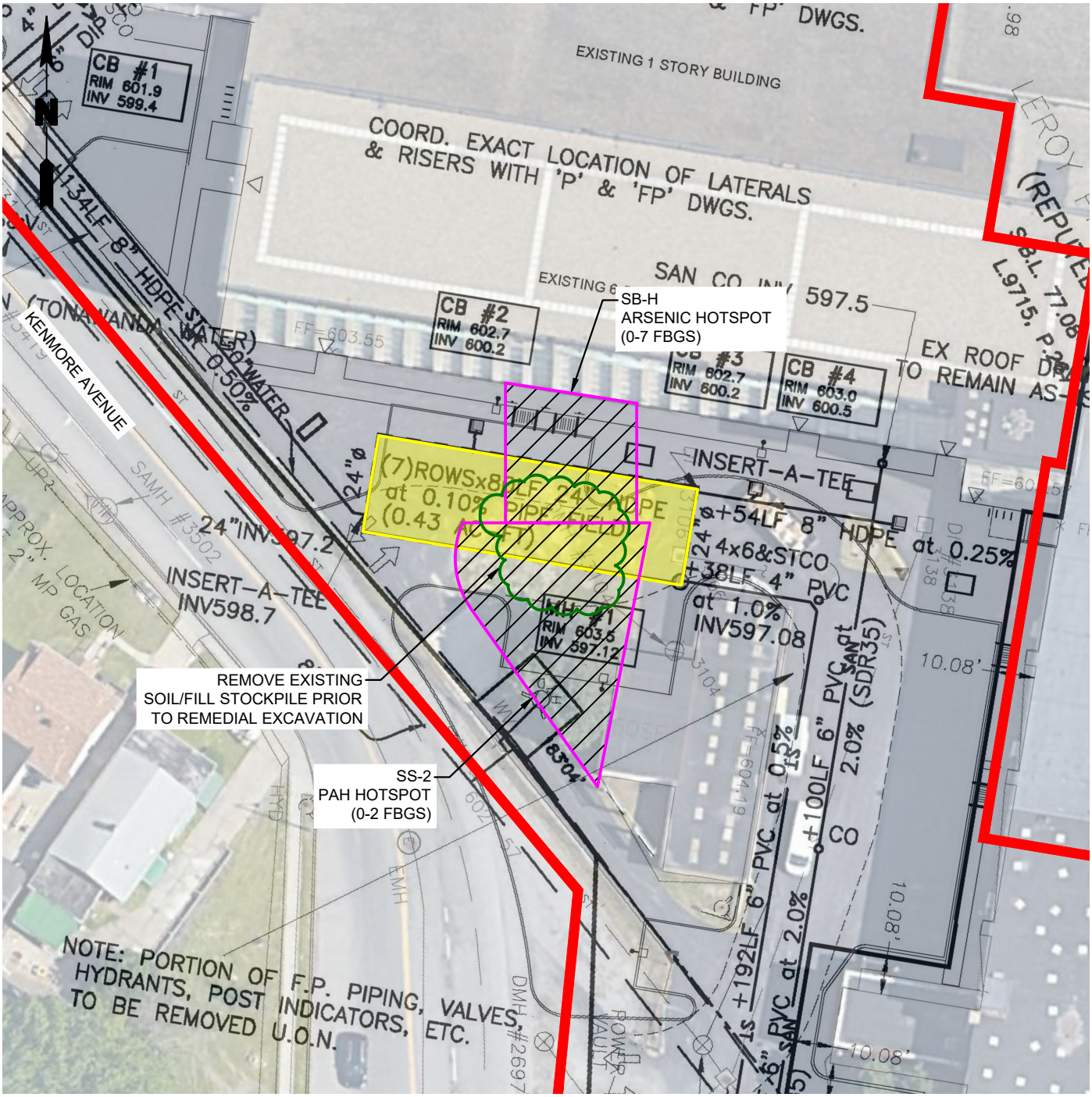
Prepared for:

WOOD AND BROOKS PROPERTIES LLC

ROUX

Compiled by: CMS	Date: DECEMBER 2023	FIGURE
Prepared by: CMS	Scale: AS SHOWN	2
Project Mgr: NTM	Project: B0562-023-002	
File: FIGURE 2; PREVIOUS INVESTIGATION LOCATIONS.DWG		

F:\CAD\BENCHMARK\FRONTIER INSULATION\RAWP\FIGURE 2; PREVIOUS INVESTIGATION LOCATIONS.DWG



LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- HOTSPOT EXCAVATION AREA
- UNDERGROUND DETENTION SYSTEM AREA
- EXISTING STOCKPILE

NOTE: FINAL EXCAVATION EXTENTS WILL BE BASED ON CONFIRMATORY SAMPLE RESULTS

40' 0 40'

Title:
INTERIM REMEDIAL MEASURES AND UTILITIES
2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

INTERIM REMEDIAL MEASURES WORK PLAN

Prepared for:

WOOD AND BROOKS PROPERTIES LLC

ROUX

Compiled by: CMS	Date: DECEMBER 2023	FIGURE
Prepared by: CMS	Scale: AS SHOWN	3
Project Mgr: NTM	Project: B0562-023-002	
File: FIGURE 3; INTERIM REMEDIAL MEASURES AND UTILITIES.DWG		

F:\CAD\BENCHMARK\FRONTIER INSULATION\RAWP\FIGURE 3; INTERIM REMEDIAL MEASURES AND UTILITIES.DWG

APPENDIX A

HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN
for
BROWNFIELD CLEANUP PROGRAM
REMEDIAL INVESTIGATION ACTIVITIES

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

April 2023 0602-021-001

Prepared for:

Wood and Brooks Properties LLC

Prepared by:

Benchmark Civil/Environmental Engineering & Geology, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0599

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas H. Forbes, P.E.

Project Manager: Nathan Munley

Designated Site Safety and Health Officer: Nathan Munley

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

BENCHMARK

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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BCP SITE NO. C915391
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES

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ATTACHMENTS

1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Civil/Environmental Engineering & Geology, PLLC (Benchmark) employees during Remedial Investigation (RI) activities at the 2101 Kenmore Avenue Site (Site), BCP Site No. C915391, located in the Town of Tonawanda, Erie County, New York (see Figure 1). This HASP presents procedures for Benchmark employees who will be involved with RI field activities; it does not cover the activities of other contractors, subcontractors or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark accepts no responsibility for the health and safety of contractor, subcontractor, or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

The Site is a ±2.4-acre parcel addressed as a portion of the greater 2101 Kenmore Avenue property which is located on the northeast side of Kenmore Avenue in the Town of Tonawanda, New York. The Site has two (2) interconnected commercial use buildings, with associated parking and driveways, with select greenspace. Some portions of the buildings are used as commercial and storage operations, with other areas currently vacant.

The Site was historically used for piano key manufacturing from approximately 1900 to the 1970s; and more recently has been used in a variety of commercial manufacturing and warehousing.

1.3 Known and Suspected Environmental Conditions

A previous investigation completed at the Site identified elevated levels of polycyclic aromatic hydrocarbons (PAHs), and metals at concentrations exceeding 6 NYCRR Part 375

Restricted-Residential Use, Commercial Use, and/or Industrial Use Soil Cleanup Objectives (SCOs). Details of the previous investigation as it pertains to the subject Site are presented below.

July 2021 – Limited Phase II Environmental Investigation

Investigation activities indicated Site-wide soils comprised of fill material, consisting of cinders, ash, brick, and glass ranging in depth from 0 to 2.5 feet below ground surface (fbgs).

Laboratory analytical results indicated elevated PAHs and metals exceeding Restricted-Residential Use SCOs (RRSCOs), Commercial Use SCOs (CSCOs), and/or Industrial Use SCOs (ISCOs), including:

- Elevated metals, specifically arsenic, was identified exceeding its ISCO at several locations.
- Elevated concentrations of PAHs exceeding their respective RRESCO, CSCO, and ISCO at multiple locations.

The RI will be performed in support of the BCP to determine the nature and extent of impacts from these known and suspected environmental conditions on this Site.

1.4 Parameters of Interest

Based on the previous investigation, constituents of potential concern (COPCs) in soil at the Site include:

- **Semi-volatile Organic Compounds (SVOCs)** – SVOCs present at elevated concentration may include PAHs, which are byproducts of incomplete combustion and impurities in petroleum products. PAHs present at elevated levels in the soil/fill samples include: are benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

- **Metals** – Metals present at elevated concentrations of soil/fill may include arsenic and lead.

1.5 Overview of RI Activities

Benchmark personnel will be on-site to observe and perform RI activities. The field activities to be completed as part of the RI are described below.

Remedial Investigation Activities

1. **Surface/Subsurface Soil Sampling:** Benchmark will collect subsurface soil/fill samples from soil borings and test pits to determine the nature and extent of potential COPC impacts in the subsurface soil/fill.

2. **Monitoring Well Installation/Development and Sampling:** Benchmark will observe the installation of groundwater monitoring wells, develop the wells, and collect groundwater samples for the purpose of determining the nature and extent of potential COPC impacts.

3. **Soil Vapor Investigation:** Benchmark will observe the installation of three (3) subslab soil vapor (SSV) sampling probes within the on-Site buildings, purge the probes and associated tubing, and collect soil vapor samples for the purpose of determining the nature and extent of potential COPC impacts. In conjunction with collection of the SSV samples, three (3) indoor air (IA) samples proximate to the SSV samples and one (1) outdoor air (OA) sample will be collected.

2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility, and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establish the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Benchmark personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The Benchmark Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director is responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Officer

The Project Officer for the Site is ***Mr. Nathan Munley.*** The Project Officer has the responsibility for ensuring conformance with the BCP program requirements. The Project Officer will report directly to the Applicant and the NYSDEC/NYSDOH Project Coordinators and is responsible for project oversight. The Project Officer will:

- Define project objectives, oversee detailed work plan development and project schedule.

- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Review the work performed on the project to assure its quality, responsiveness, and timeliness.
- Certify deliverables before their submission to NYSDEC.

2.1.3 Project Manager

The Project Manager for this Site is ***Mr. Nathan Munley.*** The Project Manager has the responsibility and authority to direct Benchmark work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.4 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Mr. Nathan Munley***. The qualified alternate SSHO is ***Mr. Christopher Z. Boron***. The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they

are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.

- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.
- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.5 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.6 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Drilling Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark's HASP. Benchmark assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-Benchmark Site personnel. Each Contractor shall assign an SSHO who will coordinate with Benchmark's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-Site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., drill rig, excavator) will also present conditions for potential physical injury to workers. Further, since some of the work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities have potentially resulted in impacts to Site soil/fill. Soil/fill sample results indicate that SVOC (PAHs) and metals impact to Site soil/fill. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

- **Polycyclic Aromatic Hydrocarbons (PAHs) PAHs** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; and dibenzo(a,h)anthracene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-

type blemishes in areas of the skin exposed to sunlight.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

With respect to the anticipated RI activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

RI field activities at the 2101 Kenmore Avenue Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as excavator and/or drilling equipment.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during RI operations and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing RI activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.

- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.
- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Attachment A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to Site visitors and other non-Benchmark personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for Benchmark employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works, an occupational health care provider under contract with Benchmark. Health Works is located in Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

Benchmark employees shall conform to the following safe work practices during on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- Personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.
- Employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark personnel are also responsible for their own safety.
- Subsurface work will not be initiated without first clearing underground utility services.

- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial

possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances

encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exist that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

Benchmark personnel will conduct routine, real-time air monitoring during intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined in the Generic Community Air Monitoring Plan and attached as Attachment C. Ground intrusive activities include soil/fill excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of surface soil/fill samples or the collection of groundwater samples from installed monitoring wells. Continuous monitoring

is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by Benchmark personnel to monitor organic vapor concentrations as specified in this HASP. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other Site conditions) as follows for Benchmark personnel:

- Total atmospheric concentrations of unidentified (vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D.
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C.
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B, re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.
- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 mg/m^3 - Continue field operations.
- 50-150 mg/m^3 - Don dust/particulate mask or equivalent
- Greater than 150 mg/m^3 - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Readings from the field equipment will be recorded and documented on the appropriate Project Field Forms. Instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Attachment C):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume with continued monitoring.
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm for the 15-minute average, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.
  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone for the 15-minute average, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine when re-entry of the exclusion zone is possible and will

implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (DEC) and Department of Health (DOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**

  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.
  - If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).
  - If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

- **MAJOR VAPOR EMISSION RESPONSE PLAN:**

  Upon activation, the following activities will be undertaken:

  1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Attachment A) will be advised.
  2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.
  3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Attachment A.

- **EXPLOSIVE VAPORS:**
  - Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
  - Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.
- **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

  Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

  - If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.
  - If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must

be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Attachment A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes

that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on Site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during RI efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Attachment A of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.

- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring Benchmark field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.
- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.
- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.
- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same. If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:
  1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.
  2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.
  3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.
- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:
  1) Shivering
  2) Apathy (i.e., a change to an indifferent or uncaring mood)
  3) Unconsciousness
  4) Bodily freezing

  Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:
  1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
  2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).
  3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
    - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
    - At a workers request.
    - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).
    - As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other Site users by the SSHO. It shall be each Contractor's Site Safety and Health Officer's responsibility to ensure that all Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone") - The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. Flagging tape will delineate the zone. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.
- Contamination Reduction Zone - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment, and samples must remain in the Contamination Reduction Zone until decontaminated.
- Support Zone - The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50-foot radius from the outer limit of the sampling/construction activity.
- Contaminant Reduction Zone: 100-foot radius from the outer limit of the sampling/construction activity.
- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark workers and their level of protection. The zone boundaries may be changed by

the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life-threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

The Contractor, in accordance with their Health and Safety Plan in the Contamination Reduction Zone will conduct decontamination of heavy equipment. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Benchmark personnel will conduct decontamination of all tools used for sample collection purposes. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark employees is not anticipated to be necessary to complete the RI activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark's corporate Health and Safety Director. Benchmark employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Attachment B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Attachment A. The hospital route map is presented within Attachment A as Figure 1.

TABLES

BENCHMARK

TABLE 1
TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN
Site Health & Safety Plan
2101 Kenmore Avenue Site
BCP Site No. C915391
Tonawanda, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Semi-volatile Organic Compounds (SVOCs) [2] : ppm						
Benzo(a)anthracene	Tetraphene, 1,2-Benzanthracene, Benzanthrene	56-55-3	*none*	--	--	--
Benzo(a)pyrene	Coal tar pitch volatiles, Acridine, Anthracene, Chrysene, Phenanthrene	50-32-8	*none*	0.2	0.2	80
Benzo(b)fluoranthene	3,4-Banzofluoranthene	205-99-2	*none*	--	--	--
Chrysene	Coal tar pitch volatiles, Acridine, Anthracene, Chrysene, Phenanthrene	218-01-9	*none*	0.2	0.2	80
Dibenzo(a,h)anthracene	Benzo(k)tetraphene	53-70-3	*none*	--	--	--
Indeno(1,2,3-cd)pyrene	o-Phenylenepyrene, Indenopyrene	193-39-5	*none*	--	--	--
Inorganic Compounds: mg/m [2]						
Arsenic	Arsenia, arsenic metal	7440-38-2	*Ca*	0.01	0.01	5

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with chages and updates).
2. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.

Ca = NIOSH considers constituents to be a potential occupational carcinogen

IDLH = Immediately Dangerous to Life or Health.

TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hr

TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.

TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)

TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.

Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

BENCHMARK

TABLE 2
POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN
Site Health & Safety Plan
2101 Kenmore Avenue Site
BCP Site No. C915391
Tonawanda, New York

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
Remedial Investigation Tasks			
1. Surface/Subsurface Soil/Fill Sampling	x	x	x
2. Monitoring Well Installation/Development and Sampling			x
3. Subslab Vapor Sampling	x	x	

Notes:
1. Activity as described in Section 1.5 of the Health and Safety Plan.

BENCHMARK

TABLE 3
REQUIRED LEVELS OF PROTECTION
FOR RI TASKS
Site Health & Safety Plan
2101 Kenmore Avenue Site
BCP Site No. C915391
Tonawanda, New York

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
Remedial Investigation Tasks					
1. Surface/Subsurface Soil/Fill Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Monitoring Well Installation/Development and Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
3. Subslab Vapor Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS

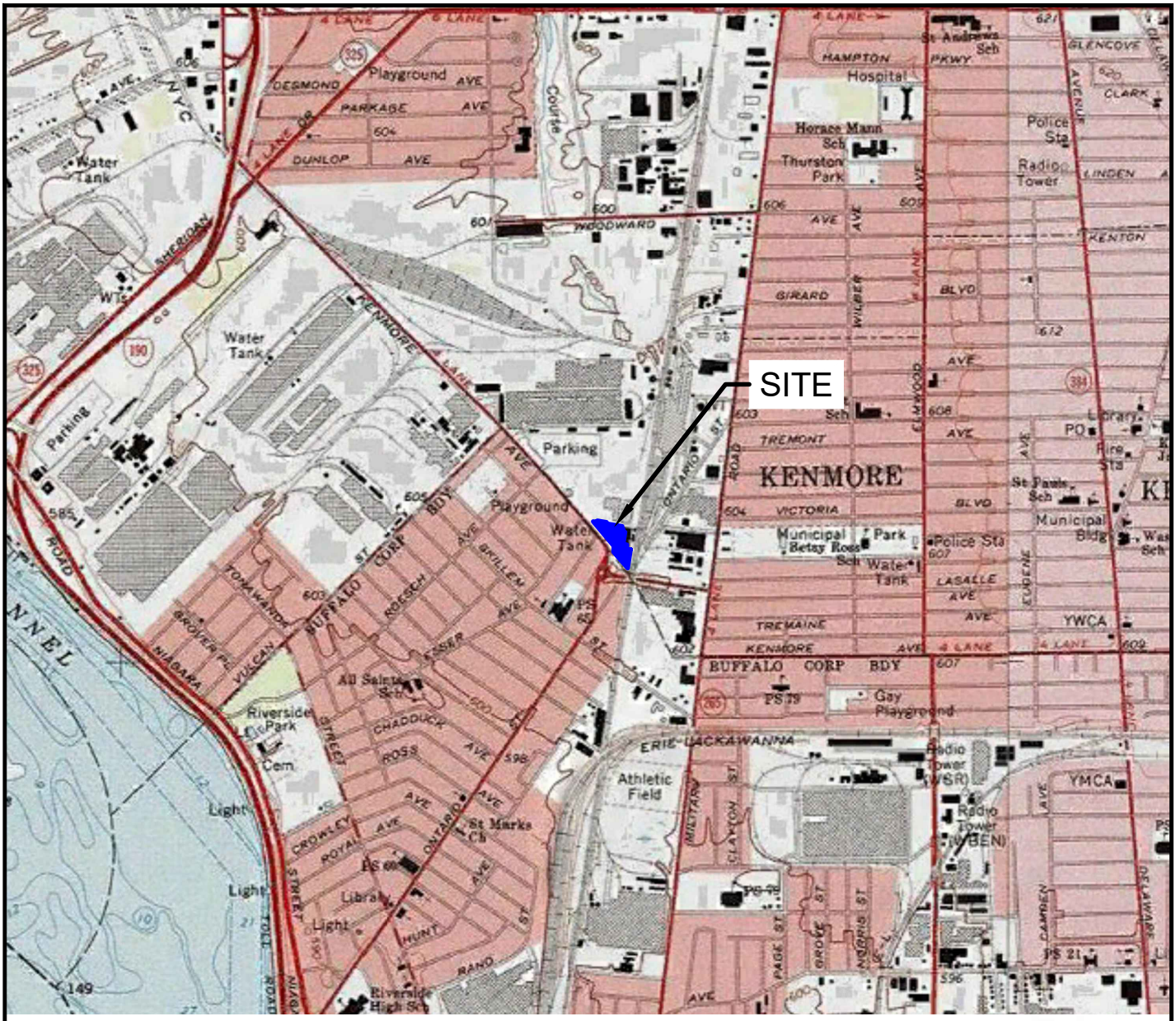
Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

FIGURE 1

F:\CAD\Benchmark\Frontier Insulation\RIWP\HASP\Figure 1; Site Location and Vicinity Map.dwg



SCALE: 1 INCH = 2000 FEET
SCALE IN FEET
(approximate)

BENCHMARK

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0602-021-001

DATE: APRIL 2023

DRAFTED BY: CMS

SITE LOCATION AND VICINITY MAP

SITE HEALTH AND SAFETY PLAN

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

PREPARED FOR

WOOD AND BROOKS PROPERTIES LLC

FIGURE 2

F:\CAD\Benchmark\Frontier Insulation\RIWP\HASP\Figure 2; Site Plan (Aerial).dwg

N

100' 0' 100' 200'

SCALE: 1 INCH = 100 FEET
SCALE IN FEET
(approximate)

LEGEND:

BCP BOUNDARY

PARCEL BOUNDARY

BENCHMARK

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: B0602-021-001

DATE: APRIL 2023

DRAFTED BY: CMS

SITE PLAN (AERIAL)

SITE HEALTH AND SAFETY PLAN

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

PREPARED FOR

WOOD AND BROOKS PROPERTIES LLC

ATTACHMENT A

EMERGENCY RESPONSE PLAN

BENCHMARK

EMERGENCY RESPONSE PLAN
for
BROWNFIELD CLEANUP PROGRAM
REMEDIAL INVESTIGATION

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

March 2023 0602-021-001

Prepared for:

WOOD AND BROOKS PROPERTIES LLC

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2101 KENMORE AVENUE SITE
HEALTH AND SAFETY PLAN FOR RI ACTIVITIES
ATTACHMENT A: EMERGENCY RESPONSE PLAN

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1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for remedial investigation activities at the 2101 Kenmore Avenue Site (BCP Site No. C915391) in Tonawanda, New York. This attachment of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Evaluate hazards of activities identified in Section 1.5 of the HASP and address potential injuries from electrical and mechanical hazards, heavy equipment, environmental conditions, fire hazards, heavy lifting, and cold or heat exposure.

Type of Emergency:

1. Medical, due to physical injury

Source of Emergency:

1. Slip/trip/fall

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

A minimum of 1 first aid kit and 1 fire extinguisher are required. Fire extinguishers should also be in each piece of heavy equipment. The contents and availability of the first aid kit should vary depending on the hazards identified in the specific activities outlined in section 1.5 of the HASP.

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark-TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: *Nathan Munley*
Work: (716) 856-0599
Mobile: (716) 289-1072

Corporate Health and Safety Director: *Thomas H. Forbes*
Work: (716) 856-0599
Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): *Nathan Munley*
Work: (716) 856-0599
Mobile: (716) 289-1072

Alternate SSHO: *Christopher Boron*
Work: (716) 856-0599
Mobile: (716) 864-2726

KENMORE MERCY HOSPITAL (ER):	(716) 447-6100
FIRE:	911
AMBULANCE:	911
TOWN OF TONAWANDA POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

p/o 2101 Kenmore Avenue
Tonawanda, New York 14207
Site Phone Number: Benchmark-TurnKey Staff Cell Phones to be used.

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's Site Health and Safety Officer to ensure all personnel entering the site understand an adequate method of internal communication. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all Benchmark-TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly

site. If any worker cannot be accounted for, notification is given to the SSHO (***Nathan Munley*** or ***Christopher Boron***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the Site Safety and Health Officer in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Kenmore Mercy Hospital.

- Inhalation: Move to fresh air and, if necessary, transport to Hospital.

- Ingestion: Decontaminate and transport to Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Hospital via ambulance. The Site Health and Safety Officer will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Kenmore Mercy Hospital (see Figure 1):

The following directions describe the best route from the Site to Kenmore Mercy Hospital:

- Turn left (southeast) from Site onto Kenmore Avenue toward the Kenmore Ave./Ontario St./Dunston Ave. traffic circle.
- Continue through traffic circle and follow Kenmore Avenue (east)
- Turn left (north) onto Military Road
- Turn right (east) onto Woodward Avenue
- Turn left (north) onto Elmwood Avenue
- Turn left (west) into Kenmore Mercy Hospital
  (2.0 miles total)

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURE

FIGURE 1

F:\CAD\Benchmark\Frontier Insulation\RWP\Figure 1; Hospital Route Map.dwg

- Turn left (southeast) from Site onto Kenmore Avenue toward the Kenmore Ave./Ontario St./Dunston Ave. traffic circle.
- Continue through traffic circle and follow Kenmore Avenue (east)
- Turn left (north) onto Military Road
- Turn right (east) onto Woodward Avenue
- Turn left (north) onto Elmwood Avenue
- Turn left (west) into Kenmore Mercy Hospital (2.0 miles total)

N

1000' 0' 1000' 2000'

SCALE: 1 INCH = 1000 FEET
SCALE IN FEET
(approximate)

BENCHMARK

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: B0602-021-001

DATE: APRIL 2023

DRAFTED BY: CMS

HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

2101 KENMORE AVENUE SITE
BCP SITE NO. C915391
TONAWANDA, NEW YORK

PREPARED FOR

WOOD AND BROOKS PROPERTIES LLC

ATTACHMENT B

HOT WORK PERMIT FORM

BENCHMARK

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

ATTACHMENT C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

BENCHMARK

Appendix C1
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix C2
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX B

COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

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overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

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Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

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2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX C

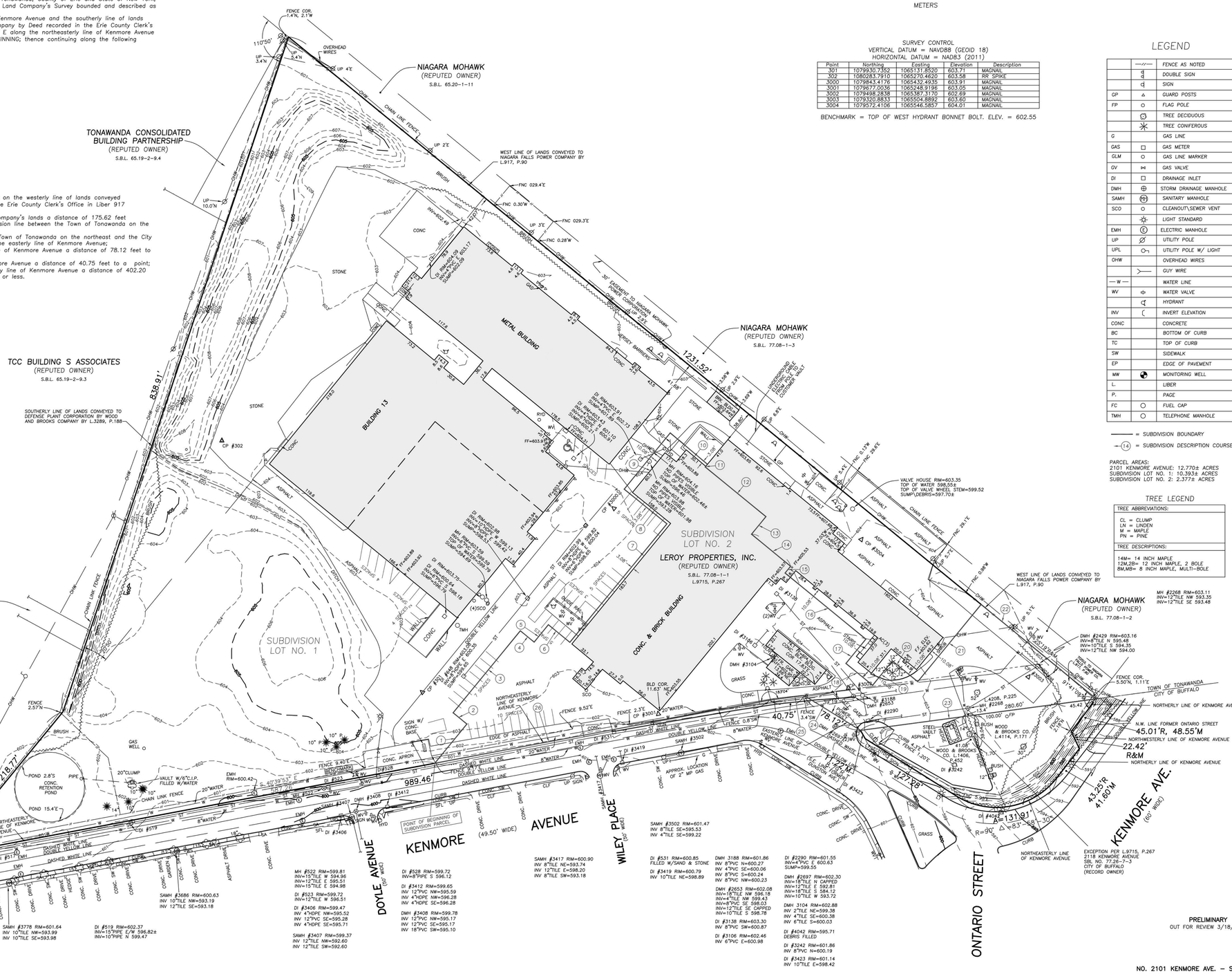
CIVIL DESIGN DRAWINGS

SUBDIVISION LOT NO. 2 DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND, situate in the Town of Tonawanda, County of Erie and State of New York, being part of Lot No. 42, Township 12, Range 8 of the Holland Land Company's Survey bounded and described as follows:

COMMENCING at the intersection of the northeasterly line of Kenmore Avenue and the southerly line of lands conveyed to Defense Plant Corporation by Wood and Brooks company by Deed recorded in the Erie County Clerk's Office in Liber 3289 of Deeds at page 188; thence S 40°39'53" E along the northeasterly line of Kenmore Avenue (49.5 feet wide) a distance of 587.26 feet to the POINT of BEGINNING; thence continuing along the following twenty-six courses:

1) S80°38'13"E a distance of 59.70' to a point;
2) thence N 09°21'47" E a distance of 21.00 feet to a point;
3) thence S 80°38'13" E a distance of 125.00 feet to a point;
4) thence S 09°21'47" W a distance of 21.00 feet to a point;
5) thence S 80°38'13" E a distance of 26.53 feet to a point;
6) thence S09°21'47"W a distance of 32.70 feet to a point;
7) thence S80°37'37"E a distance of 180.61 feet to a point;
8) thence N09°01'13"E a distance of 64.98 feet to a point;
9) thence S80°37'56"E a distance of 85.70 feet to a point;
10) thence S10°07'59"W a distance of 57.37 feet to a point;
11) thence N80°24'12"W a distance of 4.08 feet to a point;
12) thence S09°15'52"W a distance of 92.49 feet to a point;
13) thence N80°37'37"W a distance of 26.78 feet to a point;
14) thence S09°22'23"W a distance of 59.62 feet to a point;
15) thence N80°37'37"W a distance of 10.26 feet to a point;
16) thence S09°18'14"W a distance of 123.11 feet to a point;
17) thence N80°36'24"W a distance of 37.02 feet to a point;
18) thence S09°24'05"W a distance of 40.65 feet to a point;
19) thence S80°56'26"E a distance of 37.09 feet to a point;
20) thence S09°26'09"W a distance of 38.65 feet to a point;
21) thence S 80°35'18" E a distance of 117.84 feet to a point on the westerly line of lands conveyed to the Niagara Falls Power Company by deed recorded in the Erie County Clerk's Office in Liber 917 of Deeds at page 90;
22) thence S 09°19'07" W along the west line of said Power Company's lands a distance of 175.62 feet to the northerly line of Kenmore Avenue, being also the division line between the Town of Tonawanda on the northeast and the City of Buffalo on the southwest;
23) thence S 37°36'04" W along said division line between the Town of Tonawanda on the northeast and the City of Buffalo on the southwest a distance of 280.60 feet to the easterly line of Kenmore Avenue;
24) thence N 01°43'07" E and continuing along the easterly line of Kenmore Avenue a distance of 78.12 feet to the northeasterly line of Kenmore Avenue;
25) thence N 37°35'53" W along the northeasterly line of Kenmore Avenue a distance of 40.75 feet to a point;
26) thence N 40°39'53" W and continuing along the northeasterly line of Kenmore Avenue a distance of 402.20 feet to the point of beginning, containing 2.377 acres more or less.



SURVEY CONTROL
VERTICAL DATUM = NAVD88 (GEOID 18)
HORIZONTAL DATUM = NAD83 (2011)

Point	Northing	Easting	Elevation	Description
301	1079930.7352	1065131.8520	603.71	MAGNAIL
302	1080283.7910	1065270.4620	603.58	RR SPIKE
3000	1079843.4176	1065432.4935	603.91	MAGNAIL
3001	1079677.0036	1065248.9196	603.05	MAGNAIL
3002	1079498.2838	1065387.3170	602.69	MAGNAIL
3003	1079320.8833	1065504.8892	603.60	MAGNAIL
3004	1079572.4106	1065546.5857	604.01	MAGNAIL

BENCHMARK = TOP OF WEST HYDRANT BONNET BOLT. ELEV. = 602.55

LEGEND

	—//—	FENCE AS NOTED
		DOUBLE SIGN
		SIGN
GP	△	GUARD POSTS
FP	○	FLAG POLE
		TREE DECIDUOUS
	✳	TREE CONIFEROUS
G		GAS LINE
GAS	□	GAS METER
GLM	○	GAS LINE MARKER
GV	⋈	GAS VALVE
DI	□	DRAINAGE INLET
DMH	⊕	STORM DRAINAGE MANHOLE
SAMH	Ⓜ	SANITARY MANHOLE
SCO	○	CLEANOUT\SEWER VENT
	☼	LIGHT STANDARD
EMH	Ⓔ	ELECTRIC MANHOLE
UP	∅	UTILITY POLE
UPL		UTILITY POLE W/ LIGHT
OHW		OVERHEAD WIRES
	≻—	GUY WIRE
— W —		WATER LINE
WV		WATER VALVE
		HYDRANT
INV	(	INVERT ELEVATION
CONC		CONCRETE
BC		BOTTOM OF CURB
TC		TOP OF CURB
SW		SIDEWALK
EP		EDGE OF PAVEMENT
MW	●	MONITORING WELL
L.		LIBER
P.		PAGE
FC	○	FUEL CAP
TMH	○	TELEPHONE MANHOLE

—— = SUBDIVISION BOUNDARY
←⑭ = SUBDIVISION DESCRIPTION COURSE IDENTIFIER

PARCEL AREAS:
2101 KENMORE AVENUE: 12.770± ACRES
SUBDIVISION LOT NO. 1: 10.393± ACRES
SUBDIVISION LOT NO. 2: 2.377± ACRES

TREE LEGEND

TREE ABBREVIATIONS:

CL = CLUMP
LN = LINDEN
M = MAPLE
PN = PINE

TREE DESCRIPTIONS:

14M= 14 INCH MAPLE
12M,2B= 12 INCH MAPLE, 2 BOLE
8M,MB= 8 INCH MAPLE, MULTI-BOLE

WARNING: ALTERING THIS DOCUMENT IS IN VIOLATION OF THE LAW EXCEPTING AS PROVIDED IN SECTION 7209, PART 2 OF THE NEW YORK STATE EDUCATION LAW.

THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATEMENT OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

NOTE: THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

NOTE: WHEN ANY DESIGN OR RECONSTRUCTION INVOLVES A NEW CONNECTION TO EXISTING STORM OR SANITARY STRUCTURE AS SHOWN ON THIS DRAWING IT IS STRONGLY ADVISED THAT THE ENGINEER OR ARCHITECT CONTACT THE APPROPRIATE OPERATING AUTHORITY TO VERIFY THAT THE STRUCTURE BEING CONNECTED TO IS APPROPRIATE FOR ANY SUCH STORM OR SANITARY CONNECTION PRIOR TO PROCEEDING WITH DESIGN.

ALL UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE. BEFORE YOU DIG, DRILL, OR BLAST, CALL DIG SAFELY NEW YORK AT 1-800-962-7962

9/8/2022 9:36:13 AM

CADD: 4806 2101 KENMORE AVE SUBDIVISION.DWG

PRELIMINARY
OUT FOR REVIEW 3/18/2022

NO. 2101 KENMORE AVE. – SBL 77.08-1-1
NO. 2116 KENMORE AVE. – SBL 77.26-7-2

DATE OF SURVEY	DATE OF REVISION	COMMENT	INT.
11/5/2021	1/18/2022	ADD PARCEL AREAS	MJC
11/5/2021	2/9/2022	REVISE DESCRIPTION	MJC
11/5/2021	3/18/2022	REVISE SUBDIVISION PARCEL	MJC

This map void unless Embossed with New York State Licensed Land Surveyors Seal No. 50510

Rosanne Frandina, PE, LS

SUBDIVISION MAP
PART OF LOT 42, TWP 12, RGE 8
OF THE HOLLAND COMPANY'S SURVEY
TOWN OF TONAWANDA, COUNTY OF ERIE
– ALSO –
PART OF LOT 1 OF THE JONES TRACT
AND PART OF FORMER ONTARIO STREET
CITY OF BUFFALO, COUNTY OF ERIE
STATE OF NEW YORK

FRANDINA ENGINEERING and LAND SURVEYING, PC
CIVIL ENGINEERS and LAND SURVEYORS
1701 Hertel Avenue, Buffalo, New York 14216
Phone: (716) 883-1299
www.FRANDINA.com

DATE : 11/5/2021 SHEET : 1 OF 1 DWN BY : MC
JOB NO.: 4806 SCALE : 1" = 50' CHK'D BY : RF

Kideney Architects
Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3837 | kideney.com

STAMP AND SIGNATURE:

CONSULTANT:

WOOD AND BROOKS CO. FACTORY COMPLEX
2101 KENMORE AVE, BUFFALO, NY 14207

BID DOCUMENTS

SITE SURVEY

WARNING:

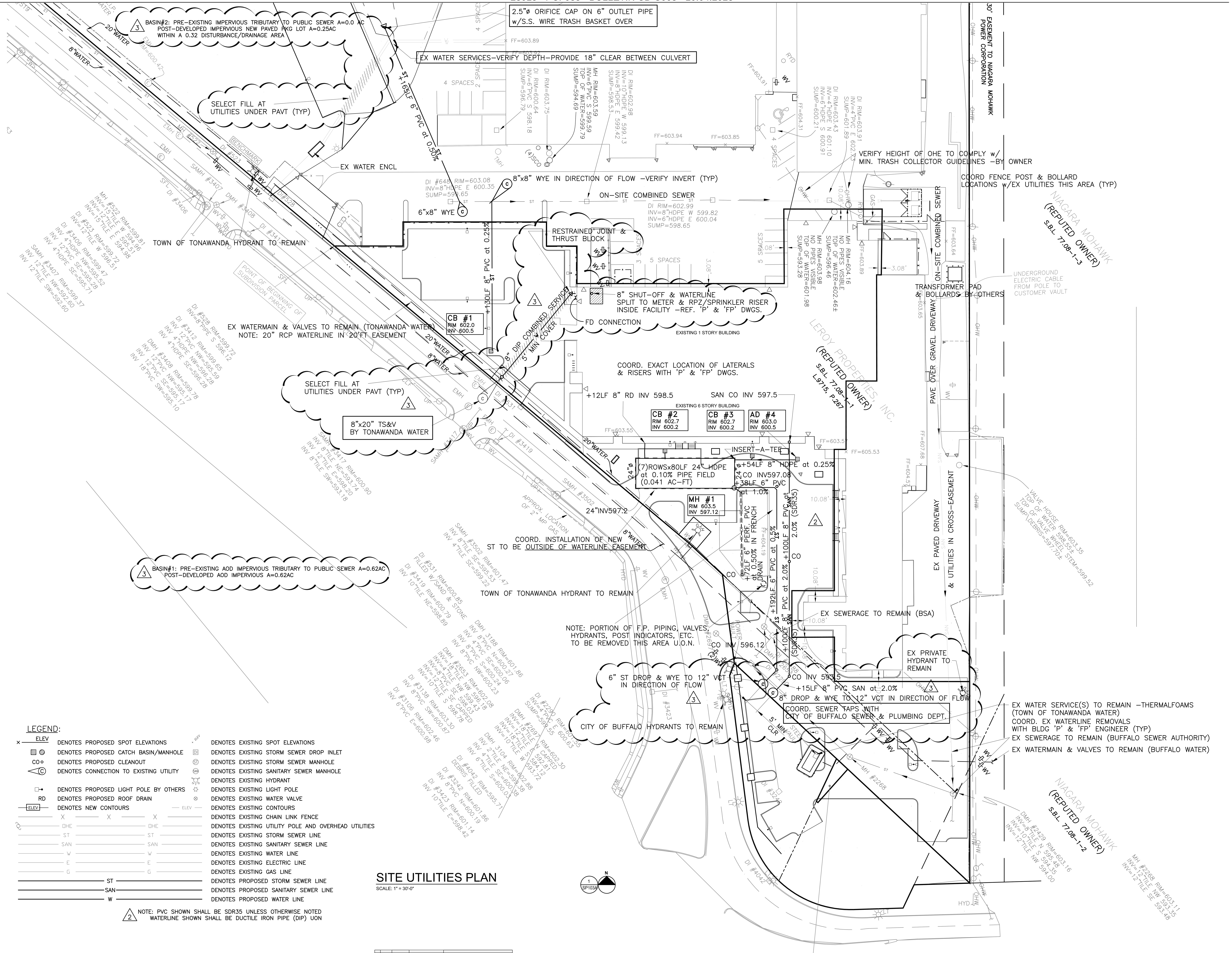
ANY ALTERATIONS TO THIS DOCUMENT NOT CONFORMING TO SECTION 7307, NEW YORK STATE EDUCATION LAW ARE STRICTLY PROHIBITED

No.	DATE	DESCRIPTION

REVISIONS:

CHECKED BY: -
DRAWN BY: -
KA PROJECT NO. 2021038.00
DATE: 09/08/2022

TS001
DRAWING NO.



LEGEND:

Symbol	Proposed	Symbol	Existing
× ELEV	DENOTES PROPOSED SPOT ELEVATIONS		DENOTES EXISTING SPOT ELEVATIONS
	DENOTES PROPOSED CATCH BASIN/MANHOLE		DENOTES EXISTING STORM SEWER DROP INLET
CO	DENOTES PROPOSED CLEANOUT		DENOTES EXISTING STORM SEWER MANHOLE
C	DENOTES CONNECTION TO EXISTING UTILITY		DENOTES EXISTING SANITARY SEWER MANHOLE
			DENOTES EXISTING HYDRANT
	DENOTES PROPOSED LIGHT POLE BY OTHERS		DENOTES EXISTING LIGHT POLE
RD	DENOTES PROPOSED ROOF DRAIN		DENOTES EXISTING WATER VALVE
ELEV	DENOTES NEW CONTOURS	ELEV	DENOTES EXISTING CONTOURS
		X	DENOTES EXISTING CHAIN LINK FENCE
		OHE	DENOTES EXISTING UTILITY POLE AND OVERHEAD UTILITIES
		ST	DENOTES EXISTING STORM SEWER LINE
		SAN	DENOTES EXISTING SANITARY SEWER LINE
		W	DENOTES EXISTING WATER LINE
		E	DENOTES EXISTING ELECTRIC LINE
		G	DENOTES EXISTING GAS LINE
ST			DENOTES PROPOSED STORM SEWER LINE
SAN			DENOTES PROPOSED SANITARY SEWER LINE
W			DENOTES PROPOSED WATER LINE

NOTE: PVC SHOWN SHALL BE SDR35 UNLESS OTHERWISE NOTED. WATERLINE SHOWN SHALL BE DUCTILE IRON PIPE (DIP) UON

SITE UTILITIES PLAN

SCALE: 1" = 30'-0"

1 SP103A

Kideney Architects
Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3837 | kideney.com

STAMP AND SIGNATURE:

tredo ENGINEERS
755 Seneca Street
Suite 202
Buffalo, New York 14210
716.876.7147 ph

CONSULTANT:

WOOD & BROOKS

2101 KENMORE AVE, BUFFALO, NY 14207

PERMIT SET

SITE UTILITIES PLAN

No.	DATE	DESCRIPTION
3	9.13.23	REVISED
2	8.24.23	REVISED
1	8.08.23	WATER TAP

REVISIONS:

CHECKED BY: MJE	DRAWN BY: AVM
KA PROJECT NO.: 2021038.00	DATE: 1/30/2023

RECEIVED BY
OCT 04 2023
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SP103A
DRAWING NO.

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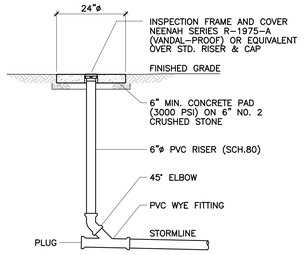
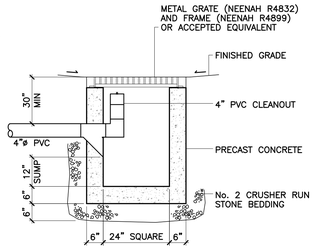
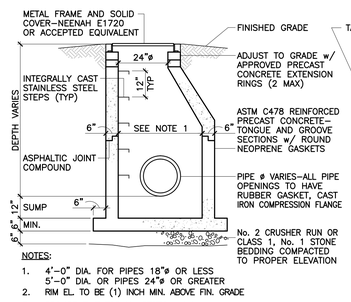


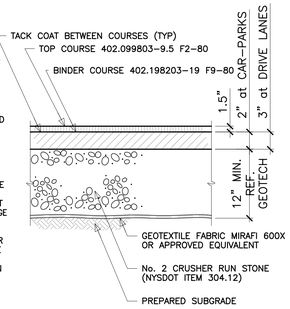
5 STORMLINE CLEANOUT AND RISER DETAIL



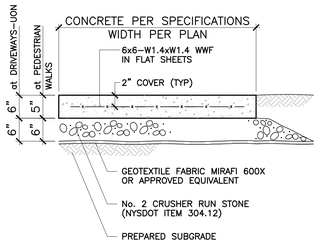
4 TYPICAL CATCH BASIN



3 TYPICAL STORM MANHOLE

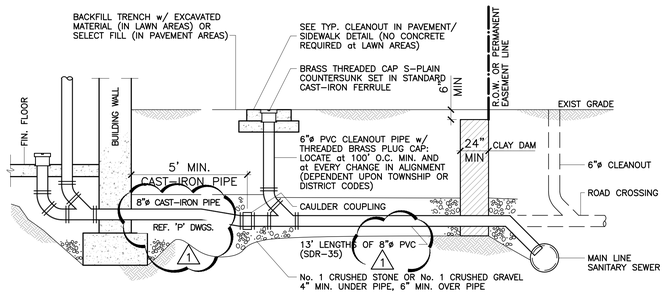


2 TYPICAL BITUMINOUS PAVEMENT SECTION

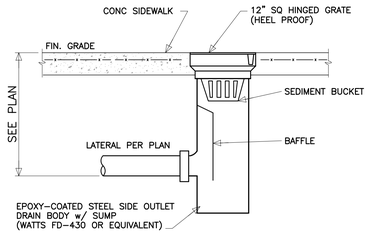


NOTE: CONC. SHALL BE 4000 PSI at 28-DAYS, 6% AIR-ENTRAINED, 4" MAX. SLUMP-PROVIDE LT. BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAFFIC

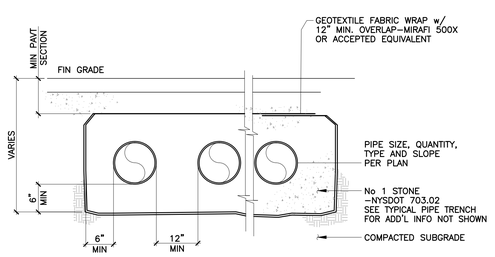
1 TYPICAL CONCRETE SIDEWALK



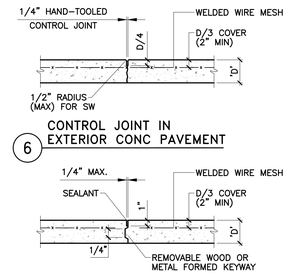
11 COMMERCIAL SERVICE DETAIL



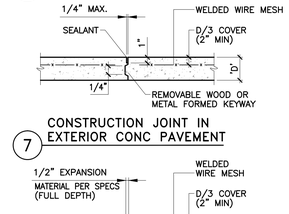
10 AREA DRAIN



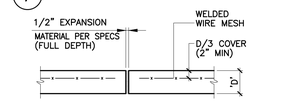
9 PIPED DETENTION CROSS-SECTION



6 CONTROL JOINT IN EXTERIOR CONC PAVEMENT



7 CONSTRUCTION JOINT IN EXTERIOR CONC PAVEMENT



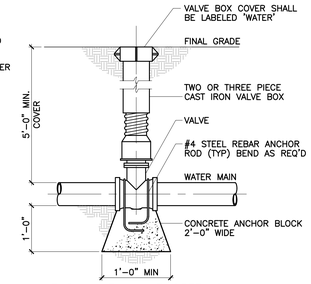
8 EXPANSION JOINT IN EXTERIOR CONC PAVEMENT

RESIDENTIAL SERVICE NOTES:

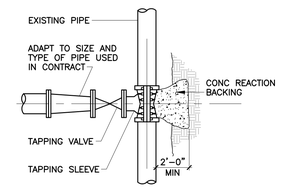
1. THE SERVIDE LATERAL MUST BE INSTALLED A MIN. OF 10" ABOVE THE BASEMENT FLOOR (IF APPLICABLE). WHERE LOCAL BUILDING ORDINANCES REQUIRE A GREATER DISTANCE, THE CONTRACTOR SHALL COMPLY TO THE MORE STRINGENT.
2. PVC PIPE MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF ASTM D-3033/D-3034. CAST-IRON PIPE MATERIAL SHALL BE EXTRA HEAVY ASTM A74-42.
3. PURSUANT TO DISTRICT RULES AND REGULATIONS, PIPE SHALL BE LAID AT 1/4" PER FOOT GRADE. ANY VARIANCE MUST BE APPROVED BY THE DISTRICT MANAGER. IN NO CASE SHALL PIPE GRADE BE LESS THAN 1/8" PER FOOT.
4. A MANUAL VALVE SHALL BE INSTALLED ON ALL BASEMENT DRAIN LINES.
5. VENTS MUST BE INSTALLED IN LAWN AREAS, NOT IN SIDEWALK OR DRIVEWAY AREAS.
6. SELECT BACKFILL IS REQUIRED UNDER PAVED AREAS.
7. CONCRETE ENCASEMENT IS REQUIRED IF COVER DEPTH IS LESS THAN 4'-0" UNDER PAVED AREAS.
8. MINIMUM DEPTH OF COVER SHALL BE 3'-0".

NOTES:
1. PIPE SHALL BE IN ACCORDANCE w/ MANUFACTURER'S RECOMMENDATIONS
2. TRENCHING OPERATIONS SHALL INCLUDE ALL NECESSARY DEWATERING
3. TRENCH DETAILS ARE ONLY SHOWN FOR MATERIAL PLACEMENT PURPOSES
4. ANY OSHA APPROVED MOVEABLE PROTECTIVE TRENCH SHIELD MAY BE USED.

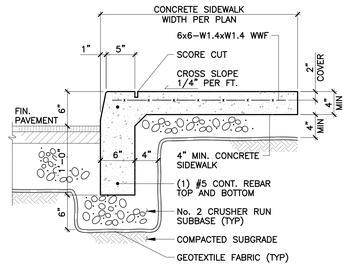
MATERIALS:
(A) No. 1 STONE WITH A GRADATION CONFORMING TO NYSDOT SECTION 703-02, LATEST EDITION. THE CRUSHED STONE SHALL BE WELL GRADED WITH NO PARTICLES LARGER THAN (1) INCH AND HAVING A MAX. GRADATION MEETING THE LIMITS DESCRIBED IN THE SPECIFICATIONS. NO SLAG SHALL BE USED IN PLACE OF MATERIAL 'A'.
(B) No. 2 CRUSHER RUN STONE OR No. 2 RUN OF CRUSHED GRAVEL WITH A GRADATION CONFORMING WITH NYSDOT SECTION 304-2.02 TYPE 4 AND NYSDOT SECTION 703-02 (COMPACTED IN 6" LIFTS TO 90% DENSITY). NO SLAG SHALL BE USED IN PLACE OF MATERIAL 'B'.



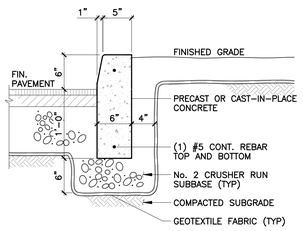
15 TYP. LINE VALVE SETTING WITH ANCHORED BLOCKING
NOTE: TO BE USED ON BOTH GATE AND BUTTERFLY VALVES



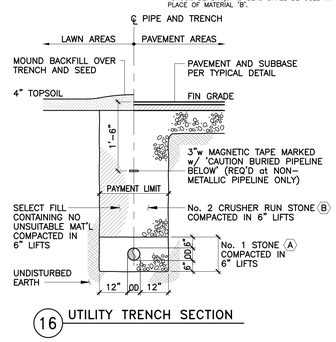
14 TYPICAL TAPPING SLEEVE AND VALVE DETAIL
≥ 3-INCH PIPE



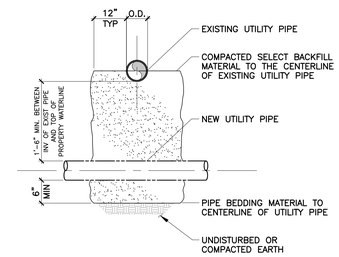
13 CONCRETE SIDEWALK WITH INTEGRAL CURB



12 TYPICAL CONCRETE CURB



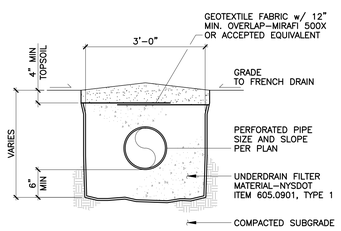
16 UTILITY TRENCH SECTION



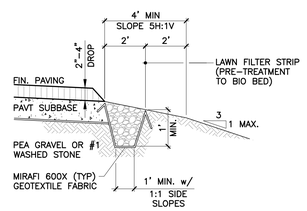
19 TYPICAL PIPE CROSSING

PIPE CROSSING NOTES:

1. ALL EXISTING UTILITIES MUST BE SUPPORTED DURING CONSTRUCTION OF THE NEW WATERLINE. COST SHALL BE INCLUDED IN THE PIPE PRICE.
2. WHEN CROSSING A SEWERLINE WITH A NEW WATERLINE, ONE FULL PIPE LENGTH (18 FEET MIN) SHALL BE USED AT THE POINT OF CROSSING. THE PIPE LINE SHALL BE PLACED SO THAT BOTH JOINT ENDS ARE AS FAR AS POSSIBLE FROM THE EXISTING SEWERLINE.



18 TYP. FRENCH DRAIN SECTION



17 GRAVEL DIAPHRAGM/ FILTER STRIP SECTION

RECEIVED BY
AUG 28 2023
B C C

Kideney Architects
Kideney Architects, P.C.
ARCHITECTS | PLANNERS
INTERIORS | LANDSCAPE DESIGN
143 Genesee Street
Buffalo, New York 14203
716.249.3837 | kideney.com

STAMP AND SIGNATURE

tredo
ENGINEERS
755 Seneca Street
Suite 202
Buffalo, New York 14210
716.876.7147 ph

CONSULTANT:

WOOD & BROOKS
2101 KENMORE AVE, BUFFALO, NY 14207

PERMIT SET

SITEWORK DETAILS

No.	DATE	DESCRIPTION
1	8.24.23	REVISED

REVISIONS:

CHECKED BY: MJE	DRAWN BY: AVM
KA PROJECT NO: 2021038.00	DATE: 1/30/2023

SP201
DRAWING NO.

223015-334900-01-00

BUFFALO CONSTRUCTION CONSULTANTS, INC.
SUBMITTAL ITEM COVER SHEET

PROJECT WOOD AND BROOKS CO.

Job No. - 23015

Architect - 2021038.00

Contract # C131 Contractor Occhino Corp Date 9/26/2023

Spec Section 334900 Spec Section Title Retention Structure

Spec Sect Paragraph _____ Item Description Detention System

(Only ONE item per coversheet / Attach separate coversheet to EACH submittal copy)

Supplier Core & Main Manufacturer ADS Inc. Quantity _____

Submittal Item Status (check one) ☑ ORIGINAL - or - ☐ RESUBMITTAL

Submittal Item Type (check one)

☐ LEED	☐ Quality Control / Assurance		
☑ Shop Drawing	☐ Sample / Color Selector	☐ Test Report	☐ Closeout Item
☑ Product Data	☐ Startup Requirement	☐ Warranty	☐ _____

Remarks _____

I have reviewed this submittal item and verify that it does meet the specifications except as noted above.

Amir K ocer — 9/26/2023

(Contractor's Signature) *(Date)*

For General Contractor/Construction Manager Use Only

RECVD FROM CONTRACTOR	SENT TO ARCH / ENG
Date 09.28.23 Copies	Date 09.28.23 Copies
RECVD FROM ARCH / ENG	SENT TO CONTRACTOR
Date Copies	Date Copies
	Submittal # 23015-334900-01-00

Remarks

REVIEWED BY
09/28/2023
B C C

Cc

Review Date

By

RECEIVED BY
Sep 28 2023
B C C

Contractor is not relieved from compliance with contract documents and remains solely responsible for all coordination, dimensions, quantities, etc.

Date

APP

tredo
ENGINEERS

REVIEWED	☐
MAKE CORRECTIONS NOTED	☒
REVISE AND RESUBMIT	☐
REJECTED	☐

REVIEW IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THIS PROJECT AND SUBMITTAL HAS BEEN REVIEWED FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS, QUANTITIES AND COMPLIANCE WITH CONTRACT DOCUMENTS AND FOR THE INFORMATION THAT PERTAINS TO FABRICATION PROCESSES, CONSTRUCTION TECHNIQUES AND COORDINATION OF THIS WORK WITH ALL TRADES WHICH WILL BE AFFECTED THEREBY. THIS REVIEW IS NULL AND VOID IF SHOP DRAWINGS DEVIATE FROM CONTRACT DOCUMENTS AND DO NOT INDICATE OR NOTE SUCH DEVIATIONS.

A.Marino DATE: 10/10/23

NTS.

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	IAN KUCHMAN 585-472-1312 IAN.KUCHMAN@ADSPIPE.COM
ADS SALES REP:	DAVID ENSER 716-860-4608 DAVID.ENSER@ADSPIPE.COM
PROJECT NO:	S356040

Advanced Drainage Systems, Inc.

WOOD & BROOKS

TONAWANDA, NY

ADS RETENTION/DETENTION PIPE SYSTEM SPECIFICATION

SCOPE
THIS SPECIFICATION DESCRIBES ADS RETENTION/DETENTION PIPE SYSTEMS FOR USE IN NON-PRESSURE GRAVITY-FLOW STORM WATER COLLECTION SYSTEMS UTILIZING A CONTINUOUS OUTFALL STRUCTURE.

PIPE REQUIREMENTS
ADS RETENTION/DETENTION SYSTEMS MAY UTILIZE ANY OF THE VARIOUS PIPE PRODUCTS BELOW:
- N-12® STIB PIPE (PER AASHTO) SHALL MEET AASHTO M 294, TYPE S OR ASTM F2306
- N-12® STIB PIPE (PER ASTM F2648) SHALL MEET ASTM F2648
- N-12® MEGA GREEN™ STIB SHALL MEET ASTM F2648

ALL PRODUCTS SHALL HAVE A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS. ALL STIB PIPE PRODUCTS ARE AVAILABLE AS PERFORATED OR NON-PERFORATED. WTIB PIPE PRODUCTS ARE ONLY AVAILABLE AS NON-PERFORATED. PRODUCT-SPECIFIC PIPE SPECIFICATIONS ARE AVAILABLE IN THE DRAINAGE HANDBOOK SECTION 1 "SPECIFICATIONS".

JOINT PERFORMANCE
PLAIN END / SOIL-TIGHT (STIB):
STIB PIPE SHALL BE JOINED USING A BELL AND SPIGOT JOINT. THE BELL AND SPIGOT JOINT SHALL MEET THE SOIL-TIGHT REQUIREMENTS OF ASTM F2306 AND GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.

PLAIN END PIPE AND FITTINGS CONNECTIONS SHALL BE JOINED WITH COUPLING BANDS COVERING AT LEAST TWO FULL CORRUGATIONS ON EACH END OF THE PIPE. GASKETED SOIL-TIGHT COUPLING BAND CONNECTIONS SHALL INCORPORATE A CLOSED-CELL SYNTHETIC EXPANDED RUBBER GASKET MEETING THE REQUIREMENTS OF ASTM D1056 GRADE 2A2. GASKETS, WHEN APPLICABLE, SHALL BE INSTALLED BY THE PIPE MANUFACTURER.

FITTINGS
FITTINGS SHALL CONFORM TO ASTM F2306 AND MEET JOINT PERFORMANCE INDICATED ABOVE FOR FITTINGS CONNECTIONS. CUSTOM FITTINGS ARE AVAILABLE AND MAY REQUIRE SPECIAL INSTALLATION CRITERION.

INSTALLATION
INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND ADS RECOMMENDED INSTALLATION GUIDELINES, WITH THE EXCEPTION THAT MINIMUM COVER IN NON-TRAFFIC AREAS FOR 12-60 INCH (300-1500 mm) DIAMETERS SHALL BE 1 FT (0.3 m). MINIMUM COVER IN TRAFFICKED AREAS FOR 12-36 INCH (300-900 mm) DIAMETERS SHALL BE 1 FT (0.3 m) AND FOR 42-60 INCH (1050-1500 mm) DIAMETERS, THE MINIMUM COVER SHALL BE 2 FT (0.6 m). BACKFILL SHALL CONSIST OF CLASS I (COMPACTED) OR CLASS II (MINIMUM 95% SPD) MATERIAL, WITH THE EXCEPTION THAT 60 INCH (1500 mm) SYSTEMS SHALL USE CLASS I MATERIAL ONLY. MINIMUM COVER HEIGHTS DO NOT ACCOUNT FOR PIPE BUOYANCY. REFER TO ADS TECHNICAL NOTE 5.05 "PIPE FLOTATION" FOR BUOYANCY DESIGN CONSIDERATIONS. MAXIMUM COVER OVER SYSTEM USING STANDARD BACKFILL IS 8 FT (2.4 m); CONTACT A REPRESENTATIVE WHEN MAXIMUM FILL HEIGHT MAY BE EXCEEDED. ADDITIONAL INSTALLATION REQUIREMENTS ARE PROVIDED IN THE DRAINAGE HANDBOOK SECTION 6 "RETENTION/DETENTION".

ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES:

1) ALL ELEVATIONS, DIMENSIONS AND LOCATIONS OF RISERS, INLETS AND OUTLETS, SHALL BE VERIFIED BY THE ENGINEER PRIOR TO RELEASING FOR FABRICATION.

2) IN SITUATIONS WHERE A FINE-GRAINED BACKFILL MATERIAL IS USED ADJACENT TO THE PIPE SYSTEM, AND ESPECIALLY INVOLVING GROUND WATER CONDITIONS, CONSIDERATION SHOULD BE GIVEN TO THE USE OF GASKETED PIPE JOINTS. AT THE VERY LEAST THE PIPE JOINTS SHOULD BE WRAPPED IN A SUITABLE, NON-WOVEN GEOTEXTILE FABRIC TO PREVENT INFILTRATION OF FINES INTO THE PIPE SYSTEM.

3) CONSIDERATION FOR CONSTRUCTION EQUIPMENT LOADS MUST BE TAKEN INTO ACCOUNT.

4) ALL PIPE DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

5) ALL RISERS TO BE FIELD EXTENDED OR TRIMMED TO FINAL GRADE.

THE UNDERSIGNED HERBY APPROVES THE ATTACHED PAGES.

CUSTOMER _____ DATE _____

RECEIVED BY
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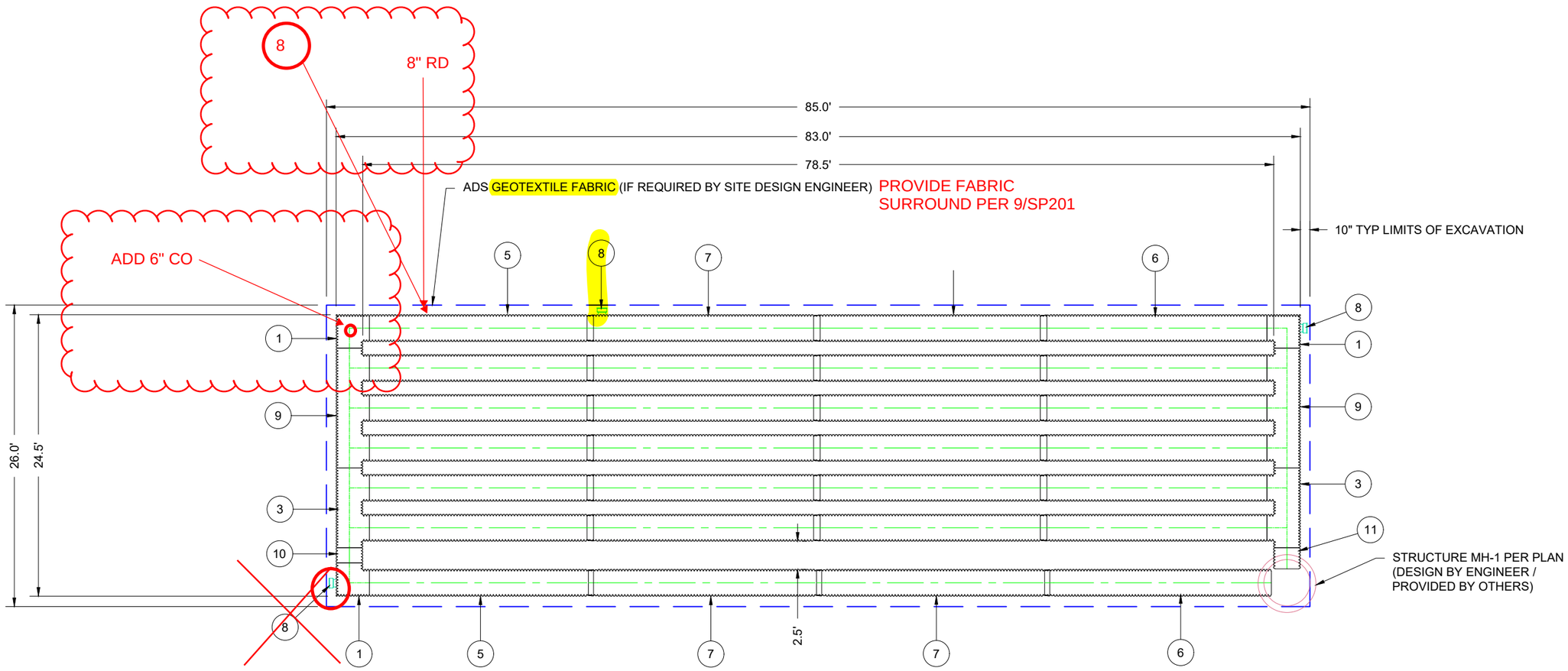
BILL OF MATERIALS

223015-334900-01-00

*THE COMPONENTS AND QUANTITIES LISTED HEREIN ARE NOT INTENDED TO BE A COMPREHENSIVE MATERIAL LIST.
EXTRA COMPONENTS, NOT LISTED HEREIN, MAY BE NECESSARY TO COMPLETE THE CONSTRUCTION OF THE SYSTEM.

ITEM	QTY.	PART #	DESCRIPTION	MATERIAL	VENDOR	NOTE
1	3	2498AN	24" X 90° MANIFOLD BEND	HDPE	ADS	SEE DETAIL
3	2	2452AN	24" DOUBLE MANIFOLD TEE	HDPE	ADS	SEE DETAIL
5	7	STICK-1	24" PIPE STICK : SOLID	HDPE	ADS	FIELD CUT
6	7	STICK-2	24" PIPE STICK : SOLID	HDPE	ADS	FIELD CUT
7	14	2485-0020IB	24" PIPE STICK : SOLID	HDPE	ADS	STIB
8	3	TBD	8" INSERTA TEE	VARIES	ADS	FIELD LOCATE
	20	2465AA	24" SPLIT BAND COUPLER	HDPE	ADS	NOT SHOWN
	1	TBD BY ENGINEER	ADS GEOTEXTILE FABRIC	AS SPECIFIED	ADS	AS NEEDED
9	2	2453AN	24" TRIPLE MANIFOLD TEE	HDPE	ADS	SEE DETAIL
10	1	STICK-3	24" PIPE STICK : SOLID	HDPE	ADS	FIELD CUT
11	1	STICK-4	24" PIPE STICK : SOLID	HDPE	ADS	FIELD CUT



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Sep 28 2023
B C C

WOOD & BROOKS
TONAWANDA, NY
DATE: 06/23/23 DRAWN: GDL
PROJECT #: S356040 CHECKED: AJD

DATE	DRWN	CHKD	DESCRIPTION
06/26/23	GDL	AJD	CENTERED MANHOLE AT CORNER

24" STIB: SOLID
DETENTION
LandMax
Stormwater Management System

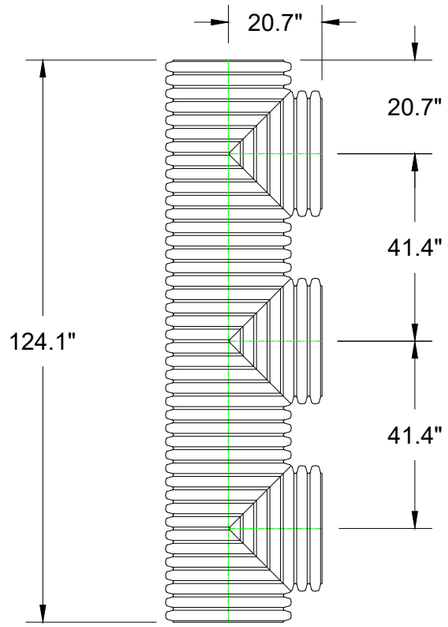
4640 TRUEMAN BLVD
HILLIARD, OH 43026

0 10' 20'

SHEET 2 OF 4

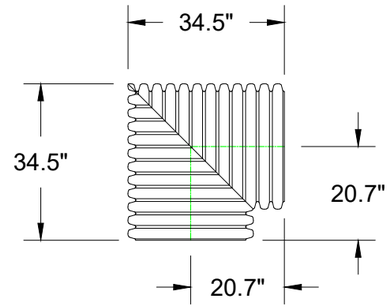
223015-334900-01-00

24" TRIPLE MANIFOLD TEE



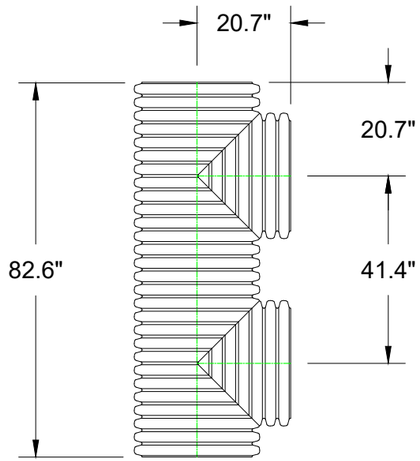
ITEM #: 9
QTY: 2
2453AN

24" X 90° MANIFOLD BEND



ITEM #: 1
QTY: 3
2498AN

24" DOUBLE MANIFOLD TEE



ITEM #: 3
QTY: 2
2452AN

RECEIVED BY
Sep 28 2023
B C C

WOOD & BROOKS
TONAWANDA, NY

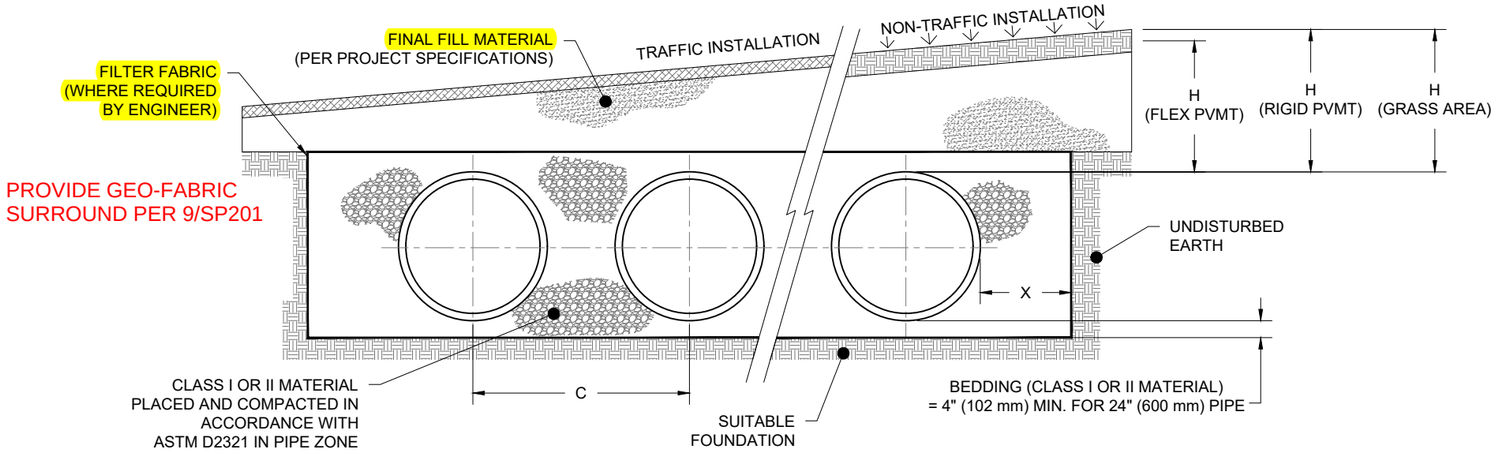
DATE: 06/23/23 | DRAWN: GDL | CHECKED: AJD
PROJECT #: S356040

DATE	DRWN	CHKD	DESCRIPTION
06/26/23	GDL	AJD	CENTERED MANHOLE AT CORNER

24" STIB: SOLID DETENTION
LandMax Stormwater Management System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 3 OF 4



NOMINAL DIAMETER	NOMINAL O.D.	STANDARD SPACING "C"	TYPICAL SIDE WALL "X"	MIN. H (NON-TRAFFIC)	MIN. H (TRAFFIC)	MAX. H*
24" (600 mm)	28" (711 mm)	41.4" (1052 mm)	10" (254 mm)	12" (305 mm)	12" (305 mm)	8' (2.4 m)

* MAXIMUM FILL HEIGHTS OVER MANIFOLD FITTINGS. CONTACT MANUFACTURER'S REPRESENTATIVE FOR INSTALLATION CONSIDERATIONS WHEN COVER EXCEEDS 8 FT (2.4 m).

NOTES:

1. ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.
3. MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED. SEE ASTM D2321.
4. FILTER FABRIC: A GEOTEXTILE FABRIC MAY BE USED AS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.
5. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE. THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
6. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR II. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (102 mm) FOR 4"-24" (100-600 mm); 6" (152 mm) FOR 30-60" (750-1500 mm).
7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR II IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" (152 mm) ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
8. COVER: MINIMUM COVER OVER ALL RETENTION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (305 mm) FROM TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER IS 12" (305 mm) UP TO 36" (900 mm) DIAMETER PIPE AND 24" (610 mm) OF COVER FOR 42-60" (1050-1500 mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. MAXIMUM FILL HEIGHT LIMITED TO 8 FT (2.4 m) OVER FITTINGS FOR STANDARD INSTALLATIONS. CONTACT A SALES REPRESENTATIVE WHEN MAXIMUM FILL HEIGHTS EXCEED 8 FT (2.4 m) FOR INSTALLATION CONSIDERATIONS.

WOOD & BROOKS
TONAWANDA, NY
DATE: 06/23/23 DRAWN: GDL
PROJECT #: S356040 CHECKED: AJD

DATE	DRWN	CHKD	DESCRIPTION
06/26/23	GDL	AJD	CENTERED MANHOLE AT CORNER

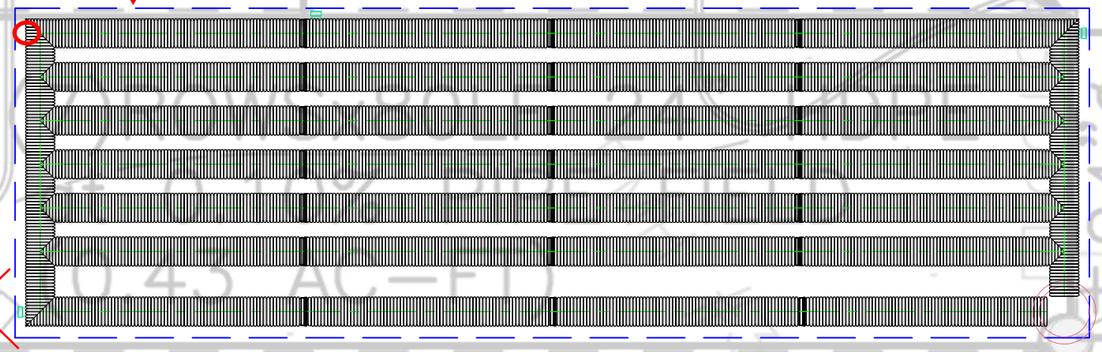
24" STIB: SOLID
DETENTION
LandMax
Stormwater Management System

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 4 OF 4

8" roof drain
insert-a-tee

ADD 6" CO



6"