PRE-DESIGN INVESTIGATION WORK PLAN

Former Brown Manufacturing Site
Syracuse (c), Onondaga County
Site No. B00024
June 2012

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PLAN

The New York State Department of Environmental Conservation (the Department) developed this Pre-Design Investigation Work Plan (work plan) to define the activities that must occur at the Former Brown Manufacturing Site (site) prior to implementation of the remedy selected for the site by the Record of Decision (ROD), which was issued for the site in March 2012 under the Environmental Restoration Program (ERP). Additional data will be collected to better define the areas to be excavated as required by the ROD and to close data gaps that have been identified to ensure the remediation is conducted properly and in a timely fashion

The goals of the pre-design investigation (PDI) include the following:

1. Delineate the area where soil contains polychlorinated biphenyls (PCBs) at concentrations greater than 50 parts per million (ppm).

2. Delineate the area to be excavated, which includes the following areas:
    a. areas where concentrations of PCBs in soil are greater than 10 ppm; and
    b. areas with gross petroleum impacts.

3. Make a determination if soils are a characteristic hazardous waste.

4. Collect data for total cyanide in soil.

SECTION 2: SITE DESCRIPTION AND HISTORY

Location: The Former Brown Manufacturing site is located at 101 Chester Street in a residential portion of the City of Syracuse, Onondaga County. The site is located at the southeast corner of the intersection of Chester Street and Bellevue Avenue and is bordered to the north by Bellevue Avenue with residential properties beyond, to the south by a residential property on Chester Street, to the east by residential properties along Huron Street, and to the west by Chester Street with residential properties beyond. The site is owned by the City of Syracuse (City)

Site Features: The site is vacant and is a generally flat parcel of land covered with grass, concrete, stone, and asphalt. A row of trees and chain link fence are located along the east property boundary.

Current Zoning/Use(s): The site is currently vacant. Most of the surrounding parcels are residential parcels, several of which are also vacant.

Historic Use(s): The site was formerly the location of the Brown Manufacturing Corporation, an automobile parts manufacturing facility which burned down in August of 1981. Prior uses that appear to have led to site contamination include disposal of waste oil/sludge into a disposal pit and underground quenching trough. Following the fire, a remediation contractor reportedly removed and disposed of approximately 100 drums of PCB-contaminated waste oil, the contents of the disposal pit and quenching trough, and a ruptured electrical transformer.

Site Geology and Hydrogeology: The investigation of the site identified two soil units. The top unit consists of fill ranging from 1 to 4 feet thick which is comprised of sand, crushed stone, concrete debris, brick, ash, cinders and wood debris. The fill was underlain by dense silty layer that also contained some clay which was approximately 6 to 8 feet thick. The geology of the region generally consists of glaciolacustrine silt and clay, underlain by glacial till.

Groundwater at the site was generally encountered around 9 to 11 feet below grade and flows south towards Onondaga Creek, which is located approximately 450 feet south of the site and flows generally southwest to northeast in this area. Perched groundwater was encountered in the western portion of the site at approximately 3 to 7 feet below grade. It is assumed the perched groundwater is caused in part by the foundations of the former facility, which remain in place in the subsurface.

A site location map is attached as Figure 1.

The City conducted a Remedial Investigation (RI) at the site under the ERP. More information regarding the results of the RI and the basis for the selected remedy can be found in the ROD and other site documents.

SECTION 3: SUMMARY OF THE SELECTED REMEDY

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Additional data will be collected from on-site and off-site areas as part of the remedial design program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;

- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. All on-site soils which exceed 10 ppm PCBs will be excavated and transported off-site for disposal. It is anticipated this excavation area will extend to a depth of approximately 2 feet over an area of 6,700 square feet in the western portion of the site. The approximate limits of this area to be excavated are indicated on Figure 2 as Area of Concern (AOC) 1A. Approximately 500 cubic yards of soil will be removed for off-site disposal from AOC 1A. Soils grossly-impacted by oil in the west portion of the site will be excavated to a depth of approximately 6 feet below grade for off-site disposal. The approximate limits of this area to be excavated is indicated on Figure 2 as AOC 1B. Approximately 570 cubic yards of additional soil will be removed for off-site disposal from AOC 1B. If determined necessary based on the remedial design investigation, soil in off-site areas impacted by site-related contamination will be excavated for off-site disposal. PCB-contaminated off-site soil exceeding 1 ppm will be removed. Petroleum-impacted off-site soils will be removed to the extent practicable until the lower of the residential use and protection of groundwater SCOs are achieved. Excavated soil may be used to partially backfill on-site excavations if it is not grossly contaminated and does not contain greater than 10 ppm PCBs. Clean fill will then be brought in to replace the excavated soil and establish the designed grades at the site. Any imported fill material utilized will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Soils impacted by oil in the southeast portion of the site will be excavated to facilitate installation of an oil recovery system. Grossly-contaminated soils from this area will be transported off-site for disposal. The approximate limits of the area to be excavated are indicated on Figure 2 as AOC 2. Approximately 75 cubic yards of soil will be removed for off-site disposal. An oil recovery trench/system will be installed in this area to remove oil and prevent off-site migration. Details of the recovery system will be determined during the design phase.

4. A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement or sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.
Engineering Controls: The soil cover discussed in Paragraph 4 and the oil recovery system discussed in Paragraph 3 above.

This plan includes, but may not be limited to:
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

SECTION 4: PRE-DESIGN INVESTIGATION ACTIVITIES

The pre-design investigation (PDI) will include collection of several surface soil and subsurface soil samples for laboratory analysis. Subsurface samples will be collected from soil borings to be installed using a direct push drill rig (geoprobe). Surface samples will be collected and analyzed, and the locations of certain soil borings will be finalized based on the results of the surface soil analyses.

All samples requiring chemical analysis will be placed in appropriate laboratory-supplied containers, and the containers will be clearly labeled with all categories or parameters. All samples will be stored in coolers on ice until delivery to a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory by the Department under appropriate chain-of-custody. Copies of chain-of-custody documents will be retained and daily records including locations of blind field duplicates will be recorded in the field logbook. Certain samples will be held by the laboratory for analysis pending the results of shallower samples from the same boring. The Department will utilize one of its standby contract laboratories for analyses. All laboratory procedures will be conducted as required by the contract between the laboratory and the Department.

Samples will be analyzed as specified in subsequent sections using the following methods.

1) CP:51 Table 3 List (Fuel Oil Contaminated Soil) - Semi-Volatile Organic Compounds (SVOCs) and Volatile Organic Compounds (VOCs) by EPA Methods 8270 and 8260
2) PCBs (9 Aroclors) by EPA Methods 8082
3) Total Cyanide by EPA Method 9012
4) Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311
5) Cyanide Reactivity and Sulfide Reactivity by EPA Methods 9010 and 9030; respectively

All sampling locations will be recorded using GPS or comparable method.

4.1 Surface Soil Sampling

Surface soil samples will be collected from a depth of 0 to 6 inches and analyzed as follows. Samples will be collected with dedicated, disposal trowels or with properly decontaminated equipment. Surface soil sampling locations are depicted on Figure 3.

1. 12 grab samples will be collected to delineate the known area of surface soil PCB contamination and analyzed for PCBs. Two of these locations will also be sampled and analyzed for total cyanide. 6 composite samples will be also collected and analyzed for PCBs from a grid per requirements of the Toxic Substances Control Act (TSCA).

2. 2 samples will be collected from on-site areas with no surface soil data and analyzed for PCBs and total cyanide.

3. 1 sample will be collected from the area of the former waste oil pit and analyzed for PCBs and total cyanide.

4.2 Subsurface Soil Sampling

4.2.1: General Requirements

Several soil borings will be installed using a direct-push soil probe drill rig. Borings will be installed to target depths of approximately 8 feet or approximately 16 feet, as described further in subsequent sections. Borings may be installed deeper if directed by the Department.

All subsurface work must be conducted in accordance with the procedures described below and the existing Standby Remedial Services Contract (the Contract). If there is a conflict between procedures defined below and the Contract, the contractor must contact the Department's Project Manager to determine the appropriate protocol.

The contractor will contact Dig Safely of New York at least two working days, but not more than 10 working days, before subsurface work is conducted. The owner (the City) will also be contacted to determine if there are any other known utilities on-site.

The contractor will be responsible for setting up an exclusion zone at the drill rig using tape or other means. The contractor will be responsible to prevent spillage of drill spoils on the ground using plastic sheeting or other means.

A decontamination pad will be constructed by the contractor. All non-dedicated sampling equipment will be decontaminated between each sampling location. All equipment must be cleaned of all foreign matter, washed with a detergent, and rinsed properly with water; or cleaned of foreign matter and sanitized with a steam cleaner prior to insertion into a new sampling location and prior to demobilization from the Site. Other methods may be employed if requested by the contractor and approved by the Department. Wash water will be contained and placed in 55-gallon drums or other appropriate container for disposal.

Continuous soil samples will be collected and visually classified. Written field logs will be developed for each boring. All sample intervals will be inspected and logged, and headspace screening will be performed on all intervals with a contractor-supplied photoionization detector (PID). The PID will be calibrated daily by the contractor and used to monitor the vapors emitted from the borehole and from each sample as soon as the sampler is opened. PID readings will be recorded on the boring logs. Digital photographs will be taken of visually contaminated samples, as well other physical characteristics that may be of future interest, prior to disturbing them. The PID will also be used to ensure vapors are not migrating off-site or outside the exclusion zone.

All soil cores collected will be described in writing as to color (including the presence of mottling) grain size, sorting, cohesiveness, and the presence or absence of odors, staining, or other signs of contamination. Obvious man-made objects such as brick fragments, metal scrap, or concrete will be clearly identified. Grain size and sorting will be described in detail. If staining, discoloration, or contamination is noted along specific layers or other structures, the characteristics and stratigraphic position of these layers will be clearly noted. The amount of

visual contamination present will be noted (none, stain, sheen, blebs, stringers, saturated, pooled).

The following definitions will be used to define contamination:

None:	No visual evidence of contamination is seen.
Stain:	Soil is discolored un-naturally, apparently from Site contaminants.
Sheen:	No measurable contamination is observed, but the sample exhibits a silvery or rainbow sheen indicative of a non-aqueous phase liquid (NAPL) layer molecules thick.
Blebs:	Discontinuous droplets/spots of contamination are observed.
Stringers:	Continuous, discrete, contamination pathways are observed.
Saturated:	Contamination is infused within the entire soil matrix.
Pooled:	Contamination (e.g., NAPL) is observed at significant thicknesses, separate from the soil matrix.

In addition to these observations of the recovered samples, any other indirect evidence of contamination (such as odors, coating on downhole tools, or lifting of contamination to the surface during sample recovery) will be noted in writing.

All drill cuttings from on-site boring locations that appear to be clean (i.e., no visual contamination or presence of contamination-related odors or elevated PID readings) shall be used to backfill the borehole from which they were removed. All excess drill cuttings and drill cuttings that appear to be contaminated will be containerized in 55-gallon drums for off-site disposal by the contractor at a properly permitted facility.

Containerized water and soil must be characterized by the contractor by methods required by the proposed disposal facility or facilities. All wastes to be sent off-site for disposal will be done so in a timely manner, and will be transported by a hauler licensed in accordance with 6 NYCRR Part 364. If the waste is determined to be hazardous, it will be shipped with a manifest in accordance with 6 NYCRR Part 372. Wastes will be removed from the site no later than 45 days following completion of drilling or sooner if required by law or regulation.

If insufficient soil cuttings are available, borings will be backfilled with bentonite or a cement-bentonite grout. Any borings completed off-site will be backfilled with bentonite or a cement-bentonite grout and restored to the original surface material by the contractor.

4.2.2: Excavation Area Delineation

Soil borings will be installed in the locations identified on Figure 4 in order to better delineate the areas to be excavated (Areas of Concern [AOC] 1A, 1B and 2). In AOC 1A/1B, borings will be installed to a target depth of 8 feet, unless it is determined necessary to extend the boring deeper based on field results. In AOC 2, borings will be installed to a target depth of 16 feet, unless it is determined necessary to extend the boring deeper based on field results.

<u>AOC 1A & 1B</u>

For borings in AOC 1A/1B, samples will be collected for laboratory analysis incrementally as described below and as depicted on Figure 5 to delineate areas where PCBs are greater than 50 ppm and where PCBs are greater than 10 ppm. Field results will be used to delineate the area requiring excavation due to gross-petroleum contamination (AOC 1B).

1. Pending the results of surface soil analysis, seven (7) or more borings will be installed to a depth determined by the vertical extent of gross petroleum contamination or refusal, whichever is shallower, as long as refusal is greater than 4 feet below ground surface (bgs). If gross contamination is not encountered, extend to 2 feet below groundwater or refusal, whichever is shallower, as long as refusal is greater than 4 feet bgs.

2. Collect two (2) samples for total cyanide analysis from most highly impacted locations on-site.

3. Collect soil samples for PCB analysis as follows to delineate the area where PCB > 50 ppm and PCB > 10 ppm. Refer also to Figure 5.

    - If adjacent surface soil samples contain PCBs < 50 ppm, collect PCB samples from 1-1.5 feet bgs; 2-2.5 feet bgs; 3-3.5 feet bgs; 4-4.5 feet bgs; 5-5.5 feet bgs; 6-6.5 feet bgs and 7.5-8 feet bgs unless gross petroleum contamination encountered in boring. If gross petroleum contamination encountered within top 8 feet of boring (and therefore that area will be disposed of off-site), collect PCB sample just below gross contamination and another 1 foot deeper, unless prevented by refusal.

        - If no gross petroleum contamination encountered in top 8 feet of boring, analyze shallowest sample and hold deeper samples. Progress to next deepest sample if PCBs > 10 ppm.
        - If gross petroleum contamination encountered in top 8 feet of boring, analyze PCB sample from just below gross contamination and hold deeper sample. If PCBs > 10 ppm, analyze deeper sample as well.

    - If any adjacent surface soil sample contains PCBs > 50 ppm, collect PCB samples from 1-1.5 feet bgs; 2-2.5 feet bgs; 3-3.5 feet bgs; 4-4.5 feet bgs; 5-5.5 feet bgs; 6-6.5 feet bgs and 7.5-8 feet bgs.
        - If no gross petroleum contamination encountered in top 8 feet of boring, analyze shallowest sample and hold deeper samples. Progress to next deepest sample if PCBs > 10 ppm.
        - If gross petroleum contamination encountered in top 8 feet of boring, collect another PCB soil sample just below gross contamination and another sample 1 foot deeper.
            - Analyze PCB sample from just below gross contamination and hold deeper sample. If PCBs > 10 ppm, analyze deeper sample as well.
            - If sample or samples below gross contamination are >=50 ppm, do not analyze incremental samples. Otherwise, analyze 1-1.5 bgs sample and if PCBs > 50 ppm, progress to next deepest sample.

AOC 2

Seven (7) soil borings will be installed to approximately 16 feet bgs to delineate the area of gross contamination. Additional borings will be installed as necessary to delineate. There are no samples planned for laboratory analysis from this area.

4.2.3 Off-site Petroleum Investigation

Six (6) borings will be installed along the property line to approximately 16 feet bgs to attempt to confirm the results of the RI or update the results.

If there is no evidence of impact noted, no samples will be collected, as this would confirm the RI results which showed no impacts needing to be addressed.

If obvious petroleum impacts are noted, no sample will be collected, and additional borings will be installed (step out) to delineate the impacts. If there is a need to step out, samples will be collected for SVOC, VOC & PCB analysis from the outermost boring to determine compliance with soil cleanup objectives (SCOs).

4.2.4 Off-site PCB Investigation

Three borings will be installed in the area of former waste oil pit (110 Huron Street) to attempt to confirm the results of the RI or update the results. Soil samples will be collected for PCB analysis from the soil horizon just below backfill, if identified. Otherwise soil sample will be collected from any impacted zone or, if none, at the groundwater table interface. If evidence of impact is noted, step out to delineate as for the off-site petroleum investigation above. One sample will also be collected for total cyanide analysis.

4.2.5 Hazardous Waste Determination

Samples will be collected from three locations in the most highly impacted areas to determine if it is a characteristic hazardous waste. One sample should be collected from near RI sample location T-1Q and other locations will be determined during the PDI. A sample will be collected from RI location GP-25 at a depth of 0-6" and analyzed by the TCLP for metals.

4.3 Deliverables

All waste receipts, disposal certificates, and/or manifests relating to the hauling and disposal of all wastes (soil and water) generated as a result of the PDI activities will be submitted by the contractor to the NYSDEC following completion of the field activities.

All analytical data will be submitted by the laboratory to the Department upon completion of the analyses in accordance with the time frames and format specified by the contract between the laboratory and the Department.

Boring logs, figures depicting sample locations and tables of results will be submitted to the Department along with electronic data deliverables (EDDs).

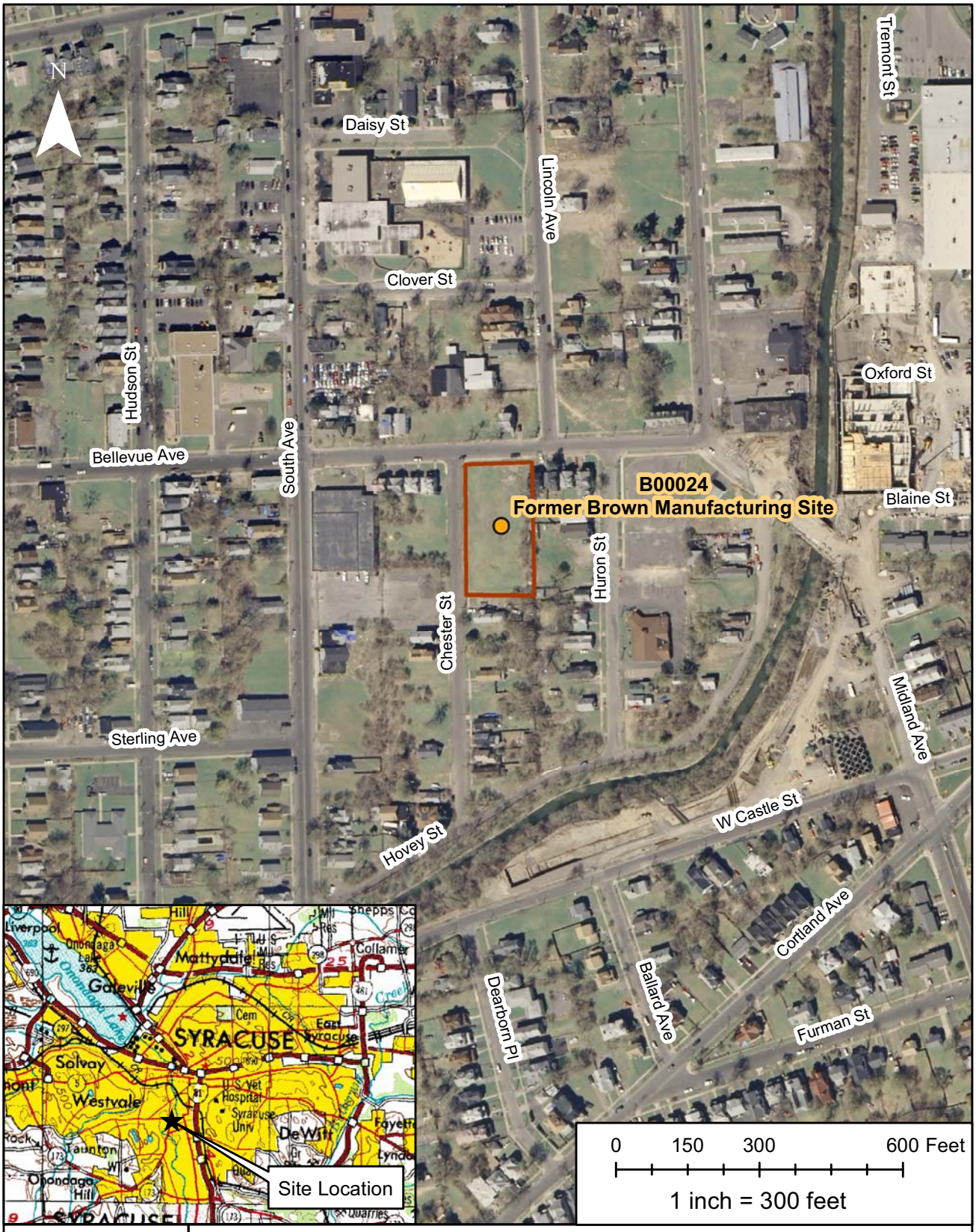


Figure 1 - Site Location

Former Brown Manufacturing Site
Site ID B00024
City of Syracuse, Onondaga County, New York

2011-11-03
JPC

Figure 2 - Selected Remedy

Alternative 5: Excavation, Oil Recovery & Site Cover

Former Brown Manufacturing Site
Site ID B00024
City of Syracuse, Onondaga County

30 15 0 30 60 Feet

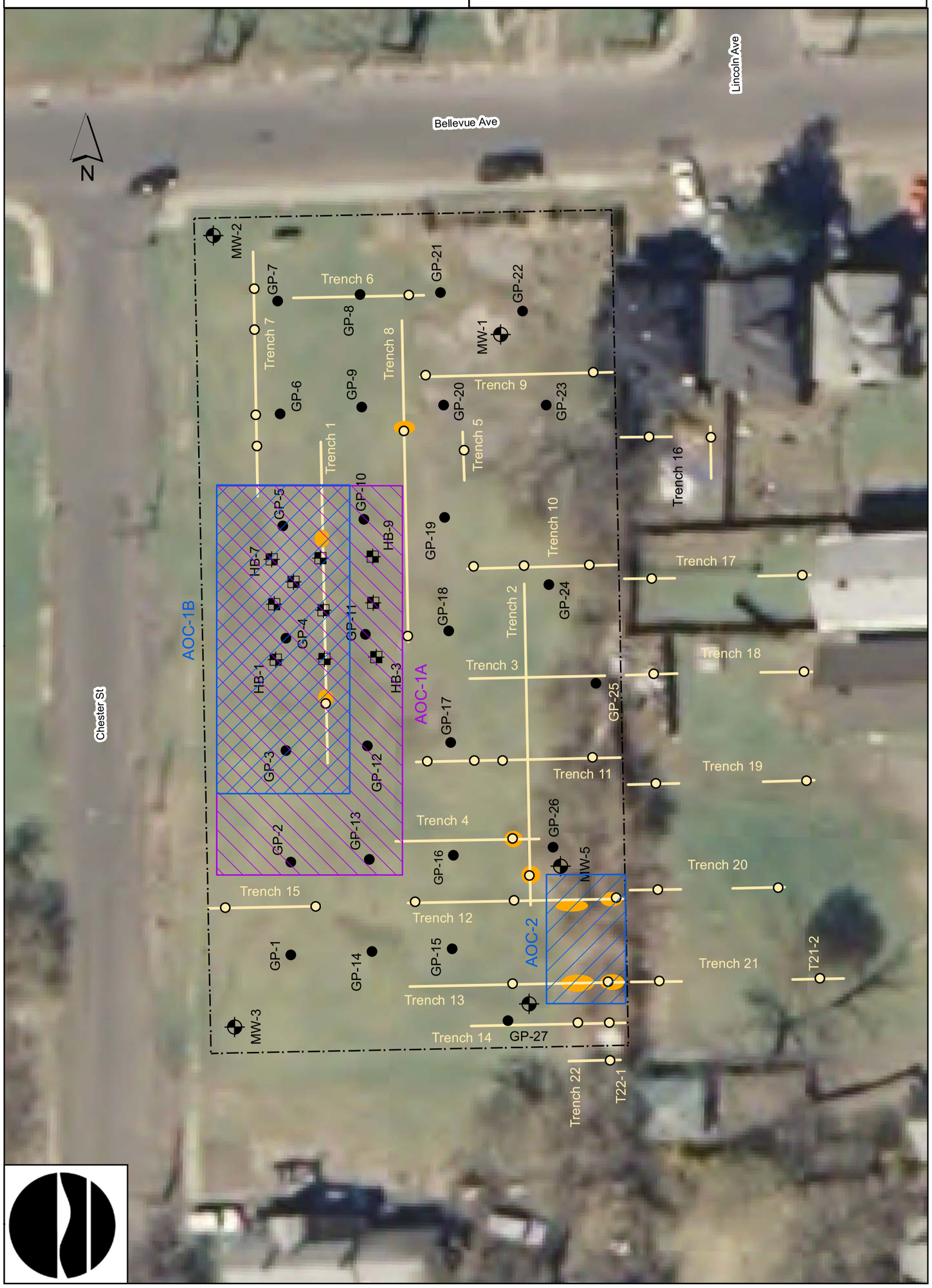
1 inch = 30 feet

Geoprobe Soil Boring
Hand Boring
Test Trench
Test Trench Soil Sample
Monitoring Well
Oil in Trench
Site Boundary, Extent of Cover System
Excavation of Petroleum Contaminated Soils
Excvation of PCB Contaminated Soils

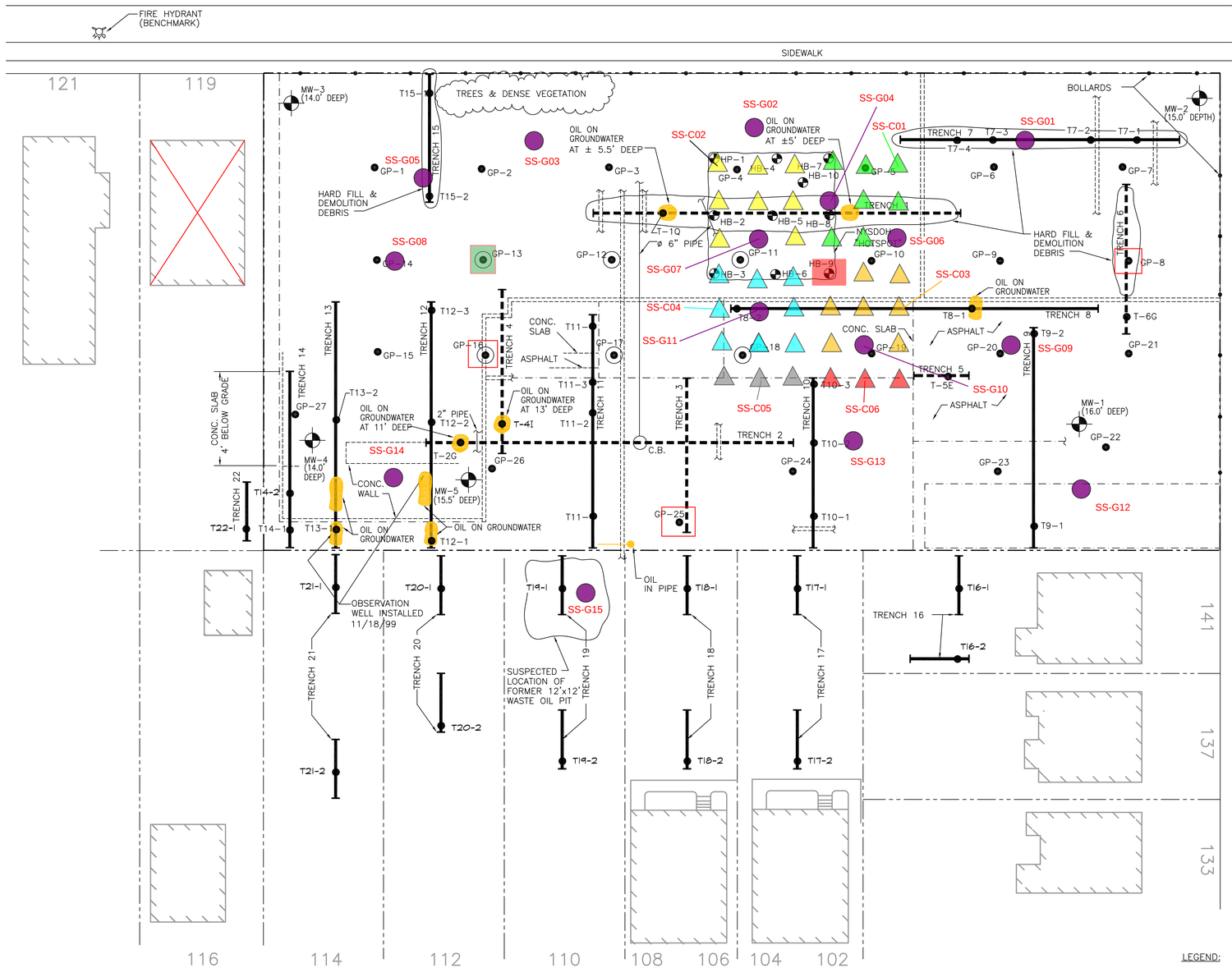
All locations approximate.

Based on "Site Investigation/ Remedial Alternatives Report," January 2003, Beardsley Design Assoc.

Drawn: 2011-11-04 by JPC



CHESTER STREET



SITE INVESTIGATION PLAN

SCALE: 1/16"=1'-0"

LEGEND:

- GP– GEOPROBE SOIL BORINGS (21) TO GROUNDWATER OR 10' (PHASE 1)
- GP– GEOPROBE SOIL BORINGS (6) TO GROUNDWATER (PHASE 1)
- HB– SHALLOW HAND BORINGS 1–9 (PHASE 1)
- MW– MONITORING WELLS 1–5 (PHASE 1)
- TRENCH EXCAVATIONS 1–6 (PHASE 1)
- TRENCH EXCAVATIONS 7–15 (PHASE 2A)
- OFF–SITE TRENCH EXCAVATIONS 16–22 (PHASE 2B)
- T– TRENCH EXCAVATION SOIL SAMPLES
- EXISTING BUILDING
- FORMER BUILDING (APPROX.)
- EXISTING CONCRETE FOUNDATION

Altered by JPC
NYSDEC
January 22, 2015

Added PDI Locations
Changed Figure Title
Changed Figure Number

- PCB Data Available - PCB Not Detected
- PCBs > 50 ppm
- 10 ppm < PCBs < 50 ppm
- Proposed PDI Surface Soil Composite Sample Grid Locations- PCBs
- Proposed PDI Surface Soil Grab Sample - PCBs

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BROWNFIELD RESTORATION PROJECT
FORMER BROWN MANUFACTURING SITE
101 CHESTER STREET
SYRACUSE, NEW YORK
(NYSDEC Project No. B-00024-7)

PRE-DESIGN INVESTIGATION

SURFACE SOIL SAMPLE LOCATIONS

Project Number:	Designed By:
00618	JMK
Drawn By:	Reviewed By:
FJS	RNC

NO	REVISION DESCRIPTION	BY	DATE

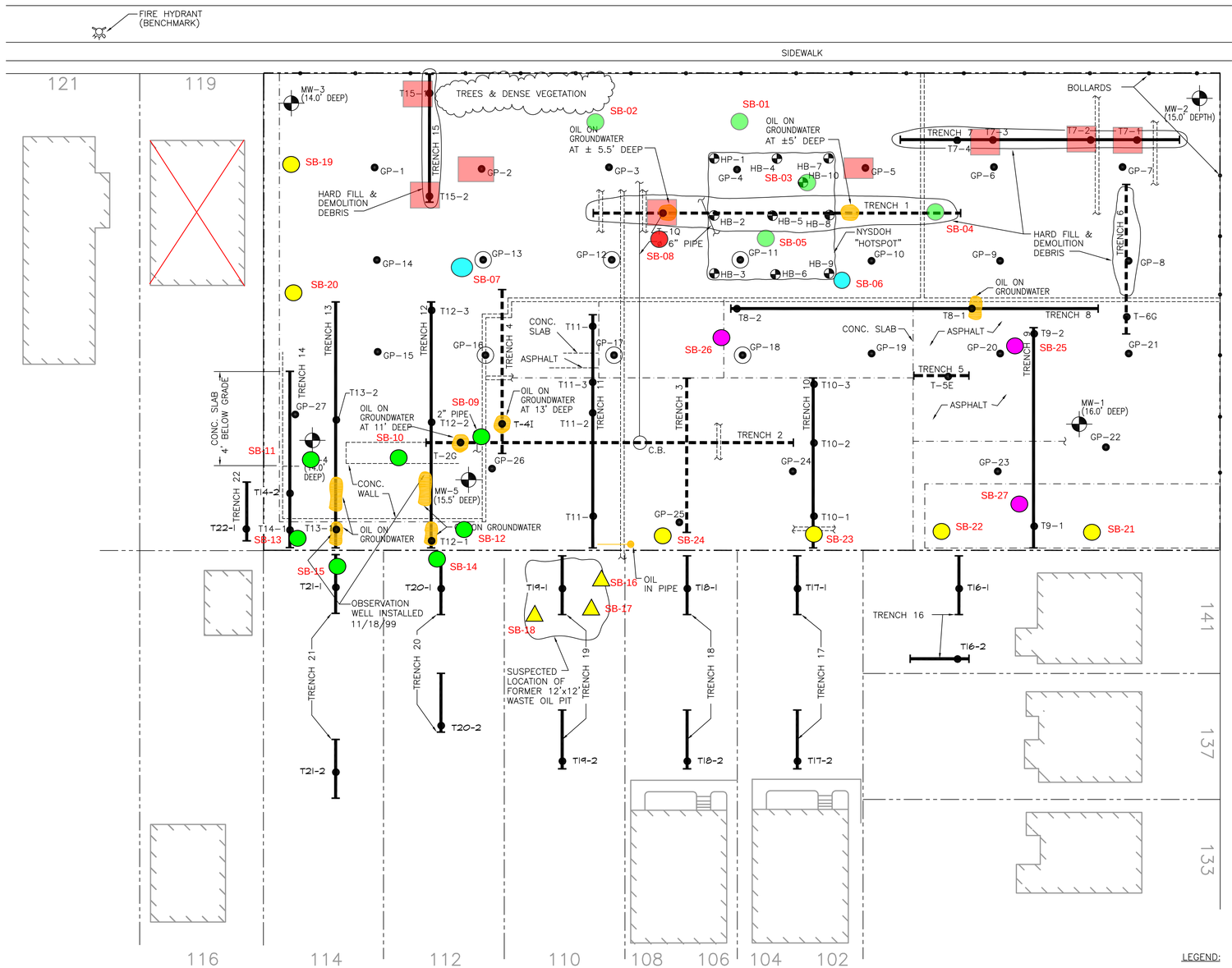
Date: SEPTEMBER 4, 2002

Drawing Number

FIGURE 3

of

CHESTER STREET



SITE INVESTIGATION PLAN

SCALE: 1/16"=1'-0"

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- T– TRENCH EXCAVATION SOIL SAMPLES
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- EXISTING CONCRETE FOUNDATION

Altered by JPC
NYSDEC
June 1 2012

Added PDI Locations
Changed Figure Title
Changed Figure Number

- PCB Data Available 2-6' bgs PCB < 10 ppm
- Proposed PDI Soil Boring (2) PCB vertical delineation
- Proposed PDI Soil Boring (10) Petroleum Delineation PCB vertical delineation if PCBs > 10 ppm in adjacent PDI surface soil sample
- Proposed PDI Soil Boring (1) Hazardous waste Determination sample
- Contingent PDI Soil Borings (3-4) PCB vertical delineation if PCB > 10 ppm in adjacent PDI surface soil sample
- Proposed PDI Soil Borings (6) RI Confirmation
- Proposed PDI Soil Borings (3) Waste Oil Pit & RI Confirmation

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PRE-DESIGN INVESTIGATION

SUBSURFACE SOIL SAMPLE LOCATIONS

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NO	REVISION DESCRIPTION	BY	DATE

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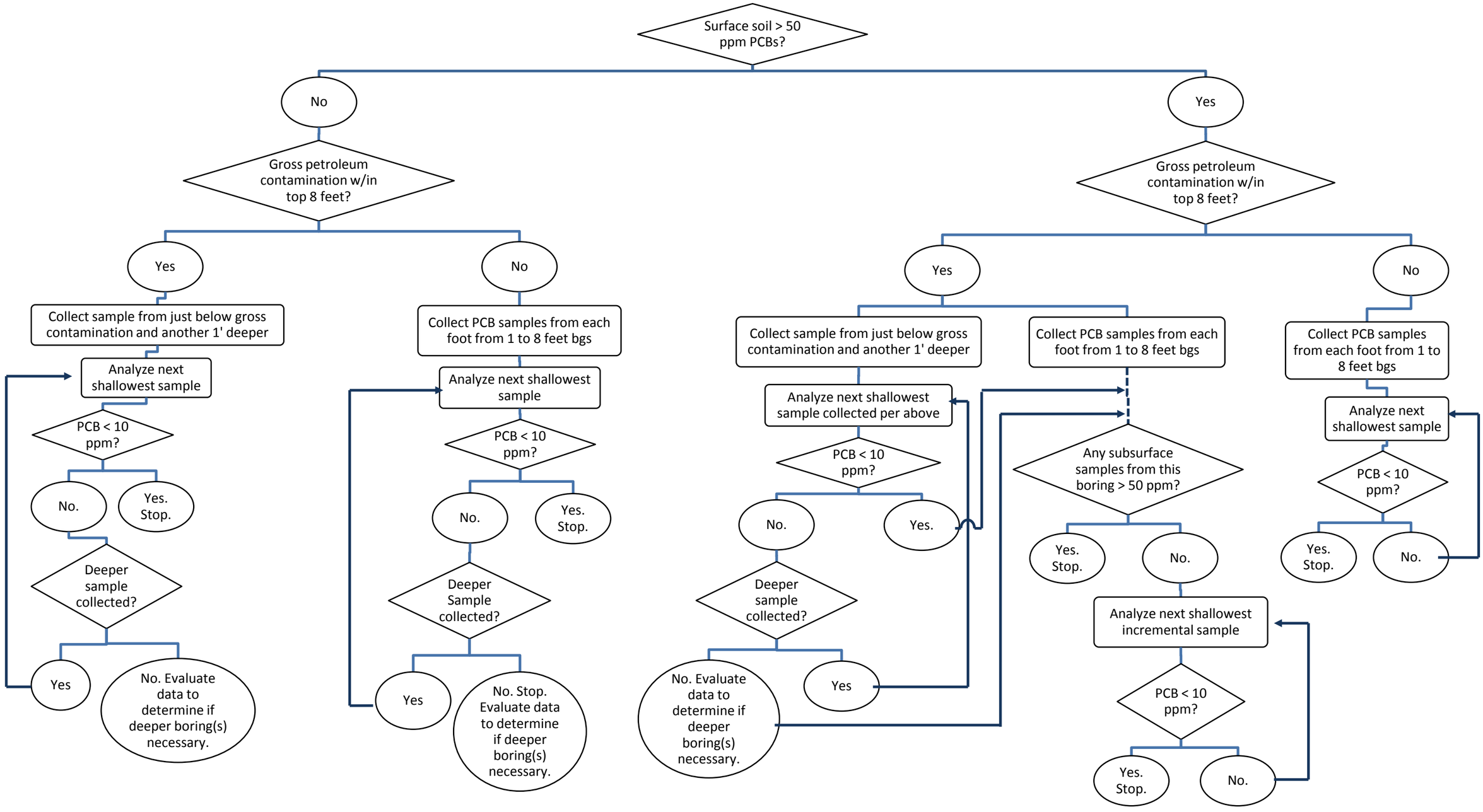
Drawing Number

FIGURE 4

of

FIGURE 5: Subsurface PCB Delineation (AOC 1A) Sampling Logic For Locations where PCBs > 10 ppm in surface soil



	PCBs	Total CN	TCLP VOC	TCLP SVOC	TCLP Metals	TCLP Pests	TCLP Herbs	Ignitabilitiy	Corrosivity	Reactivity
PDI-SS-G01	X + EB									
PDI-SS-G02	X									
PDI-SS-G03	X									
PDI-SS-G04	X	X + EB								
PDI-SS-G05	X	X + DUP								
PDI-SS-G06	X + DUP									
PDI-SS-G07	X									
PDI-SS-G08	X									
PDI-SS-G09	X									
PDI-SS-G10	X + MS/MSD									
PDI-SS-G11	X									
PDI-SS-G12	X	X								
PDI-SS-G13	X	X + MS/MSD								
PDI-SS-G14	X	X								
PDI-SS-G15	X	X								
PDI-SS-C01	X									
PDI-SS-C02	X									
PDI-SS-C03	X									
PDI-SS-C04	X									
PDI-SS-C05	X									
PDI-SS-C06	X									
PDI-SB-01	PENDING SURFACE RESULTS	2 TOTAL + 1 DUP	2 TOTAL	2 TOTAL	2 TOTAL	2 TOTAL	2 TOTAL	2 TOTAL	2 TOTAL	2 TOTAL
PDI-SB-02										
PDI-SB-03										
PDI-SB-04										
PDI-SB-05										
PDI-SB-06	8									
PDI-SB-07	8 + DUP									
PDI-SB-08			X	X	X	X	X	X	X	X
PDI-SB-09	PENDING SURFACE RESULTS		1 TOTAL	1 TOTAL	1 TOTAL	1 TOTAL	1 TOTAL	1 TOTAL	1 TOTAL	1 TOTAL
PDI-SB-10										
PDI-SB-11										
PDI-SB-12										
PDI-SB-13										
PDI-SB-14										
PDI-SB-15										
PDI-SB-16	X	1 TOTAL + 1 MS/MSD								
PDI-SB-17	X + DUP									
PDI-SB-18	X + MS/MSD									
PDI-SB-19										
PDI-SB-20										
PDI-SB-21										
PDI-SB-22										
PDI-SB-23										
PDI-SB-24					X					
PDI-SB-25										
PDI-SB-26										
PDI-SB-27										

CME Associates, Inc.

Construction Materials Evaluation

August 7, 1998

C & H Engineers, P.C.
431 East Fayette Street
Syracuse, NY 13202

Attn: Mr. Stephen Mahana

Re: Monitoring Well Installation and Development
Former Brown Manufacturing Site
Syracuse, NY
NYSDEC Project No.: B-00024-7
CME Report No.: 4663B-01-0898

Gentlemen:

CME Associates, Inc. (CME) has completed Monitoring Well Installation and Development as requested for the former Brown Manufacturing Site Project. Work was performed by CME during the period of July 27 to August 1, 1998. Our services consisted of the installation of five (5) monitoring wells and the development of wells following installation. Monitoring Well Installation Details are attached for each well.

CME provided a truck mounted Central Mine Equipment Model 55 rotary drill rig for the well installation. The wells were installed to depths varying from 14.0' to 16.0' below the ground surface using 4-1/4" ID hollow stem augers in accordance with NYSDEC guidelines. A flush mounted protective casing with locking cap was installed at each well head for protection. All drill tool was decontaminated between well borings using a steam cleaner and citrus based cleaner. All excess drill cuttings were placed in 55 gallon drums and stored on site. A CME Geologist was on site much of the project for quality assurance.

CME developed the wells following installation using a combination of surging and bailing with a 2" bailer and pumping with a portable moyno pump. Each well was developed for an hour or more and at least 25 gallons of water was removed from each well. All waste water was transferred to 55 gallon drums and stored on site.

Please contact the undersigned if you have any questions regarding the services provided.

Sincerely,

CME ASSOCIATES, INC.

Douglas F. Hurlbut
Senior Geologist

Attachments: Groundwater Observation Well Reports (5 of 5)

CME Associates, Inc.

GROUND WATER OBSERVATION WELL REPORT

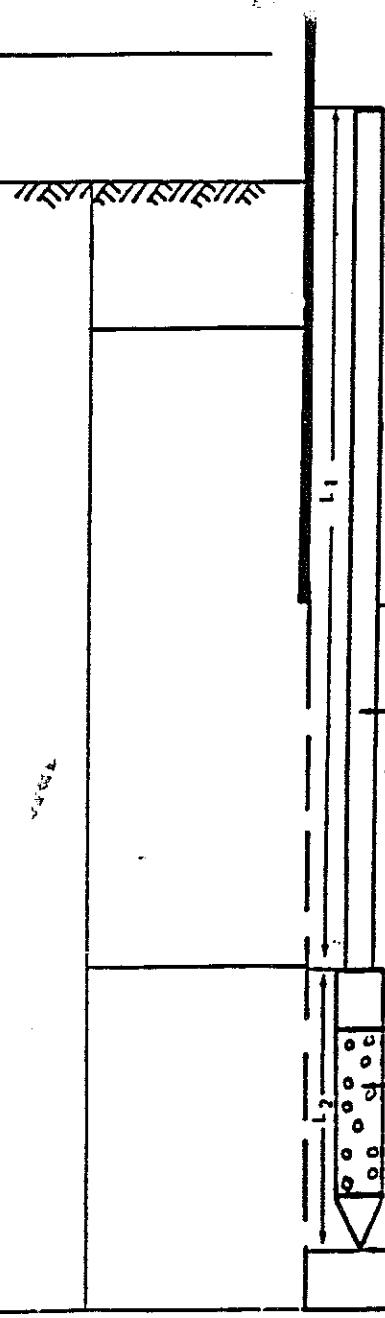
PROJECT: Brown Manufacturing Site
LOCATION: NYSDEC Project B-00024-T, Syracuse, NY
CLIENT: C&H Engineers, P.C.
CONTRACTOR: CME Associates, Inc.
DRILLER: Al Linstruth INSPECTOR: Doug Hurlbut
INSTALLATION DATE July 27, 1998

FILE NO. 41663
WELL NO. MW-1
BORING NO. MW-1
LOCATION See Well Location Plan
SHEET 1 OF 1

SURVEY DATUM

GROUND ELEVATION

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)



STICKUP ABOVE GROUND SURFACE OF CASING: Flush Mount Curb Box

ELEVATION STICKUP ~~ABOVE~~ Below GROUND SURFACE OF RISER PIPE: -2"

THICKNESS OF SURFACE SEAL: 6" 5000 psi Concrete 0.0' to 0.5'

TYPE OF SURFACE SEAL: Bentonite Chips 3.0' to 5.0'

[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]

TYPE OF CASING: 12" Galvanized Steel

INSIDE DIAMETER OF CASING: 8"

ELEVATION/DEPTH OF BOTTOM OF CASING: 12"

INSIDE DIAMETER OF RISER PIPE: 2" Sch. 40 PVC

TYPE OF BACKFILL AROUND RISER: Soil Cuttings 0.5'-3.0'

DIAMETER OF BOREHOLE: 8"

Silica Sand 5.0'-20.0'

ELEVATION/DEPTH OF BOTTOM OF RISER: 6.0'

TYPE OF POINT OR MANUFACTURER: Sch. 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"

DIAMETER OF WELLPOINT: 2" I.D.

TYPE OF BACKFILL AROUND POINT: Morie #0 Silica

ELEVATION/DEPTH OF BOTTOM OF POINT: 16.0'

ELEVATION/DEPTH OF BOTTOM OF BOREHOLE: 20.0'

[FIGURES REFER TO: EL. ____ DEPTH ____]

[ft. / LENGTH OF CASING L_3] [ft. / LENGTH OF RISER PIPE (L_1) + ft. / LENGTH OF POINT (L_2) = ft. / PAY LENGTH]

CME Associates, Inc.

GROUND WATER OBSERVATION WELL REPORT

PROJECT: Brown Manufacturing Site
LOCATION: NYSDEC Project B-00024-7, Syracuse NY
CLIENT: Ci H Engineers, P.C.
CONTRACTOR: CME Associates, Inc.
DRILLER: Al Linstruth INSPECTOR: Doug Hurlbut
INSTALLATION DATE July 28, 1998

FILE NO. 4663
WELL NO. MW-2
BORING NO. MW-2
LOCATION See Well Location Plan
SHEET 1 OF 1

SURVEY DATUM

GROUND ELEVATION

STICKUP ABOVE:

GROUND SURFACE OF CASING — Flush Mount Curb Box

ELEVATION STICKUP ~~ABOVE~~ Below GROUND SURFACE OF RISER PIPE. — -2"

6" 5000 psi Concrete 0.0' to 0.5'

THICKNESS OF SURFACE SEAL

TYPE OF SURFACE SEAL — Bentonite Chips 2.0' to 4.0'

[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]

TYPE OF CASING — 12" Galvanized Steel

INSIDE DIAMETER OF CASING — 8"

ELEVATION/DEPTH OF BOTTOM OF CASING — 12"

INSIDE DIAMETER OF RISER PIPE — 2" Sch. 40 PVC

TYPE OF BACKFILL AROUND RISER — Soil Cuttings 0.5'-2.0'

DIAMETER OF BOREHOLE — 8"

Silica Sand 4.0'-16.0'

ELEVATION/DEPTH OF BOTTOM OF RISER — 5.0'

TYPE OF POINT OR MANUFACTURER — Sch. 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS — 0.010"

DIAMETER OF WELLPOINT — 2" I.D

TYPE OF BACKFILL AROUND POINT — Morie #0 Silica

ELEVATION/DEPTH OF BOTTOM OF POINT — 15.0'

ELEVATION/DEPTH OF BOTTOM OF BOREHOLE — 16.0'

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

[FIGURES REFER TO: EL. ____ DEPTH ____]

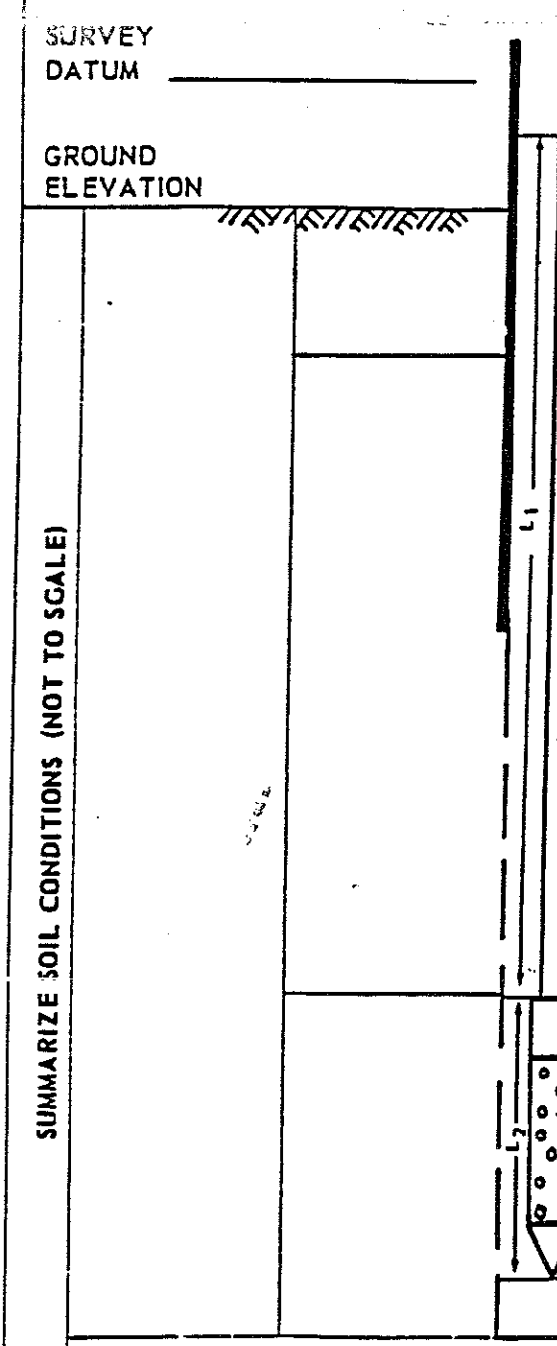
[ft. / LENGTH OF CASING L_3] [ft. / LENGTH OF RISER PIPE (L_1) + ft. / LENGTH OF POINT (L_2) = ft. / PAY LENGTH]

CME Associates, Inc.

GROUND WATER OBSERVATION WELL REPORT

PROJECT: Brown Manufacturing Site
LOCATION: NYSDEC Project B-00024-7, Syracuse NY
CLIENT: C&H Engineers, P.C.
CONTRACTOR: CME Associates, Inc.
DRILLER: Al Linstruth INSPECTOR: Doug Hurlbut
INSTALLATION DATE July 28, 1998

FILE NO. 4663
WELL NO. MW-3
BORING NO. MW-3
LOCATION See Well Location Plan
SHEET 1 OF 1



STICKUP ABOVE GROUND SURFACE OF CASING: Flush Mount Curb Box

ELEVATION STICKUP ~~ABOVE~~ Below GROUND SURFACE OF RISER PIPE: -2"

THICKNESS OF SURFACE SEAL: 6" 5000 psi Concrete 0.0' to 0.5'

TYPE OF SURFACE SEAL: Bentonite Chips 0.5' to 3.0'

[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]

TYPE OF CASING: 12" Galvanized Steel

INSIDE DIAMETER OF CASING: 8"

ELEVATION/DEPTH OF BOTTOM OF CASING: 12"

INSIDE DIAMETER OF RISER PIPE: 2" Sch. 40 PVC

TYPE OF BACKFILL AROUND RISER: none

DIAMETER OF BOREHOLE: 8"

Silica Sand 3.0' to 15.0'

ELEVATION/DEPTH OF BOTTOM OF RISER: 4.0'

TYPE OF POINT OR MANUFACTURER: Sch. 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"

DIAMETER OF WELLPOINT: 2" I.D.

TYPE OF BACKFILL AROUND POINT: Morie #0 Silica

ELEVATION/DEPTH OF BOTTOM OF POINT: 14.0'

ELEVATION/DEPTH OF BOTTOM OF BOREHOLE: 15.0'

[FIGURES REFER TO: EL. ____ DEPTH ____]

[____ ft. LENGTH OF CASING L_3] [____ ft. LENGTH OF RISER PIPE (L_1) + ____ ft. LENGTH OF POINT (L_2) = ____ ft. PAY LENGTH]

CME Associates, Inc.

GROUND WATER OBSERVATION WELL REPORT

PROJECT: Brown Manufacturing Site
LOCATION: NYSDEC Project B00024-7, Syracuse NY
CLIENT: C&H Engineers, P.C.
CONTRACTOR: CME Associates, Inc.
DRILLER: Al Linstruth INSPECTOR: Doug Hurlbut
INSTALLATION DATE July 29, 1998

FILE NO. 4663
WELL NO. MW-4
BORING NO. MW-4
LOCATION See Well Location Plan
SHEET 1 OF 1

SURVEY DATUM

GROUND ELEVATION

SUMMARIZE SOIL CONDITIONS (NOT TO SCALE)

GROUND SURFACE OF CASING	Flush Mount Curb Box
ELEVATION STICKUP ~~ABOVE~~ GROUND SURFACE OF RISER PIPE.	Below -2"
THICKNESS OF SURFACE SEAL	6" 5000psi Concrete 0.0' to 0.5'
TYPE OF SURFACE SEAL	Bentonite Chips 0.5 to 3.0'
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]	
TYPE OF CASING	Galvanized Steel
INSIDE DIAMETER OF CASING	8"
ELEVATION/DEPTH OF BOTTOM OF CASING	12"
INSIDE DIAMETER OF RISER PIPE	2" Sch. 40 PVC
TYPE OF BACKFILL AROUND RISER	none
DIAMETER OF BOREHOLE	8"
	Silica Sand 3.0' to 15.0'
ELEVATION/DEPTH OF BOTTOM OF RISER	11.0'
TYPE OF POINT OR MANUFACTURER	Sch. 40 PVC
SCREEN GAUGE OR SIZE OF OPENINGS	0.010"
DIAMETER OF WELLPOINT	2" I.D.
TYPE OF BACKFILL AROUND POINT	Morie #0 Silica
ELEVATION/DEPTH OF BOTTOM OF POINT	14.0'
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE	15.0'

[FIGURES REFER TO: EL. ____ DEPTH ____]

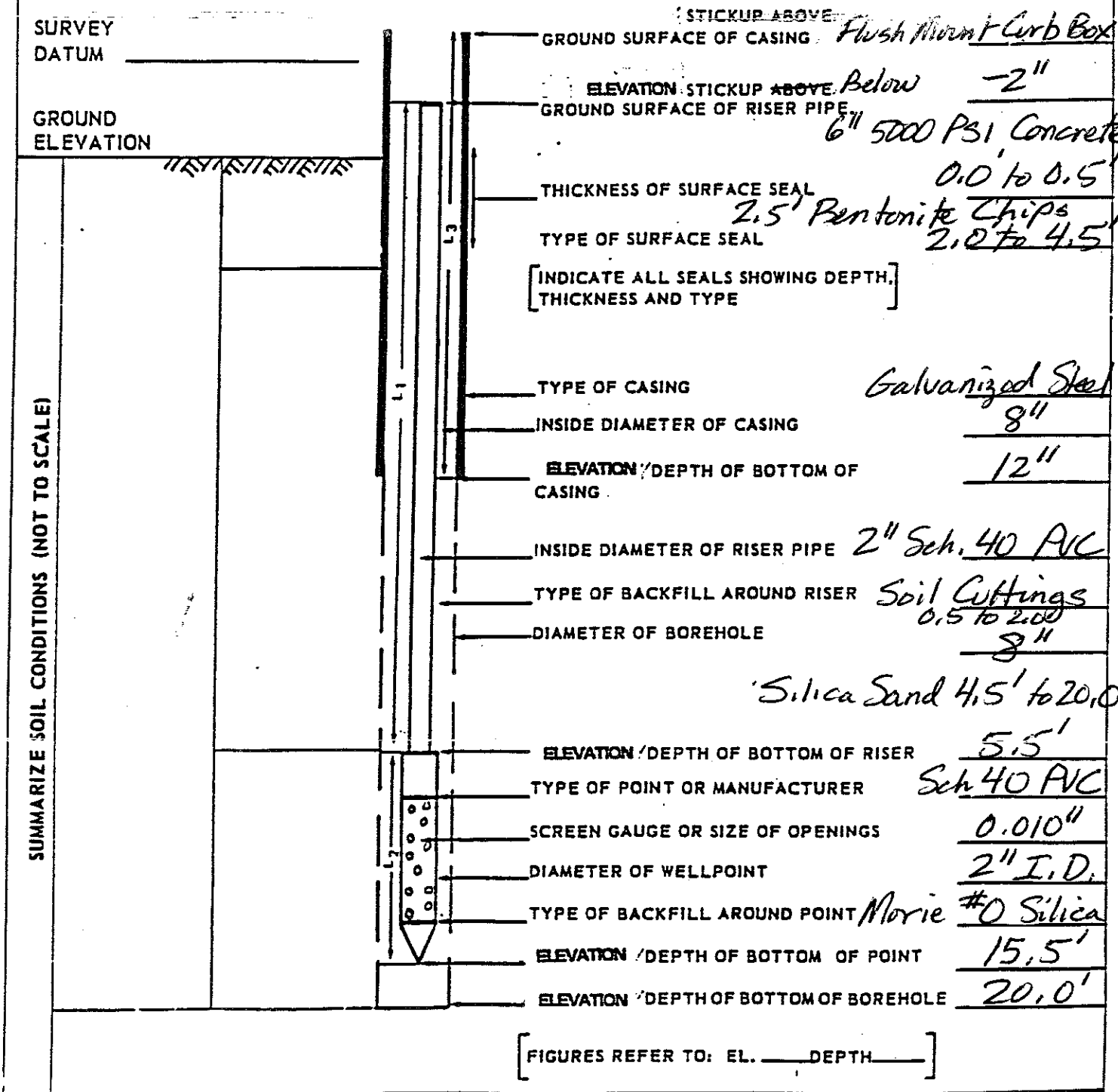
[ft. / LENGTH OF CASING L_3]	[ft. / LENGTH OF RISER PIPE (L_1)	+	ft. / LENGTH OF POINT (L_2)	=	ft. / PAY LENGTH]

CME Associates, Inc.

GROUND WATER OBSERVATION WELL REPORT

PROJECT: Brown Manufacturing Site
LOCATION: NYSDEC Project B-00024-7, Syracuse NY
CLIENT: C&H Engineers, P.C.
CONTRACTOR: CME Associates, Inc.
DRILLER: Al Linstruth INSPECTOR: Doug Hurlbut
INSTALLATION DATE

FILE NO. 4663
WELL NO. MW-5
BORING NO. MW-5
LOCATION See Well Location Plan
SHEET 1 OF 1



STICKUP ABOVE GROUND SURFACE OF CASING: Flush Mount Curb Box
ELEVATION STICKUP ~~ABOVE~~ Below GROUND SURFACE OF RISER PIPE: -2"
THICKNESS OF SURFACE SEAL: 6" 5000 PSI Concrete 0.0' to 0.5'
TYPE OF SURFACE SEAL: 2.5' Bentonite Chips 2.0 to 4.5'
[INDICATE ALL SEALS SHOWING DEPTH, THICKNESS AND TYPE]
TYPE OF CASING: Galvanized Steel
INSIDE DIAMETER OF CASING: 8"
ELEVATION/DEPTH OF BOTTOM OF CASING: 12"
INSIDE DIAMETER OF RISER PIPE: 2" Sch. 40 PVC
TYPE OF BACKFILL AROUND RISER: Soil Cuttings 0.5 to 2.0'
DIAMETER OF BOREHOLE: 8"
Silica Sand 4.5' to 20.0'
ELEVATION/DEPTH OF BOTTOM OF RISER: 5.5'
TYPE OF POINT OR MANUFACTURER: Sch 40 PVC
SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"
DIAMETER OF WELLPOINT: 2" I.D.
TYPE OF BACKFILL AROUND POINT: Morie #0 Silica
ELEVATION/DEPTH OF BOTTOM OF POINT: 15.5'
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE: 20.0'

[FIGURES REFER TO: EL. ____ DEPTH ____]

[ft. / LENGTH OF CASING L_3] [ft. / LENGTH OF RISER PIPE (L_1) + ft. / LENGTH OF POINT (L_2) = ft. / PAY LENGTH]