RECORD OF DECISION

Former Brown Manufacturing Site
Environmental Restoration Project
Syracuse (c), Onondaga County
Site No. B00024
March 2012

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

DECLARATION STATEMENT - RECORD OF DECISION

Former Brown Manufacturing Site
Environmental Restoration Project
Syracuse (c), Onondaga County
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Statement of Purpose and Basis

This document presents the remedy for the Former Brown Manufacturing Site, an environmental restoration site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Former Brown Manufacturing Site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of 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 3 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 3 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 3 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.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions

and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 29,2012

Date

Robert W. Schick, P.E., Acting Director
Division of Environmental Remediation

RECORD OF DECISION

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

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that will be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Onondaga County Public Library

The Galleries of Syracuse
447 South Salina Street
Syracuse, NY 13202
Phone: 315-435-1900

NYSDEC Region 7
Attn: Joshua Cook
615 Erie Blvd West
Syracuse, NY 13204
Phone: 315-426-7411

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: 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.

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.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

No PRPs have been documented to date.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. City of Syracuse will assist the state in its efforts by providing all information to the state which identifies PRPs. City of Syracuse will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require

evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

POLYCHLORINATED BIPHENYLS (PCB)	ARSENIC
BENZO(A)PYRENE	BARIUM
BENZ(A)ANTHRACENE	CADMIUM
BENZO(B)FLUORANTHENE	CHROMIUM
BENZO[K]FLUORANTHENE	COPPER
Chrysene	LEAD
DIBENZ[A,H]ANTHRACENE	NICKEL
indeno(1,2,3-cd)pyrene	SELENIUM
	Petroleum Products

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination: The primary contaminants of concern at the site include polychlorinated biphenyls (PCBs), petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), and metals in soil. Dissolved phase groundwater contamination has not been identified by the investigation; however, oil is present in the subsurface in portions of the site.

Soil samples from an area of surface soil staining collected prior to the Remedial Investigation contained PCBs at 63,000 parts per million (ppm). Samples from the vicinity of the stained soil collected during the Remedial Investigation contained PCBs up to 72 ppm. For comparison, the residential use soil cleanup objective (SCO) for PCBs is 1 ppm. PCBs were detected in several

surface and subsurface soil samples from the rest of the site at concentrations ranging from non-detect to 22 ppm.

PAHs were detected in several surface and subsurface soil samples at concentrations above applicable SCOs. Benzo(a)pyrene (a PAH) was detected in surface soil at concentrations up to 7.5 ppm and in subsurface soil at concentrations up to 24 ppm, compared to its residential use SCO of 1 ppm.

Several metals were detected on-site at concentrations above applicable SCOs. Arsenic was detected in several surface and subsurface soil samples at concentrations up to 29.3 ppm, compared to its residential use SCO of 16 ppm. Several other metals were detected above applicable SCOs in two samples only. Barium; cadmium; chromium; copper; lead; nickel; and selenium were detected in one or both of those samples at concentrations up to 10,300 ppm; 14.7 ppm; 156 ppm; 536 ppm; 2460 ppm; 426 ppm; and 13.5 ppm, respectively, compared to their residential use SCOs of 350 ppm; 2.5 ppm; 22 ppm; 270 ppm; 400 ppm; 140 ppm; and 36 ppm, respectively.

Groundwater contamination was not identified by the investigation.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking contaminated groundwater because the area is served by a public water supply that is not affected by site-related contamination. Access to the property is unrestricted and people may come into contact with contaminants in the soil by walking on the site, digging, or otherwise disturbing the soil. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the sub-surface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a concern for the site in its current condition. Additionally, sampling indicates that soil vapor intrusion is not a concern for future development at the site or at off-site properties.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the alternatives analysis (AA) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Excavation, Oil Recovery and Site Cover remedy.

The estimated present worth cost to implement the remedy is $799,000. The cost to construct the remedy is estimated to be $652,000 and the estimated average annual cost is $9,580.

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 3 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 3 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 3 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.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into three categories; semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting soil.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375-1.2 (au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source areas which were identified at the site include areas where oil is present in the subsurface and an area of elevated PCB-contaminated surface soil.

Oil was found in several test pits installed at the site and has been identified as lubricating oil or hydraulic oil. One sample of the oil was collected and analyzed for volatile organic compounds (VOCs), SVOCs and PCBs. VOCs and PCBs were not detected in the oil sample; however, a soil sample collected from the same location contained PCBs above soil cleanup objectives. Several SVOCs were detected at elevated levels in the oil sample. Locations where oil was identified are indicated on Figure 2.

The area of PCB-contaminated surface soil is located in the western portion of the site and was referred to as the NYSDOH Hotspot in past reports. Several drums were found in this area after the buildings burned down in 1981. A small area of stained surface soil was identified in this area in 1997 and was sampled for PCBs, which were detected at 63,000 ppm in the sample. Upon receipt of the results the area was covered with gravel as a temporary measure. Since this contamination is in surface soil there is potential for it to migrate to other environmental media via erosion. The high level of contamination also poses a threat to groundwater quality.

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected on two occasions from several overburden monitoring wells. The samples were collected to assess groundwater conditions on- and off-site. In some instances, oil was identified in test pits or soil borings; however, no site-related dissolved phase groundwater contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for groundwater.

Soil

Shallow and subsurface soil samples were collected at the site during the RI. Shallow soil samples were collected from a depth of 0 – 6 inches to assess the potential for direct human exposure. Subsurface soil samples were collected from depths ranging from of 0.5 – 14 feet. The results indicate that soils at the site exceed the unrestricted SCG for PCBs, several SVOCs and several metals. Petroleum-impacted soil was also identified in several locations. The planned use of the site is open/green space. Open space is typically considered a passive recreational use which falls under the commercial land use category per 6 NYCRR Part 375. However, since the site is located in a residential neighborhood, it is likely that more active recreational usage (*e.g.*, athletics) of the site may occur. Active recreational usage is considered a restricted residential use. As such, the results of the investigation have been compared to the restricted residential soil cleanup objectives (SCOs) as well as the unrestricted use SCOs. Sampling locations and impacted areas are indicated on Figure 2.

Table 1 – Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted Use SCG
SVOCs					
Benzo(a)anthracene	ND – 34	1	6 / 36	1	6 / 36
Benzo(a)pyrene	ND – 24	1	8 / 36	1	8 / 36
Benzo(b)fluoranthene	ND – 43	1	7 / 36	1	7 / 36
Benzo(k)fluoranthene	ND – 7.9	0.8	7 / 36	3.9	5 / 36
Chrysene	ND – 28	1	10 / 36	3.9	6 / 36
Dibenz(a,h)anthracene	ND – 1.5	0.33	2 / 36	0.33	2 / 36
Indeno(1,2,3-c,d)pyrene	ND – 12	0.5	6 / 36	0.5	6 / 36
Inorganics (Metals)					
Arsenic	6.9 – 29.3	13	5 / 9	16	5 / 9
Barium	34.5 – 10,300	350	3 / 13	400	3 / 13
Cadmium	ND – 14.7	2.5	3 / 13	4.3	1 / 13
Chromium	2.7 – 156	1[d]	13 / 13	110[d]	0 / 13
Copper	5 – 536	50	5 / 13	270	1 / 13
Lead	31.2 – 2,460	63	8 / 11	400	2 / 11
Nickel	3.7 – 426	30	2 / 13	310	2 / 13
Selenium	ND – 13.5	3.9	11 / 13	180	0 / 13
Pesticides/PCBs					
PCBs	ND – 72	0.1	8 / 49	1	8 / 49

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Restricted Residential Use, unless otherwise noted.
d – This value represents the lower of the Soil Cleanup Objectives for hexavalent and trivalent forms of chromium. Chromium results were not speciated during the Remedial Investigation.
ND = not detected

The primary soil contaminants are: PCBs; polycyclic aromatic hydrocarbons (PAHs), which are a subset of SVOCs; petroleum; and several metals, all of which are present as a result of the past operations at the former Brown Manufacturing facility.

PCBs, several PAHs, and several metals (arsenic, barium, lead and nickel) were detected in surface soil at concentrations greater than the SCO for the protection of public health for restricted residential use. The highest concentrations of PCBs found at the site during the RI were detected in surface samples collected from the area referred to as the NYSDOH Hotspot. RI samples found PCBs at much lower concentrations than the historic sample discussed previously, but still above applicable SCOs. PCBs were also detected in a few instances in subsurface soil at a maximum concentration of 6.04 ppm. As a comparison, a presumptive remedy for PCBs at a site where neither the unrestricted SCOs nor the SCOs for the protection of ecological resources are applied provides for remediation of PCBs to 1 ppm for surface soils and 10 ppm for subsurface soils.

PAHs were detected in surface and subsurface soil samples across the site. PAHs in surface soil are likely due, in part, to the presence of historic fill, which is present across the site. Historic fill includes ash, coal cinders and other anthropogenic materials mixed with soil. PAHs are commonly detected in historic fill due to the presence of ash and coal cinders. Historic fill is not necessarily present as a result of past operations at this site. PAHs in surface soil may also be due, in part, to past operations at the facility, which included the use and storage of petroleum, since PAHs are constituents of petroleum products.

PAHs are present in subsurface soils as a result of past use and disposal of petroleum. Subsurface soil samples with elevated levels of PAHs were collected from areas that were obviously impacted by petroleum, which was identified by staining and odors.

Several metals were also detected in several surface samples above applicable SCOs. Arsenic was detected in several surface soil samples from across the site above its restricted residential SCO. Barium was detected in two surface soil samples above its restricted residential SCO, and lead and silver were detected in one surface soil sample above their restricted residential SCOs. One subsurface soil sample contained elevated levels of several metals (arsenic, barium, cadmium, chromium, copper, lead and nickel). This sample was collected from a location of significant oil contamination. It is likely oil was used as a lubricant during metalworking (cutting, grinding, etc.) operations at the former facility.

Based on the findings of the Remedial Investigation, the past disposal of petroleum and hazardous substances has resulted in the contamination of soil. Contaminants were not detected in off-site samples. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are petroleum, PCBs, PAHs and metals.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil contamination was evaluated by the sampling of soil vapor. At this site no buildings were present in impacted areas, so only soil vapor was evaluated.

Soil vapor samples were collected at the site and at four adjacent residential properties. The samples were collected to assess whether soil vapor contamination existed at levels that indicate soil vapor intrusion could occur.

Based on the concentration detected, no site-related soil vapor contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for soil vapor.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Limited Action

The Limited Action Alternative includes only the construction of a perimeter fence and implementation of institutional controls.

The fence will limit trespass on the site, and thereby reduce the potential for exposure to site contaminants. An institutional control, in the form of an environmental easement will also be placed on the property. The environmental easement will: require 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); restrict the use of site groundwater as a source of potable or process water without proper treatment; prohibit agriculture or vegetable gardens on the controlled property; and require compliance with the Department-approved Site Management Plan. The environmental easement will also restrict the use and development of the controlled property for uses not consistent with the level of contamination present in near-surface soil at the site. Contaminants in the top one foot of soil exceed several SCOs for the protection of public health for industrial usage, the most restrictive site usage category, so there is no usage of the site which is consistent with the requirements of 6 NYCRR Part 375.

The Site Management Plan will identify and implement the required institutional and engineering controls, as well as any necessary monitoring and/or operation and maintenance of the remedy. It will include, but not be limited to: an Excavation Plan which will detail the provisions for management of future excavations at the site; provisions for the management and inspection of the identified engineering controls; the steps necessary for periodic review and certification of the institutional and engineering controls; and a groundwater monitoring plan to assess the performance and effectiveness of the remedy.

Given the limited scope of this alternative, the capital cost to implement it are minimal, but include the costs to construct the fence, develop the Site Management and place the environmental easement on the property. Annual costs under this alternative include the cost to collect and analyze groundwater samples, report the results and provide periodic certifications. The estimated cost of Alternative 2 is as follows:

Present Worth:.....*$109,300*
Capital Cost:.....*$31,700*
Annual Costs:.....*$5,050*

Alternative 3: Oil Recovery and Site Cover

This alternative includes: construction of an oil recovery system; construction of a site cover system; implementation of an institutional control in the form of an environmental easement; and development of a Site Management Plan.

Prior to implementing this alternative a remedial design will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. During the design the location and configuration of the recovery system will be determined. It is estimated the remedial design will take approximately six to nine months. Limited soil excavation will be necessary to facilitate construction of the oil recovery system. Excavated soil will be disposed of off-site.

The oil recovery system will be constructed to remove oil from the subsurface and to prevent its off-site migration. The recovery system will include the construction of 5 to 10 collection sumps that will be backfilled with a highly permeable material such as coarse gravel. The system will utilize low-flow skimming devices to remove oil floating on the groundwater table. Skimming is a conventional remedial technology used primarily for petroleum hydrocarbons that cannot be accessed directly by excavation feasibly or in a cost-effective manner. With this system, there is very little or no recovery of water. Mechanical skimmers and passive skimmers are the two types of skimming equipment that are available. Mechanical skimming equipment actively extracts free product from targeted recovery areas. The recovery efficiency of a mechanical skimmer increases when there is a large amount of free product on the groundwater. It is applicable to settings in permeable conduits such as utility bedding or buried underground open structures. Passive skimming equipment is used for smaller amounts of free product, since it accumulates free product over time.

It is estimated oil will continue to be recovered from the subsurface for approximately 5 years; however, recovery of oil will continue until the Department determines it is longer necessary. The most mobile oil will be removed and thereby limit the potential for off-site migration; however, oil will remain in the subsurface trapped in tight soil pores and in isolated pockets between the collection sumps.

Under this alternative, a cover system will be constructed across the entire site. A cover system is a commonly employed engineering control used to prevent exposure to contamination that cannot be removed or treated feasibly or in a cost-effective manner. The cover system will consist of a minimum of two feet of imported soil which meets the SCOs for cover material as set forth in 6 NYCRR 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. If any development of the site occurs, structures such as buildings, pavement or sidewalks comprising the site development may replace the two-foot soil cover for the area covered by those structures; however, the City of Syracuse has stated there is currently no development planned for the site, other than green space.

It is estimated that construction of Alternative 3 will take 5 to 6 weeks to complete.

Since contamination will remain at the site, an institutional control will be placed on the site. The institutional control, in the form of an environmental easement, will: require 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); allow 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; restrict the use of site groundwater as a source of potable or process water without proper treatment; prohibit agriculture or vegetable gardens on the controlled property; and require compliance with the Department-approved Site Management Plan.

The Site Management Plan will identify and implement the required institutional and engineering controls, as well as any necessary monitoring and/or operation and maintenance of the remedy. It will include, but not be limited to: an Excavation Plan which will detail the provisions for management of future excavations at the site; provisions for the management and inspection of the identified engineering controls; the steps necessary for periodic review and certification of the institutional and engineering controls; an Operation and Maintenance Plan to ensure continued operation, maintenance, monitoring and inspection of the oil recovery system; and a groundwater monitoring plan to assess the performance and effectiveness of the remedy.

The capital cost to implement this alternative include the costs to design and construct the oil recovery system and site cover system, develop the Site Management and place the environmental easement on the property. It is assumed for the purpose of cost estimation that the oil recovery system will be operated during the first 5 years of remedy implementation. (The recovery system will be operated as long as necessary under this alternative.) Apart from operation of the oil recovery system annual costs under this alternative for the 30 year cost estimation period include the cost to monitor groundwater and provide periodic certification of the remedy. The estimated cost to implement Alternative 3 is as follows:

Present Worth:.....*$345,000*
Capital Cost:.....*$148,000*
Annual Costs:.....*$12,800*

Alternative 4: Restoration to Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). Therefore, this alternative does not require any restrictions on site usage and does not require long term site management. This alternative includes excavation and off-site disposal of all soils impacted by petroleum or containing contaminants of concern at concentrations greater than the unrestricted SCOs and restoration of the excavated areas. If necessary, the excavations will extend off-site. Oil present in the subsurface will be removed during the course of the excavations.

Prior to implementing the excavations at the site, a remedial design will be implemented to provide the details necessary for the construction of the remedial program. The design phase will include collection of additional data in certain locations to more accurately define the areas to be excavated. This pre-design investigation will include collection of additional data from off-site areas, including the area where a waste oil disposal pit was formerly located. Upon receipt and evaluation of the results of the pre-design investigation, detailed engineering plans and specifications will be developed. It is estimated the remedial design will take nine to twelve months to complete.

Excavation and off-site disposal is a conventional remedial method for sites contaminated by PAHs, metals or PCBs and is the most commonly employed remedial method for PCB-contaminated soil. The federal Toxic Substance Control Act (TSCA) includes requirements regarding remediation and disposal of PCB-contaminated soil. Soil containing PCBs at concentrations greater than 50 ppm have more stringent disposal requirements than soil containing less than 50 ppm PCBs. PCB-contaminated soils may be treated to remove or destroy PCBs prior to disposal. Incineration and thermal desorption are technologies that are commonly utilized for treatment of PCB contaminated soil.

Incineration is an *ex-situ* engineered process that employs thermal decomposition via oxidation at temperatures usually greater than 900^{o}C to destroy contaminants. Thermal desorption is an *ex-situ* process that uses direct or

indirect heat exchange to vaporize organic contaminants from soil, sediment, sludge or other solid and semi-solid matrices. The vapors are then condensed or otherwise collected for further treatment. Incineration and/or thermal desorption would be conducted at an off-site facility.

This alternative will require excavation across the entire site to varying depths. The necessary depth of excavation ranges from approximately 4 feet to at least 12 feet. Excavations will continue until all soil impacted by petroleum was removed and until all soil containing contaminants greater than the unrestricted use SCOs was removed. The excavations will then be restored with clean backfill which meets the requirement of 6 NYCRR 375-6.7(d) for unrestricted use. It is estimated approximately 10,100 cubic yards of soil will be excavated, and an equivalent volume of soil will be imported to restore the site.

In the course of performing the excavations, groundwater and oil will be extracted from the subsurface by pumping to prevent water from collecting within the excavation. This will create a depression of the water table which will further direct oil and groundwater toward the pumps. Once extracted, the oil will be separated from groundwater and disposed of off-site. After separation the groundwater will either be disposed of off-site or subjected to treatment prior to discharge. Given that groundwater contamination was not detected during the RI, it is possible that groundwater could be discharged directly back to the subsurface or sanitary sewer system without further treatment. If it is determined pre-treatment is necessary, a variety of methods can used to treat the extracted groundwater which include, but are not limited to, liquid phase adsorption using granular activated carbon. With this technology, groundwater is pumped through a series of vessels containing a sorbent, most commonly activated carbon, to which dissolved contaminants are adsorbed. Contaminants are not destroyed, but are physically separated from the contaminated water and transferred to the sorbent. When the concentration of contaminants in the effluent from the bed exceeds a certain level (*i.e.*, once the sorbent's contaminant-removal efficiency has diminished to certain extent), the sorbent will need to be replaced or regenerated. Activated carbon is an excellent sorbent due to its large surface area, which generally ranges from 500 - 2,000 square meters per gram. Activated carbon can be regenerated in place; removed and regenerated at an off-site facility; or removed and disposed of. Following any necessary on-site treatment, the groundwater will be discharged, either back to the subsurface or to the sanitary sewer system.

Given the depths of the excavations necessary under this alternative, excavation support systems will need to be installed to prevent collapse of the excavations. This alternative will entail stockpiling excavated soils and imported soils, though stockpiling could be minimized by loading excavated soils directly into trucks and unloading imported soil directly to the excavation. Stockpiling soil usually improves the efficiency of an operation which reduces the amount of time it takes to implement the excavation and therefore usually reduce costs. This remedy will also employ oil and groundwater storage and/or treatment tanks and equipment which will be staged on-site and will further reduce the area available for equipment and stockpiles.

It is estimated that construction of Alternative 4 will take 20 to 24 weeks to complete. The estimated cost to implement Alternative 4 is as follows:

Capital Cost:.....$2,180,000

Alternative 5: Excavation, Oil Recovery and Site Cover

This alternative includes: excavation and off-site disposal of soils from the more heavily contaminated areas of the site; construction and operation of an oil recovery system; construction of a cover system; implementation of an intuitional control in the form of an environmental easement; and development of a Site Management Plan.

Prior to implementing the excavations, a remedial design will be implemented. The design phase will include collection of additional data in certain locations to more accurately define the areas to be excavated. This pre-design investigation will include collection of additional data from off-site areas, including the area where a waste oil disposal pit was formerly located. Upon receipt and evaluation of the results of the pre-design investigation, detailed engineering plans and specifications will be developed. It is estimated the remedial design will take nine to twelve months.

As discussed in Alternative 4, excavation and off-site disposal is a conventional remedial technology for PCB-contaminated soils. Off-site disposal of PCB-contaminated soil may require pre-treatment of the soils (as discussed under Alternative 4), since soils containing PCBs at concentrations greater than 50 ppm are present. Excavations under this alternative will proceed until all on-site soil containing PCBs at concentrations greater than 10 parts per million (ppm) was removed and disposed of off-site. The estimated area of this excavation is approximately 6,700 square feet, and it is expected it will extend approximately 2 feet below grade, resulting in approximately 500 cubic yards of soil for off-site disposal. The approximate limits of this area are indicated on Figure 3 as Area of Concern (AOC) 1A.

No PCBs were detected in off-site areas during the Remedial Investigation; however, if PCB contamination is identified in off-site areas during the remedial design or remedial action phase, excavation in those off-site areas will continue until the SCO for PCBs for the protection of public health for residential use is achieved, which is 1 ppm. Any excavation conducted off-site will be restored with backfill which meets the requirement of 6 NYCRR 375-6.7(d) for unrestricted use.

On-site areas which are grossly-contaminated by oil and reasonably accessible to excavation will also be excavated for off-site disposal. There are two areas targeted for excavation. The first is an area of soil in the western portion of the site where oil contamination was encountered between 4 and 6 feet below grade. This area is located within the footprint of the PCB excavation, but extends deeper. The approximate limits of this area are indicated on Figure 3 as AOC 1B. It is estimated that an additional 570 cubic yards of soil will need to be excavated to remove grossly-contaminated soils from AOC 1B. The other area targeted for excavation due to gross oil contamination is in the southeast corner of the site. The contamination in this area is located at a depth of approximately 10 to 12 feet below grade. The approximate limits of this area are indicated on Figure 3 as AOC 2. The exact area to be excavated will be delineated during the remedial design phase. It is estimated that 75 cubic yards of soil will be generated for off-site disposal from AOC 2.

Based on the results of the investigation, it does not appear there are any off-site areas that require excavation due to petroleum contamination; however, if it is determined during the remedial design or remedial action phase that petroleum contamination is present in off-site areas that is attributable to past facility operations, that area will be excavated to the extent practicable to remove all grossly-contaminated soils and until soil does not exceed the lower of the SCOs for the protection of public health for residential use and the SCOs for the protection of groundwater.

Any soil removed from off-site areas that is not grossly-contaminated by oil and contains less than 10 ppm PCBs may be consolidated on-site to backfill excavations. Similarly, soil excavated from AOC 2 that is not grossly contaminated and does not contain PCBs at concentrations greater than 10 ppm may be reused on-site to backfill excavations. It is expected that soil in the upper 6 to 8 feet of AOC 2 will be able to be re-used on site.

In the course of performing the excavations, groundwater and oil may need to be removed from the subsurface to maintain a dry excavation. The oil will likely be separated from groundwater and disposed of off-site. After

separation the groundwater will either be disposed of off-site or subjected to treatment prior to discharge, either on-site or to the sanitary sewer system for additional treatment. Treatment and discharge of oil and groundwater extracted during the course of excavation will entail the same considerations discussed for dewatering under Alternative 4.

An oil recovery system will also be installed on-site to remove oil from the subsurface and prevent off-site migration of oil. As discussed in Alternative 3, oil recovery is a conventional remedial technology commonly employed to remove oil contamination from the subsurface that cannot be removed by excavation feasibly or in a cost-effective manner. Since groundwater contamination was not identified during the RI, the system will likely be a skimmer system, similar to the system discussed in Alternative 3. It is assumed the system will be installed in the southeast corner of the site, in AOC 2. If the excavation is successful in removing all mobile oil from the subsurface, it is possible the oil recovery system will not be needed. The details of the recovery system will be determined during the remedial design phase, or subsequent to completion of the excavations; however, it is likely the system will include a collection trench backfilled with highly permeable material (*e.g.*, coarse stone) which will be installed as the excavation of AOC 2 was backfilled. The vertical extent of the collection trench will be constructed to capture the seasonal groundwater fluctuations, similar to a monitoring well. Excavated soil to be reused on-site (*i.e.*, not grossly contaminated and containing less than 10 ppm PCBs) may be re-used above the collection sump or trench, but below the site cover system (see below) if space allows. It is estimated oil will continue to be recovered from the subsurface for approximately 3 years; however, recovery of oil will continue until the Department determines it is no longer necessary.

Upon completion of the excavations, the site will be re-graded to prepare for the installation of a two-foot clean soil cover system. Soil will need to be removed to a depth of two feet along the property boundary to allow for installation of the cover system. Some of the soil generated by the grading process will be used to backfill the excavations; however, the volume of soil generated during grading is expected to be substantially greater than the volume of the excavations. It is likely some additional soil will need to be disposed off-site in order to install the cover system without raising the elevation of the site significantly and without creating steep slopes on the site. It is estimated an additional 430 cubic yards of soil will need to be disposed of off-site to accommodate the cover system.

The cover system will have the same requirements as the cover system described for Alternative 3.

It is estimated that construction of Alternative 5 will take 10 to 12 weeks to complete.

Since contamination will remain at the site under this alternative, an environmental easement and Site Management Plan will be necessary. The environmental easement and Site Management Plan required by this alternative will include the same provisions and requirements as the environmental easement and Site Management Plan discussed under Alternative 3.

The capital cost to implement this alternative include: the costs to design and construct the excavations, oil recovery system and site cover system; develop the Site Management; and place the environmental easement on the property. It is assumed for the purpose of cost estimation that the oil recovery system will be operated during the first 3 years of remedy implementation. (The recovery system will be operated as long as necessary under this alternative.) Apart from operation of the oil recovery system annual costs under this alternative for the 30 year cost estimation period include the cost to monitor groundwater and provide periodic certification of the remedy. The estimated cost to implement Alternative 5 is as follows:

Present Worth:.....*$799,000*
Capital Cost:.....*$652,000*
Annual Costs:.....*$9,580*

Alternative 6: Expanded Excavation, Oil Recovery and Site Cover

This alternative includes the same elements as Alterative 5, except that the excavation area will be expanded to include all soil containing PCBs at concentrations greater than 1 ppm, which is the restricted residential soil cleanup objective for PCBs.

A remedial design will be implemented prior to conducting the excavations. The remedial design will have the same purpose and entail the same activities as described for Alternative 5.

Excavations under this alternative will proceed until all on-site soil containing PCBs at concentrations greater than 1 ppm was removed and disposed of off-site. The excavation in the western portion of the site described in Alternative 5 will be expanded to cover approximately 11,500 square feet and will extend to a depth of approximately 6 feet below grade, resulting in approximately 2,550 cubic yards of soil to be disposed of off-site. This excavation will also encompass one of the areas of petroleum contamination targeted for excavation under Alternative 5.

There is one additional area targeted for excavation due to PCB contaminated that is not targeted by Alternative 5. One sample collected at a depth of 13 feet below grade in the southeast quadrant of the site contained PCBs at 5 ppm. It appears the impacted area is limited in extent. It is estimated the excavation will cover approximately 250 square feet and extend to a depth of approximately 14 feet below grade. It is expected the top several feet of soil will be able to be re-used on-site and that the excavation will result in the off-site disposal of approximately 85 cubic yards.

The excavation of the petroleum contamination in the southeast corner of the site will be conducted as described in Alternative 5 and the oil recovery system will be installed as described in Alternative 5.

As with Alternative 5, a two-foot soil cover will be installed across the site. Upon completion of the excavations, the site will be re-graded to prepare for the installation of the cover system. Soil generated from the grading process will be used to partially backfill the excavations. It is expected that the volume of the excavations will exceed the volume of soil generated by site re-grading. Once the re-grading process is completed a demarcation layer will be placed across the site and clean soil will be imported to restore the excavations and establish the minimum two-foot clean soil cover system. All soil imported to the site to be used as backfill or site cover will meet the Department's requirements set forth at 6 NYCRR 375-6.7(d) for restricted residential use. If any development of the site occurs, structures such as buildings, pavement or sidewalks comprising the site development may replace the two-foot soil cover for the area covered by those structures; however, the City of Syracuse has stated there is no development planned for the site, other than green space.

As discussed in Alternative 5, based on the results of the investigation, it does not appear there are any off-site areas that require remediation. However, if it is determined that site-related contamination is present in off-site areas, that area will be excavated as described under Alternative 5. Soil generated by the excavations which is not grossly-contaminated by oil and contains less than 1 ppm PCBs may be consolidated on-site or reused on-site to backfill excavations.

It is estimated that construction of Alternative 5 will take 12 to 14 weeks to complete.

Since contamination will remain at the site under this alternative, an environmental easement and Site Management Plan will be necessary. The environmental easement and Site Management Plan required by this alternative will include the same provisions and requirements as the environmental easement and Site Management Plan discussed under Alternatives 3 and 5.

The capital cost to implement this alternative include: the costs to design and construct the excavations, oil recovery system and site cover system; develop the Site Management; and place the environmental easement on the property. It is assumed for the purpose of cost estimation that the oil recovery system will be operated during the first 3 years of remedy implementation. (The recovery system will be operated as long as necessary under this alternative.) Apart from operation of the oil recovery system annual costs under this alternative for the 30 year cost estimation period include the cost to monitor groundwater and provide periodic certification of the remedy. The estimated cost to implement Alternative 6 is as follows:

Present Worth:.....*$999,000*
Capital Cost:.....*$852,000*
Annual Costs:.....*$9,580*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1. No Action	0	0	0
2. Limited Action	31,700	5,050	109,300
3. Oil Recovery and Site Cover	171,000	12,800	368,000
4. Restoration to Unrestricted Conditions	2,180,000	0	2,180,000
5. Excavation, Oil Recovery & Site Cover	652,000	9,580	799,000
6. Expanded Excavation, Oil Recovery & Site Cover	852,000	9,580	999,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternative 5, Excavation, Oil Recovery & Site Cover as the remedy for this site. Alternative 5 achieves the remediation goals for the site by removing the source areas of contamination and preventing exposure to remaining contamination through engineering and institutional controls. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 3.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the AA report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy (Alternative 5: Excavation, Oil Recovery and Site Cover) satisfies this criterion by removing the PCB-contaminated surface soil, which is the most significant threat to public health and the environment, and minimizing the potential for off-site migration by excavating soil which is heavily contaminated by oil (source areas), and by operating the oil recovery system, which will remove additional oil. The remaining contamination will be managed through institutional controls (environmental easement) and engineering controls (oil recovery system and site cover system). Alternative 6 complies with this criterion in a similar fashion. Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 (Limited Action) only provides minimal protection of human health and the environment. Alternative 3 (Oil Recovery and Site Cover), by removing mobile oil from the subsurface and placing a soil cover across the site, will minimize the potential for off-site migration of contamination and mitigate the most significant threat to human health and the environment at the site, which is the surface soil contamination. Alternative 4 (Restoration to Unrestricted Conditions), which removes all soil contaminated above the unrestricted soil cleanup objectives, meets the threshold criteria.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 5 complies with SCGs to the extent practicable. It addresses source areas of contamination and complies with the restricted use SCOs at the surface through construction of a cover system. Alternative 6 also addresses source areas and complies with the restricted use SCOs at the surface through construction of a cover system. In addition Alternative 6 will comply with the restricted use SCO for PCBs everywhere on-site. Alternative 2 leaves surface soil contamination at the site above applicable SCGs and does not address source areas. It does not comply with SCGs, and therefore does not satisfy this threshold criterion, so will not be considered further. Under Alternative 3, PCB-contaminated soil will remain at the site under a cover system. 6 NYCRR 375-

1.8(c) requires that source areas of contamination be removed or treated to the extent feasible. Removal of the surface soil source area is feasible, yet is not considered by this alternative. Therefore, Alternative 3 does not comply with SCGs, and will not be considered further. Alternative 4 complies with SCGs by removing all contaminated soil from the site. Since Alternatives 4, 5 and 6 satisfy the threshold criteria, the remaining criteria are particularly important in determining a remedy for the site.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 4, 5 and 6 are effective in the long-term. Alternative 4 is the most effective, followed by Alternative 6, then Alternative 5. Since Alternative 4 removes all contamination from the site there is no need for controls and there is no remaining risk. Alternatives 5 and 6 eliminate the most significant risks at the site and the level of contamination remaining are easily managed using engineering and institutional controls.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 4 removes all contamination from the site. It is likely a portion of the PCB-contaminated soil may require treatment prior to disposal, so the toxicity of that volume of soil will be reduced prior to off-site disposal. The same volume requiring pre-treatment under Alternative 4, if any, will require pre-treatment under Alternatives 5 and 6. Alternatives 5 and 6 reduce the volume of contamination at the site by excavating the source areas for off-site disposal and by removing oil through the oil recovery system. Alternative 6 removes a greater volume of soil than Alternative 5. The mobility of contaminants is reduced by Alternatives 5 and 6 through the cover system, preventing erosion of contaminated soils, and through the oil recovery system, which will remove any potentially mobile oil.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 4 achieves remedial objectives more quickly than Alternatives 5 and 6, which achieve remedial objectives in the same time frame as each other. One of the remediation objectives for the site is to prevent migration of contaminants. Alternatives 5 and 6 achieve this in part by removing mobile oil from the subsurface using an oil recovery system, which is assumed to be operated for approximately 3 years.

The potential and actual short-term adverse impacts are greatest for Alternative 4, followed by Alternative 6, and Alternative 5, which has the lowest short-term impacts. Each alternative creates traffic and noise due to the operation of construction equipment and hauling soil to and from the site and will require disturbance of contaminated soils. During intrusive activities, the potential exists to generate vapors or dust which could migrate off-site if not controlled. The potential also exists to generate contaminated runoff from exposed soils. The greater

the volume of soil disturbed, the greater the potential for off-site impacts, though controls employed during construction will minimize these risks.

Alternative 5 creates the least amount of traffic, takes the least amount of time to implement (10 – 12 weeks) and disturbs the lowest volume of soil (1,500 cubic yards). Alternative 6 creates slightly more traffic, takes slightly longer to implement (12 – 14 weeks) and includes disturbance of approximately 3,100 cubic yards of soil. Alternative 4 creates the most traffic and noise, takes the longest to implement (approximately 20 to 24 weeks) and disturbs the greatest quantity of soil (approximately 10,100 cubic yards).

Alternative 4 uses the most energy, and therefore results in the greatest amount of greenhouse gas (GHG) emissions during implementation of the remedy due to the longer construction period and the greater number of truck loads needed to haul soil to and from the site. Alternative 5 creates the least GHG emissions, with Alternative 6 resulting in slightly greater GHG emissions than Alternative 5. More landfill space is used by Alternative 4 than the other alternatives and more natural resources (clean soil) need to be utilized in order to implement the remedy.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives 4, 5 and 6 are all implementable using readily available construction equipment and materials. Alternative 4 is implementable, but to a much lesser degree than the other two alternatives. Several logistical difficulties will be encountered during implementation of Alternative 4 due to the small size of the site and the large volume of soil that will be excavated and imported. The small size of the site limits the area which is available for stockpiling, vehicle/equipment access and groundwater storage and/or treatment equipment. Alternatives 5 and 6 are both readily implementable; though face the same logistical challenges of Alternative 4, but to a much lesser degree since smaller volumes of soil are involved. Alternative 5 is more implementable than Alternative 6, since Alternative 6 involves a greater volume of soil and will require excavation to considerable depths (13-14 feet) in order to remove an area of low-level PCB contamination.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

Alternative 4 has the highest present worth cost by a significant margin. The cost to implement Alternative 5 is less than Alternative 6 yet provides the same level of protectiveness of human health and the environment.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The anticipated use of the site is open space, which is considered a commercial use; however, the surrounding area is residential and the potential exists for active recreational usage by the community. Active recreational usage (such as athletics) is covered by the restricted residential land use category. Alternatives 4, 5 and 6 each allow for restricted residential use of the site. Alternative 4 will not restrict the use of the site in any way.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP were evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Alternative 5: Excavation, Oil Recovery and Site Cover has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

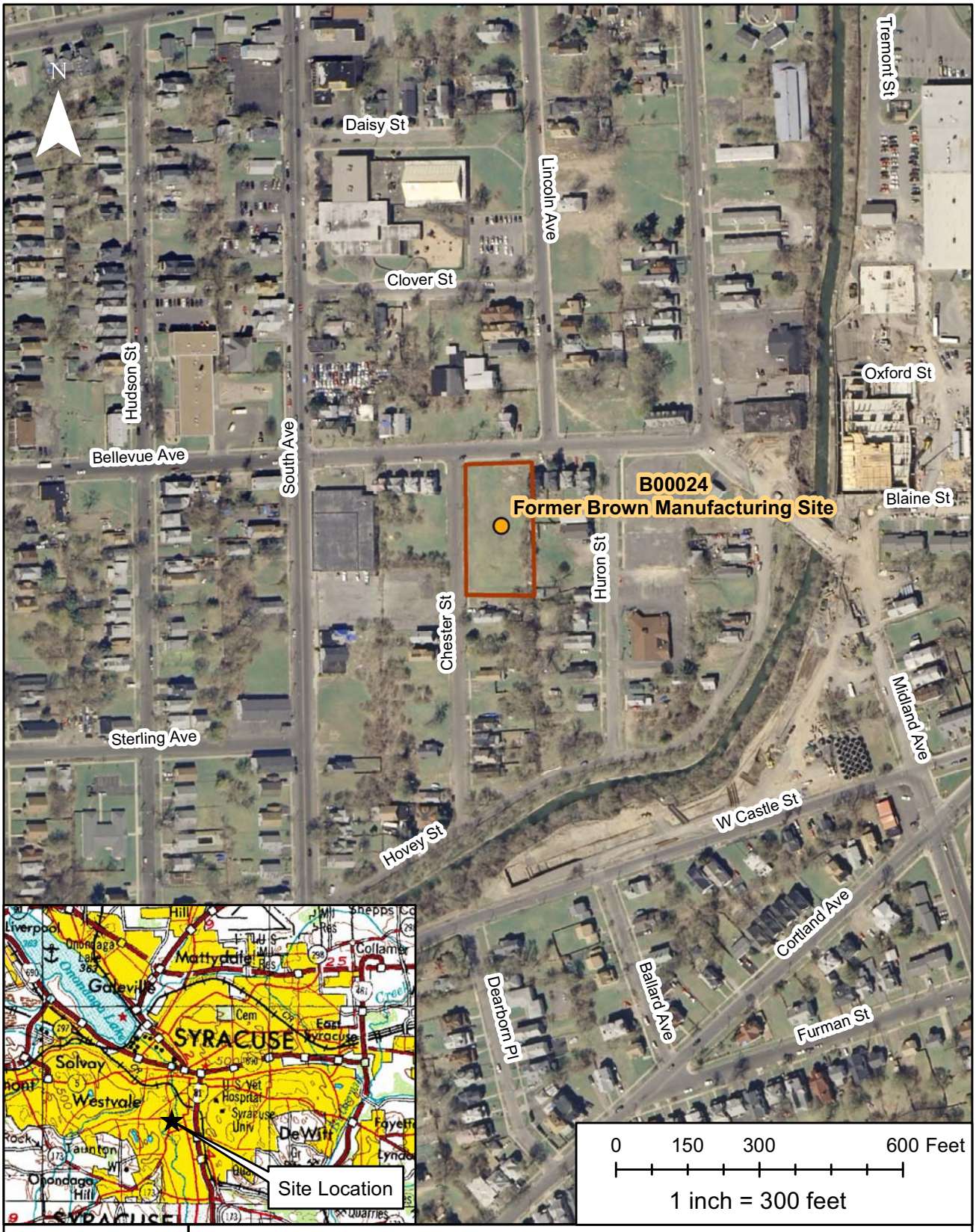

Figure 1 - Site Location

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

2011-11-03
JPC

Figure 2 - Extent of Contamination

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 Petroleum/PAH Contamination
- Extent of PCB Contamination

All locations approximate.

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

Drawn: 2011-11-04 by JPC

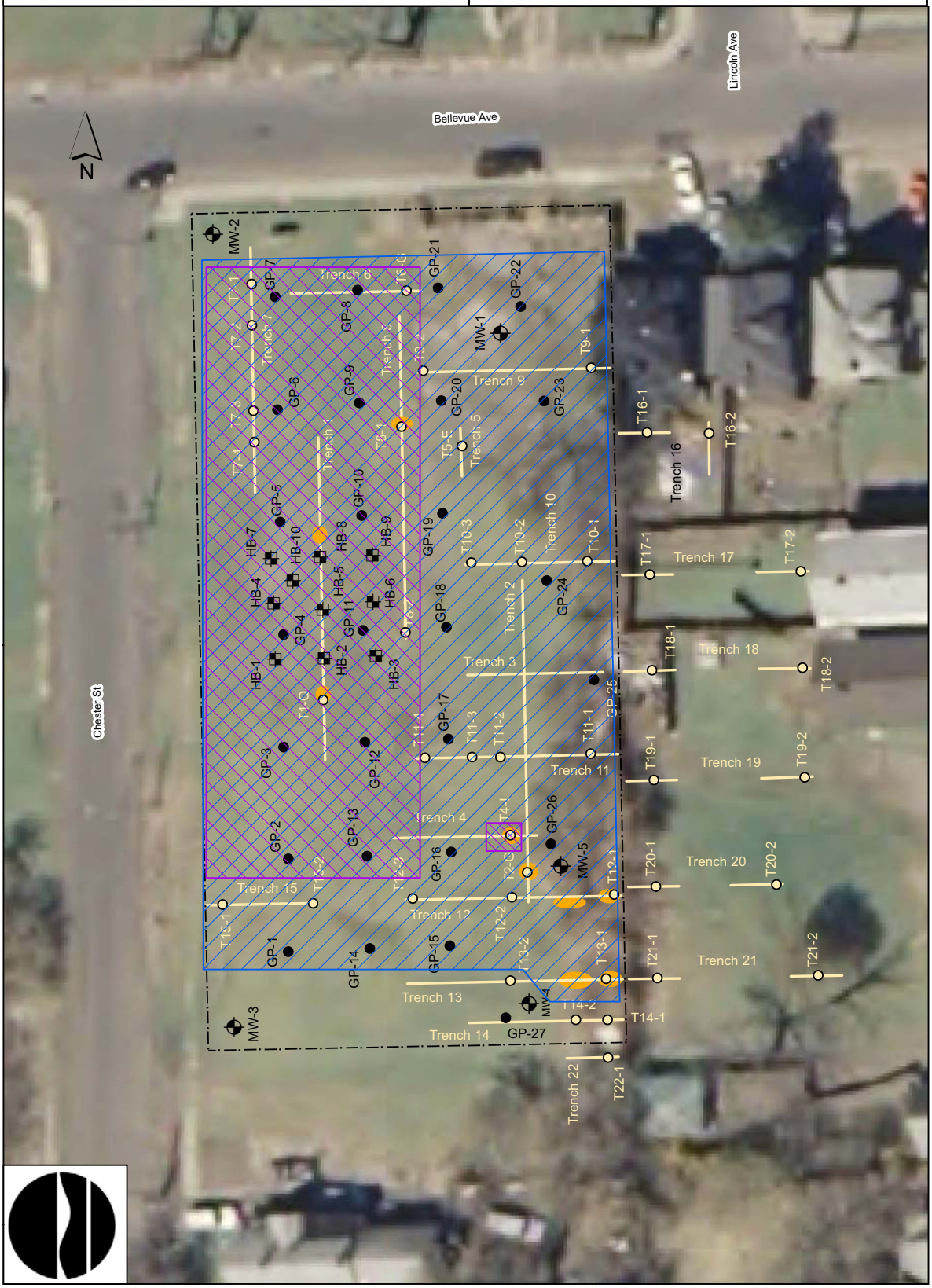

Figure 3 - Selected Remedy

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

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Former Brown Manufacturing Site
Environmental Restoration Project
City of Syracuse, Onondaga County, New York
Site No. B00024

The Proposed Remedial Action Plan (PRAP) for the Former Brown Manufacturing Site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 10, 2012. The PRAP outlined the remedial measure proposed for the contaminated soil at the Former Brown Manufacturing Site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 5, 2012, which included a presentation of the remedial investigation and alternative analysis (RI/AA) for the Former Brown Manufacturing Site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 26, 2012.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: When was the sampling conducted that showed high levels of PCBs in surface soil?

RESPONSE 1: A sample was collected around the time the City of Syracuse (City) was applying to the Environmental Restoration Program (ERP), which was about 1998.

COMMENT 2: It was stated the area that had high levels of PCBs was covered with crushed stone once the results were received. Where is that area? I have not noticed that at the site.

RESPONSE 2: The crushed stone covered area is located in the west-central portion of the site, in the vicinity of sample locations HB-1 through HB-9, which are shown on Figures 2 and 3.

COMMENT 3: What was done since then to follow-up or maintain that stone?

RESPONSE 3: Additional sampling was conducted during the Remedial Investigation from that area which showed much lower levels of PCBs, although still above applicable standards, and that the area was limited in extent.

COMMENT 4: What were the levels of PCBs and lead found at the site?

RESPONSE 4: PCBs were identified in soil during the Remedial Investigation at a maximum concentration of 72 parts per million (ppm). Another sample contained about 22 ppm PCBs and several other samples contained PCBs at concentrations ranging from non-detect to about 6 ppm. Most of those detections were located in the western portion of the site. Lead has been found at concentrations greater than 400 ppm, which is the residential use soil

cleanup objective for lead, in only two instances. One of those samples had a concentration of 2,460 ppm. That sample was collected from several feet below the surface.

COMMENT 5: I remember sampling being conducted east of the site along Huron Street. Did it look like the oil was moving that way?

RESPONSE 5: The investigation included sampling to the east of the site, on the adjoining properties on Huron Street. There was no contamination identified by that sampling. Groundwater flow at the site is to the south not to the east toward Huron St.

COMMENT 6: I feel more money should be invested in urban neighborhoods to deal with contaminated sites. Disproportionate investment has been made in other neighborhoods. If more attention had been paid to this site previously, the investigation would have been completed sooner and there would be money available for remediation through the ERP.

RESPONSE 6: Comment noted.

COMMENT 7: Could a parking lot be constructed at the site?

RESPONSE 7: Yes. A parking lot could be constructed. Remediation to restricted residential standards would also allow more restrictive uses, such as commercial and industrial usage. Although, it is important to note that specific usage is subject to local planning processes.

COMMENT 8: Would a vegetable garden be allowed at the site?

RESPONSE 8: Restricted residential use does not allow for vegetable gardens unless the area which was to be used for the vegetable garden was remediated to residential standards. A raised bed vegetable garden constructed with imported soil may be allowed.

COMMENT 9: It was stated that nearly all of the ERP funds have been encumbered. Has any of that been set aside for remediation of this site?

RESPONSE 9: The scope of work required in the City's State Assistance Contract for this site included the investigation phase only, which includes the remedial investigation and remedy selection. It did not include the remediation phase.

Upon issuance of the ROD, the municipality will be able to claim any outstanding eligible costs and the current State Assistance Contract for the investigation of the site will be closed out. Requests for funding currently exceed the $200 million authorized under the 1996 Clean Water/Clean Air Bond Act for the ERP. There is $20 million remaining that requires an agreement between the Legislature and the Governor's Office to be used. These funds could be used to complete any ongoing project construction phases, such as this site, but a decision has not yet been made as to how, or if, these funds will be made available. Following the issuance of the ROD, the Department will meet with municipal representatives to discuss options which may exist for funding the remedial program. At a minimum the Department will place an Environmental Notice on the site informing any potential property owner of the need to implement the selected remedy before the site can be used and notifying them of any restrictions on any future use required by the remedy.

COMMENT 10: What is the path forward in order to get the site remediated?

RESPONSE 10: See Response 9 regarding funding.

COMMENT 11: What is the likelihood this site would qualify for the State Superfund program and who determines if it is listed as a Superfund site? Is there something the City would have to do?

RESPONSE 11: The Department, in conjunction with the New York State Department of Health (NYSDOH), will make a determination as to whether the site presents a significant threat to human health and the environment and therefore should have a remedial program conducted under the Inactive Hazardous Waste Disposal Site Remedial Program, better known as the State Superfund program. Given the level of contamination in surface and near-surface soils and the fact that it is located in a residential neighborhood, it is a good candidate for the State Superfund program. As noted above, the Department, in conjunction with the NYSDOH, will make the determination.

COMMENT 12: Does the fact that this property is now in a floodplain affect the decision as to whether it should be listed as a Superfund site?

RESPONSE 12: It would be a less important consideration than the factors already discussed; however, it may have some bearing since it would suggest that surface contamination at the site may be prone to being transported off-site.

COMMENT 13: Given the economic climate, is there funding available for a remedial program for the site under the State Superfund program?

RESPONSE 13: If this site is determined to be a Superfund site and if no potentially responsible parties are identified that are willing and able to implement the remedy required by the Record of Decision, State Superfund money would be used to conduct the remediation.

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

Former Brown Manufacturing Site
Environmental Restoration Project
City of Syracuse, Onondaga County, New York
Site No. B00024

Proposed Remedial Action Plan for the Former Brown Manufacturing Site, dated February 2012, prepared by the Department.

The Department and the City of Syracuse entered into a State Assistance Contract, Contract No. C300654, March 9, 1998.

State Assistance Contract (SAC) No. C300654 and SAC Amendments 1 through 5.

Monitoring Well Installation Logs, dated August 7, 1998, prepared by CME Associates, Inc.

Site Investigation Report, Former Brown Manufacturing Site, dated January 2003, prepared by Beardsley Design Associates, P.C.

Remedial Alternatives Report, Former Brown Manufacturing Site, dated January 2003, prepared by Beardsley Design Associates, P.C.

Groundwater Sampling Results, October 2008, submitted by Beardsley Design Associates, P.C.

Soil Vapor Sampling Results, December 2009 & September 2008, submitted by Beardsley Design Associates, P.C.