PROPOSED REMEDIAL ACTION PLAN

Bartlett Tree Company
State Superfund Project
Westbury, Nassau County
Site No. 130074
February 2014

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site resulted in threats to public health and the environment that were addressed by actions known as interim remedial measures (IRMs), which were undertaken at the site. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation (RI) or feasibility study (FS). The IRMs undertaken at this site are discussed in Section 6.2.

Based on the implementation of the IRMs, the findings of the RI indicate that the site no longer poses a threat to human health or the environment. The IRMs conducted at the site attained the remediation objectives identified for this site, which are presented in Section 6.5, for the protection of public health and the environment. No Further Action is the remedy proposed by this Proposed Remedial Action Plan (PRAP). A No Further Action remedy may include site management, which will include continued operation of any remedial system installed during the IRMs and the implementation of any prescribed institutional controls/engineering controls (ICs/ECs) that have been identified as being part of the proposed remedy for the site. This PRAP identifies the IRMs conducted and discusses the basis for No Further Action.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of 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 document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the

reports and documents, which are available at the following repository:

A public comment period has been set from:

2/26/2014 to 3/28/2014

A public meeting is scheduled for the following date:

3/25/2014 at 7:00 PM

Public meeting location:

Westbury Community Center
357 Rockland Street
Westbury, NY 11590

At the meeting, the findings of the remedial investigation (RI) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 3/28/2014 to:

Jamie Ascher
NYS Department of Environmental Conservation
Division of Environmental Remediation
SUNY at Stony Brook 50 Circle Road
Stony Brook, NY 11790-3409
jxascher@gw.dec.state.ny.us

The Department may modify the proposed remedy presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

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 Bartlett Tree Company site is located at 345 Union Avenue in the Village of Westbury, Town of North Hempstead.

Site Features: The site is approximately 0.4 acres in size. The facility office building is a two-story brick and masonry structure, located at the south end of the site. Two structures, an equipment garage/pesticide locker and a storage shed have been removed from the site.

Current Zoning/Use: The site is currently zoned for commercial use and is located in a commercial/industrial setting. The Bartlett Tree Company provides horticultural services to the surrounding communities. The Long Island Railroad's Westbury train station is located immediately south of the site. There is a residential neighborhood several blocks north of the site.

Past Use of the Site: The Bartlett Tree Company has occupied the site since the mid 1950s. Pesticides are stored on-site for use in the services they provide. Disposal of pesticides into an on-site leaching pool has been documented.

Site Geology/Hydrogeology: The water table is encountered approximately 29'-32' below ground surface, depending on seasonal variation. Overburden consists mainly of various size sands and gravels. The site specific groundwater flow direction is to the south/southwest.

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 that restrict the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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.

The PRPs for the site, documented to date, is:

FA Bartlett Tree Expert Company

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. The FA Bartlett Tree Expert Company entered into an Order on Consent (Index #W1-1091-06-08) on April 20, 2007. The Order obligates the responsible party to implement a full remedial program.

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 (Figure 2). 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
- indoor air
- sub-slab 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 hazardous waste 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 contaminants of concern identified at this site is/are:

ALDRIN	LINDANE
DDD	DDE
DDT	CHLORDANE
DIELDRIN	ALPHA-BHC

Based on the investigation results, comparison to the SCGs, and the potential public health and environmental exposure routes, certain media and areas of the site required remediation. These media were addressed by the IRMs described in Section 6.2. More complete information can be found in the RI Report and the IRM Construction Completion Report.

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.

The following IRMs have been completed at this site based on conditions observed during the RI.

Drywell-1

An interim remedial measure (IRM) was implemented to address subsurface soil which was contaminated with pesticides and herbicides. The IRM work plan was approved by DEC on June 14, 2012. An addendum to the work plan was approved on August 21, 2012 which modified the method of shoring the excavation and segregating the excavated soils.

Soil borings conducted in 2010 during the remedial investigation were supplemented with additional soil borings in April 2011 to further delineate the vertical and horizontal extent of contamination in subsurface soil within and around Drywell-1. Elevated levels of DDD, DDT, chlordane, dieldrin, lindane and were discovered in subsurface soils beneath the drywell.

Field work associated with the IRM began on September 5, 2012. Sheet piling was driven at the outer limits of the excavation to keep the excavation open while contaminated soil was removed from within. Excavated soil was stored on-site and was sampled and analyzed for off-site disposal at a permitted disposal facility (Figure 3).

Excavation activities were completed on November 12, 2012. The final depth of excavation was approximately 32 feet below grade. Groundwater was encountered at approximately 31 feet below grade. Two post excavation soil samples were taken from the bottom of the excavation before the area was backfilled. Post excavation soil samples and previous soil characterization borings confirmed that residual soil contamination meets the protection of groundwater use soil cleanup objectives (SCOs). The only exceedance of a commercial SCO was at 32 feet below grade.

Excavated soil was disposed of off-site at two permitted disposal facilites. 97.46 tons of non-hazardous soil was disposed at Cumberland Landfill in Newburg, Pennsylvania and 340.94 tons of hazardous soil was disposed at the Bennett Environmental Facility in Quebec, Canada.

The excavation was backfilled with 239.4 tons of certified clean fill material (sandy soil) provided by 110 Sand Company in Melville, New York and 320.2 tons of coarse aggregate from Clinton Point Quarry, Clinton Point, New York. All backfill materials met the requirements and criteria specified in 6 NYCRR Part 375-6.7(d) and DER-10 Technical Guidance for Site Investigation and Remediation.

The IRM activities are summarized in a Construction Completion Report (CCR) dated July 2013 which was prepared by a New York State licensed Professional Engineer. The CCR was approved by NYSDEC on July 30, 2013.

Drywell-3

Leaching pool Drywell-3 (DW-3) received the facility's sanitary wastewater. Analysis of the wastewater did not indicate that there had been disposal of hazardous wastes into DW-3. During the RI, 6.1 tons of liquid, solids and sediment were removed from the pool and disposed of off-site at a permitted disposal facility. Soil samples were collected from the bottom of DW-3 and from a depth of 18 to 24 inches below the bottom. No contaminants of concern were detected above the protection of groundwater SCOs or the commercial use SCOs. DW-3 was then backfilled to grade utilizing a 50 psi flowable fill material (lightweight concrete mixture) which hardens in place. The closure activities are summarized in a Remedial Action Report dated November 2009. In a letter dated June 6, 2012, the Nassau County Department of Health (NCDH) granted their concurrence with the investigation and closure of DW-3. With the assistance of NCDH and the Nassau County Department of Public Works, the facility was connected to the sanitary sewer system.

Mechanic's Pit

A small pit exists within the facility's garage. The pit was filled with stone ballast and was found to have a solid concrete base approximately two feet thick. Once the ballast was removed, soil that had accumulated on the concrete bottom was containerized and disposed of off-site at a permitted disposal facility. A soil boring was performed through the concrete base of the pit and a soil sample was collected and analyzed. There were no contaminants of concern which exceeded the protection of groundwater or commercial use SCOs, therefore, the pit was backfilled with stone ballast and its cover was replaced and anchored into place. The closure activities are summarized in a Remedial Action Report dated November 2009. In a letter dated

June 5, 2012, NCDH granted their concurrence with the investigation and closure of the mechanic's pit.

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: A RI was conducted to delineate the nature and extent of soil and groundwater contamination on-site. Based upon this investigation, the primary contaminants of concern are the pesticides aldrin, alpha BHC, chlordane, DDD, DDE, DDT, dieldrin and lindane.

Prior to Remediation:
Shallow Surface Soil - Surface soil was characterized site-wide by collecting soil samples from zero to two feet below surface in a number of locations including from the following areas of concern: former pesticide storage locker, former open shed, test pit-1, test pit-2, stairway floor drain and mechanic's pit. Levels of pesticides in all soil samples collected from this depth interval were below the commercial use SCOs. All samples were below the protection of groundwater SCOs and the majority were below the residential SCOs.

Subsurface Soil - Pesticides were detected in a subsurface soil beneath Drywell-1 at levels which exceeded the commercial use and protection of groundwater SCOs. The contaminants were detected in the drywell's bottom samples (approximately 7' below grade) and to a depth of approximately 32' below grade.

Groundwater - Pesticides were detected in groundwater at levels which exceeded SCGs. Groundwater is encountered approximately 31 feet below grade, depending on seasonal variation. Contaminant levels are expected to diminish as a result of interim remedial measure source removal (soil excavation) which was conducted and completed in November 2012. Volatile organic compounds (trichloroethene and cis-1,2-dichloroethene) were detected at levels exceeding SCGs in groundwater upgradient of the site. Levels of VOCs in on-site groundwater are generally non-detect with one detection marginally exceeding the SCG, and is not considered site related.

Post-Remediation:
Remediation at the site is complete. Prior to remediation, the primary contaminants of concern were pesticides in soil and groundwater. Remediation in the form of source removal (soil excavation) has reduced contaminant levels in subsurface soil to levels meeting either the commercial use or protection of groundwater SCOs. While pesticides in groundwater were found

to exceed SCGs, detections were extremely low (parts per trillion) and are expected to diminish to levels meeting SCGs as a result of source removal.

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*.

Since the site is fenced and covered by buildings, asphalt, or concrete, people will not come into contact with residual site-related soil and groundwater contamination unless they dig below the surface. 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 subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Although sampling has indicated that impacts to indoor air are not a current concern, the potential exists to inhale contaminants in indoor air due to soil vapor intrusion in on-site building development and occupancy. Insufficient environmental information exists to evaluate the potential for soil vapor intrusion to occur in off-site areas.

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:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF PROPOSED REMEDY

Based upon the results of the investigations at the site, the IRMs that have been performed, and the evaluation presented here, the Department is proposing No Further Action as the remedy for the site. This No Further Action remedy includes continued operation of the implementation of ICs/ECs which include: green remediation principles and techniques, maintaining a site cover system, restriction of groundwater use, compliance with redevelopment as a commercial use property, and a site management plan for monitoring and future development. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Section 6.5.

The elements of the proposed remedy are as follows:

1. Institutional Control. 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 commercial and industrial use as defined by Part 375-1.8(g), although the 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: and
- requires compliance with the NYSDEC approved Site Management Plan.

2. Site Management Plan. A site Management Plan is required which includes the following:
a) an Institutional Plan that identifies all use restrictions and details the steps and media-specific requirements necessary to ensure the following institutional controls remain in place and effective:
- Institutional Controls: An Environmental Easement will be imposed which will address the requirements and restrictions outlined in Paragraph 1 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 groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any additional buildings developed on the site including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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 certifications of the institutional and 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 soil gas, indoor air and groundwater to assess performance and effectiveness of the remedy;

- the installation of an off-site groundwater monitoring well downgradient of the site;
- a schedule of monitoring and frequency of submittals to the Department;
- continued monitoring of sub-slab vapor and indoor air in the on-site building to confirm additional actions are not needed to address exposures related to soil vapor intrusion; and
- monitoring for vapor intrusion for any building occupied or developed on the site.

Green Remediation

Green Remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DR-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 material which would otherwise be considered a waste.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation (RI) 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 two categories, volatile organic compounds (VOCs) and pesticides. 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 4 and 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 groundwater and 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(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Source areas/potential source areas identified at the site, and the actions taken to address those areas, are presented below.

Under DEC oversight, a RI was completed at the site. The findings of the RI are summarized in a RI report dated August 2013. During the RI several areas of concern were investigated. A preliminary site assessment (PSA) identified pesticide contamination in soil and groundwater beneath a subsurface leaching pool identified as Drywell-1 (DW-1). DW-1 and the following areas of concern were the focal points of the RI (Figure 2).

Drywell-1

As previously discussed, the disposal of pesticides and their presence in DW-1 was confirmed during a previous PSA. Soil and groundwater beneath and around DW-1 was thoroughly investigated during the RI and during preparation of the Interim Remedial Measure (IRM) work plan. The IRM activities are documented in greater detail in Section 6.2 of the PRAP and in the IRM Construction Completion Report dated July 2013. As a result of the IRM, pesticide impacted soils were removed from beneath DW-1 to a depth of 32 feet below grade, at which point groundwater was encountered. Residual pesticide levels in soil were below the Protection of Groundwater soil cleanup objectives (SCOs) in all confirmation samples.

Drywell-2

An architectural drawing dated July 25, 1963 identifies a Drywell-2 (DW-2) in the center of the property. However, there is no visual evidence of DW-2 on the site. During the RI, a geophysical study and two soil borings were conducted in the area identified as DW-2. Based upon the soil boring logs, the soil sample results, and the geophysical data, it appears that DW-2 was never constructed on the property.

Drywell-3

Leaching pool Drywell-3 (DW-3) received the facility's sanitary wastewater. Analysis of the wastewater did not indicate that there had been disposal of hazardous wastes into DW-3. During the RI, 6.1 tons of liquid, solids and sediment were removed from the pool and disposed of off-site at a permitted disposal facility. After the removal action, the depth to the bottom of the pool was approximately 12.5 feet below grade. Soil samples were collected from the bottom of DW-3 and from a depth of 18 to 24 inches below the bottom. No contaminants of concern were detected above the protection of groundwater SCOs or the commercial use SCOs. DW-3 was then backfilled to grade utilizing a 50 psi flowable fill material which hardens in place. In a letter dated June 6, 2012, the Nassau County Department of Health (NCDH) granted their concurrence with the investigation and closure of DW-3. With the assistance of NCDH and the Nassau County Department of Public Works, the facility was then connected to the sanitary sewer system.

Mechanic's Pit
A small pit exists within the existing facility's garage. The pit was filled with stone ballast and was found to have a solid concrete base approximately two feet thick. Once the ballast was removed, soil that had accumulated on the concrete bottom was containerized and disposed of off-site at a permitted disposal facility. A soil boring was performed through the concrete base of the pit and a soil sample was collected and analyzed. There were no contaminants of concern which exceeded the protection of groundwater or commercial use SCOs, therefore the pit was backfilled with stone ballast and its cover was replaced and anchored in place. In a letter dated June 6, 2012, NCDH granted their concurrence with the investigation and closure of the mechanic's pit.

Stairway Floor Drain
A six inch diameter floor drain exists at the base of the stairs leading to the facility's garage. The drain collects stormwater during rainfall events to keep the base of the stairwell from flooding. The drain cover was removed and the drain was investigated for interconnections to any of the existing leaching pools. No interconnections existed. A sample of the soil bottom of the drain revealed that there were no contaminants of concern which exceeded the protection of groundwater or commercial use SCOs. In a letter dated June 6, 2012, concurred with the investigation and continued use of the stairway floor drain.

Former Open Shed
An open shed once existed on the north side of the property for the storage of equipment. The shed was removed in July 2008 and a soil boring was performed in the area. Soil samples were collected at a depth of 0-2 feet, 5-7 feet and 10-12 feet below grade. No contaminants of concern were detected above the protection of groundwater or commercial use SCOs.

Former Pesticide Storage Locker
A locked fireproof storage cabinet was adjacent to a garage along the eastern side of the property. The garage was removed in July 2008 and the storage locker was removed to facilitate the placement of a soil boring in the area. Soil samples were collected at a depth of 0-2 feet, 6.5-7 feet and 10-12 feet below grade. No contaminants of concern were detected above the protection of groundwater or commercial use SCOs.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, and 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 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and a Source area identified at the site include,

The RI confirmed the disposal of pesticides into an on-site leaching pool identified as DW-1. Subsurface soil and groundwater beneath DW-1 was impacted with pesticides at levels which exceeded SCGs. As a result, DW-1 was one of the areas of concern which was the focus of the RI. Levels of pesticides in the contaminated soil beneath DW-1 exceeded the Contained in Criteria thus rendering it a hazardous waste. Therefore, an interim remedial measure was conducted in the form of source removal (soil excavation). The concrete leaching pool that comprised DW-1 was removed from the ground. Subsurface soil which was determined to be contaminated from previous characterization borings was then excavated to a depth of 32 feet below grade. The contaminated soil and concrete was disposed of off-site at a permitted disposal facility. The IRM is discussed in greater detail in Section 6.2. As previously discussed, the RI revealed that other areas of concern on the site did not pose a significant threat to public health or the environment.

Groundwater

During the RI, groundwater samples were collected from overburden monitoring wells. The samples were collected to assess on-site groundwater quality at the water table and within the deeper aquifer. Groundwater was sampled and analyzed for pesticides/herbicides, volatile organic compounds (VOCs), semi-volatile organic compounds and inorganics. The primary groundwater contaminants of concern in on-site groundwater are pesticides which were found to exceed SCGs (Figure 4). As a result of the removal of the contaminant source area (DW-1) through soil excavation, pesticide levels in on-site groundwater are expected to diminish.

Volatile organic compounds (VOCs) were detected in groundwater during the RI. However, VOC levels were observed to be highest in upgradient monitoring wells MW-1s and MW-1d, indicating the presence of VOCs is attributed to an upgradient source and are considered to represent background conditions. Therefore, VOCs found in on-site groundwater are not considered to be site specific contaminants of concern.

Table # 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
cis-1,2-Dichloroethene	ND – 48	5	4 of 24
Trichloroethene	ND – 120	5	5 of 24
Pesticides			
4,4'-DDT	ND – 0.39	0.2	2 of 24
Dieldrin	ND – 3.3	0.004	13 of 24
Endrin	ND – 0.12	ND	1 of 24
alpha-BHC	ND – 0.12	0.01	2 of 24
gamma-BHC (Lindane)	ND – 0.071	0.05	1 of 24
alpha-Chlordane	ND – 0.11	0.05	3 of 24
gamma-Chlordane	ND – 0.058	0.05	1 of 24

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Soil

During the RI, soil borings were conducted within the areas of concern to assess the nature and extent of soil contamination on the site. As with groundwater, soil samples were analyzed for pesticides/herbicides, volatile organic compounds, semi-volatile organic compounds and inorganics. The primary contaminants of concern in soil are pesticides. The table below includes the contaminants of concern that exceed the Unrestricted SCO found in Part 375-6.8 (a). Additionally, the table includes a comparison of the analytical data to the appropriate Restricted SCO found in Part 375-6.8 (b) for each individual contaminant. The Restricted SCO is the lower of: 1) the commercial use SCO where Section 4 has identified a restricted land use for the site, or 2) the protection of groundwater SCO only for the primary contaminants of concern listed in the groundwater section above. Soil contamination identified during the RI was addressed during the IRM described in Section 6.2 and is summarized in Table 2. Shallow surface soil was evaluated through the analysis of the zero to two foot soil interval. Pesticide levels in shallow surface soils were below the commercial use SCOs.

Table #2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c,d] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethene	ND – 0.067	1.3	0 of 21	1.3	0 of 21
Pesticides					
4,4'-DDD	ND – 11	0.0033	17 of 21	14	0 of 21
4,4'-DDE	ND – 2.3	0.0033	13 of 21	17	0 of 21
4,4'-DDT	ND – 130	0.0033	19 of 21	47	2 of 21
Aldrin	ND – 0.0076	0.005	2 of 12	0.19	0 of 12
Alpha-BHC	ND	0.02	0 of 2	0.02	0 of 2
Endosulfan I	ND	2.4	0 of 14	102	0 of 14
Endosulfan II	ND	2.4	0 of 19	102	0 of 19
beta-BHC	ND	0.036	0 of 18	0.09	0 of 18
gamma-BHC (Lindane)	ND	0.1	0 of 21	0.1	0 of 21
Chlordane (alpha)	ND	0.094	0 of 18	2.9	0 of 18
Dieldrin	ND – 0.58	0.005	7 of 21	0.1	0 of 21
Endrin	0.017	0.014	2 of 2	0.06	0 of 2

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 Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of groundwater contamination was evaluated by the sampling of sub-slab soil vapor under structures, and indoor air inside structures. At this site due to the presence of the facility building a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Volatile organic compounds (VOCs) are migrating onto the site in groundwater from an upgradient source, therefore, sampling was conducted to assess the potential for soil vapor intrusion. Sub-slab soil gas samples, indoor air samples and ambient air samples were collected in March 2008 and March 2012. On both occasions, sub-slab soil gas levels for tetrachloethene (PCE) were found to be elevated. However, on both occasions, indoor air sample results for PCE were below the NYSDOH guidance values and the levels were similar to ambient air quality. Based on the concentrations detected, and in comparison with the Guidance for Evaluating Soil Vapor Intrusion in New York State (NYSDOH, October 2006), soil vapor intrusion was not identified as a concern during the RI. However, monitoring is recommended on site building and soil vapor intrusion may represent a concern for any future onsite buildings. Also offsite environmental sampling is recommended to confirm SVI concerns are limited to the site. VOCs detected in sub-slab soil gas are not considered to be site specific contaminants of concern. No remedial alternatives need to be evaluated for soil vapor although periodic soil vapor sampling will be conducted in the future.

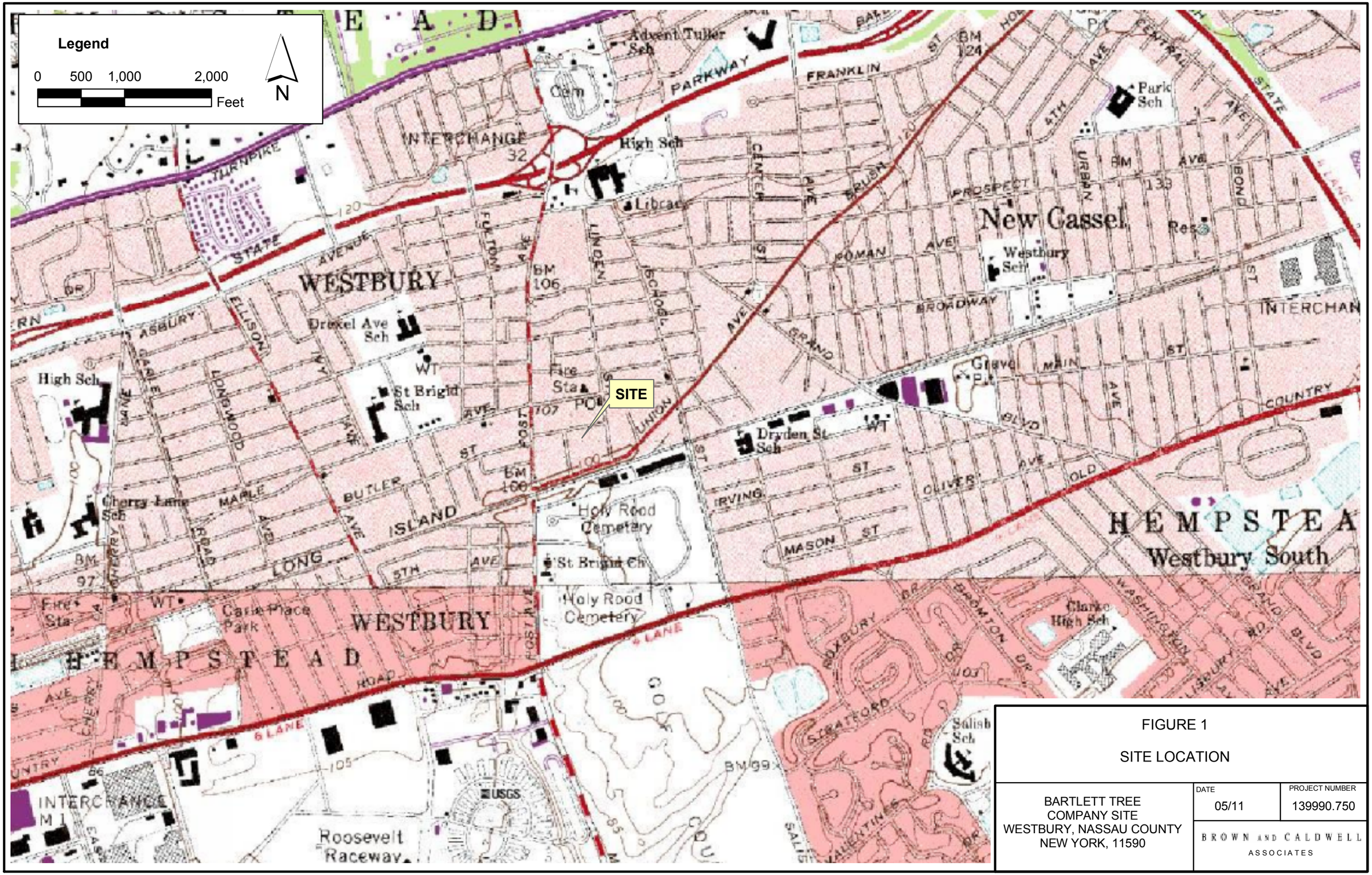


FIGURE 1

SITE LOCATION

BARTLETT TREE
COMPANY SITE
WESTBURY, NASSAU COUNTY
NEW YORK, 11590

DATE: 05/11

PROJECT NUMBER: 139990.750

BROWN AND CALDWELL
ASSOCIATES

P:\GIS\Bartlett_Tree\Dry_Well_1_IRM\750_WasteChar&DelSampling\Site_Location.mxd

N

SITE BOUNDARY

VILLAGE OF WESTBURY
PARKING LOT

SB-11

MW-1D

MW-1S

Chain link Fence

Grate=104.28

Storm MH

Concrete Curb

Wood Fence

Edge of Pavement

0.4'

0.2'

SB-12

SB-7

FORMER
OPEN
SHED

TEST PIT 1
MACADAM PATCH

TP-1

SB-4

SB-103

SB-3

SB-10/105

SB-5

SB-102

SB-104

SB-101

DRYWELL 1

SB-1

MW-4

MW-2D

MW-2S

MW-3

SB-6

FORMER
PESTICIDE
STORAGE
LOCKER

MW-5

SB-9

FORMER
GARAGE

SB-2

Remains of Foundation

LOT 786

LOT 787

LOT 207

LOT 206

Paved
Parking
Lot

MASONRY
WAREHOUSE

DRYWELL 3

SB-8

TEST PIT 2
MACADAM PATCH

TP-2

Enclosed
Pesticide
Storage
Area

Gate

Drain & Lower
Entrance
(Under Landing)

2 Story
Frame
Building

CASTLE INDUSTRIES,

Paved
Driveway

No. 345

No. 349

4.9'

ALL SEASONS TAXI

Concrete Curb

Concrete Sidewalk

Drop Curb

Gas
Box

SCO

UNION AVENUE

0 5 10 Feet

0 15 30 Feet

CROSS SECTION

MONITORING WELL

SOIL BORING

DRYWELL

TEST PIT

PAVEMENT EDGE

GROUND SURFACE ELEVATION (FT., NGVD)

PROPERTY LINE

FORMER STUCTURE LOCATION
(APPROXIMATE, DEMOLISHED JULY 2008)

P:\GIS\Bartlett_Tree\Dry_Well_1_IRM\750_WasteChar&DelSampling\Site_Plan_052411.mxd

FIGURE 2

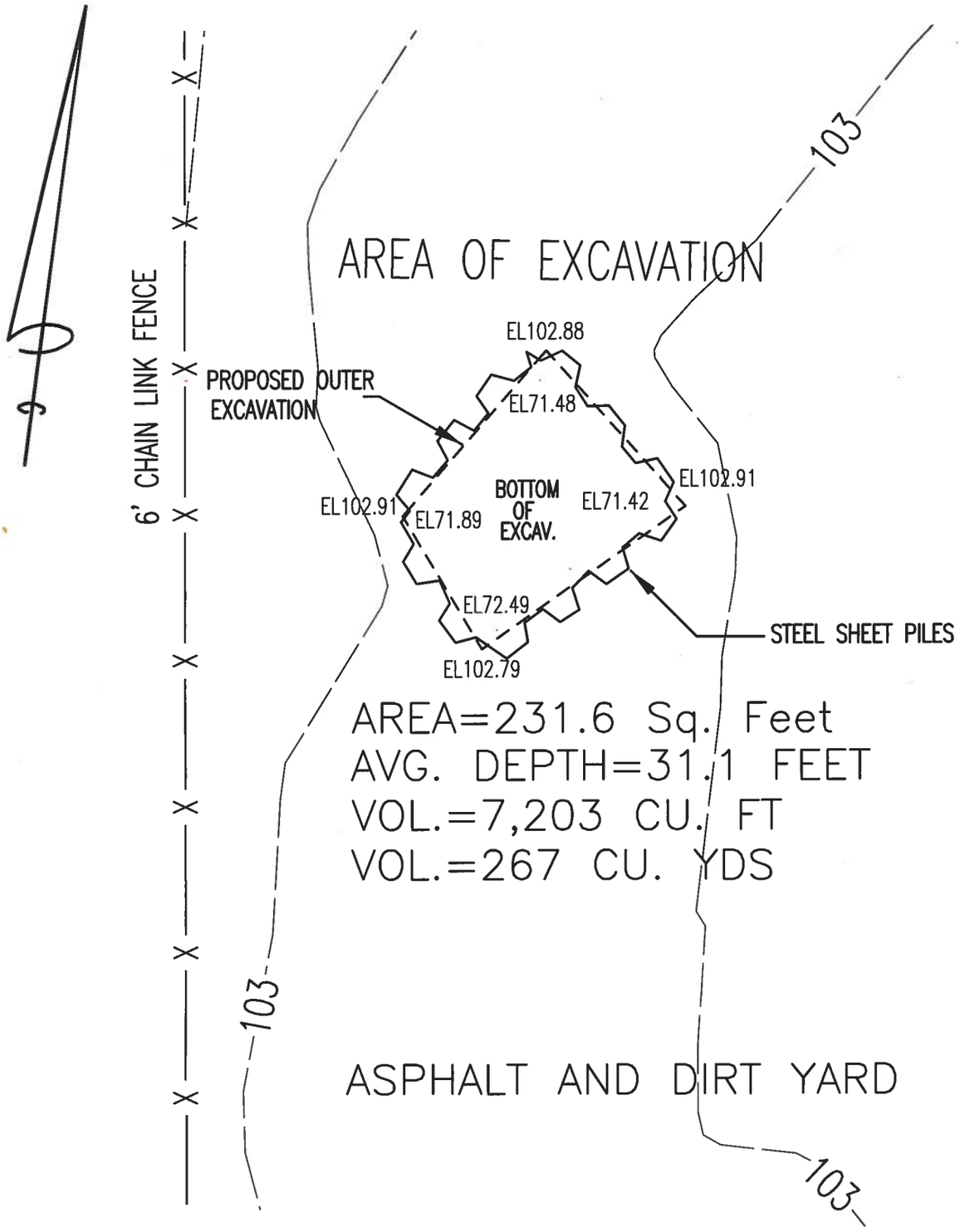
SAMPLE LOCATIONS

BARTLETT TREE COMPANY SITE
WESTBURY, NEW YORK
IRMWELL 1 IRM

DATE
May 2011

PROJECT NUMBER
139990.750

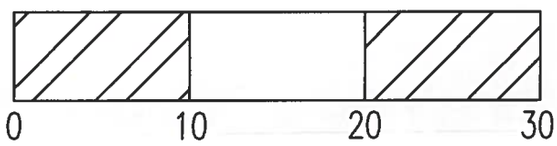
BROWN AND CALDWELL ASSOCIATES



NOTE: ELEVATIONS REFER TO NAVD88

SCALE: 1"=10FEET

Figure 3



SKETCH OF

REMEDIAL EXCAVATION

SITUATE AT

BARTLETT TREE COMPANY SITE
345 UNION AVENUE
WESTBURY, NEW YORK

SCALE 1"=10' OCTOBER 11, 2012

JOB NO.11652
REVISIONS: 10/24/2012–ADD BAR SCALE+MOVE TEXT

R:\11652–UNION\11652.DWG.

AMERICAN ENGINEERING & LAND SURVEYING, P.C.
surveyors . engineers . architects . planners
80 Smith Street . suite 3A farmingdale NY 11735
tel: 631.393.2867
fax: 631.393.2868
www.aelandsurveying.com

STATE OF NEW YORK ★ JOHN M. ABRUZZO ★ 50834 ★ LICENSED LAND SURVEYOR

JOHN ABRUZZO, L.S. (NYS LIC.50834)

MW-1D	10/27/2008	4/9/2009	3/23/2010	5/21/2012
2,4-DB	0.29 U	0.28 U	0.29 U	0.29 U
2,4,5 - T	0.015 U	0.014 U	0.015 U	0.014 U
4,4'-DDD	0.0038 U	0.0038 U	0.012 U	0.0047 U
4,4'-DDE	0.0038 U	0.0038 U	0.0049 U	0.0047 U
4,4'-DDT	0.0058 U	0.0057 U	0.012 U	0.0047 U
alpha-BHC	0.0026 U	0.0026 U	0.0026 U	0.0028 U
alpha-Chlordane	0.0045 U	0.0045 U	0.0046 U	0.0019 U
beta-BHC	0.0036 U	0.0036 U	0.0037 U	0.0032 U
Dalapon	0.32 U	0.24 U	0.24 U	0.24 U
delta-BHC	0.0029 U	0.0028 U	0.0029 U	0.0032 U
Dieldrin	0.0038 U	0.0038 U	0.0039 U	0.0050 U
Endosulfan I	0.0029 U	0.0028 U	0.0029 U	0.0041 U
Endosulfan II	0.0038 U	0.0038 U	0.0039 U	0.014 U
Endosulfan sulfate	0.0038 U	0.0038 U	0.0055 U	0.0055 U
Endrin	0.0038 U	0.0038 U	0.0039 U	0.0077 U
Endrin ketone	0.0038 U	0.0038 U	0.017 U	0.0047 U
Gamma-BHC	0.0044 U	0.0044 U	0.0045 U	0.0019 U
gamma-Chlordane	0.0029 U	0.0028 U	0.0041 U	0.0041 U
Heptachlor epoxide	0.0035 U	0.0035 U	0.0036 U	0.0022 U
MCPP	48 U	47 U	49 U	48 U

MW-1S	10/27/2008	4/9/2009	3/23/2010	5/22/2012
2,4-DB	0.29 U	0.28 U	0.29 U	0.29 U
2,4,5 - T	0.014 U	0.014 U	0.015 U	0.014 U
4,4'-DDD	0.0038 U	0.0039 U	0.011 U	0.0047 U
4,4'-DDE	0.0038 U	0.0039 U	0.0047 U	0.0047 U
4,4'-DDT	0.0057 U	0.0059 U	0.011 U	0.0047 U
alpha-BHC	0.0026 U	0.0027 U	0.0025 U	0.0028 U
alpha-Chlordane	*0.11	*0.1	0.031	0.052 J
beta-BHC	0.025	0.0044 J	0.0036 U	0.0032 U
Dalapon	0.32 U	0.24 U	0.25 U	0.24 U
delta-BHC	0.005 U	0.003 U	0.0028 U	0.0032 U
Dieldrin	*0.18	*0.12 J	*0.012 J	0.0050 U
Endosulfan I	0.007 U	0.0033 J	0.0028 U	0.0041 U
Endosulfan II	0.0038 U	0.0039 U	0.0038 U	0.014 U
Endosulfan sulfate	0.0038 U	0.0039 U	0.0053 U	0.0055 U
Endrin	0.0038 U	0.0039 U	0.0038 U	0.0077 U
Endrin ketone	0.0038 U	0.0039 U	0.016 U	0.0047 U
Gamma-BHC	0.0044 U	0.0045 U	0.0043 U	0.0019 U
gamma-Chlordane	0.048	*0.058	0.024	0.0060 U
Heptachlor epoxide	0.014	0.0036 U	0.0035 U	0.0022 U
MCPP	48 U	47 U	49 U	48 U

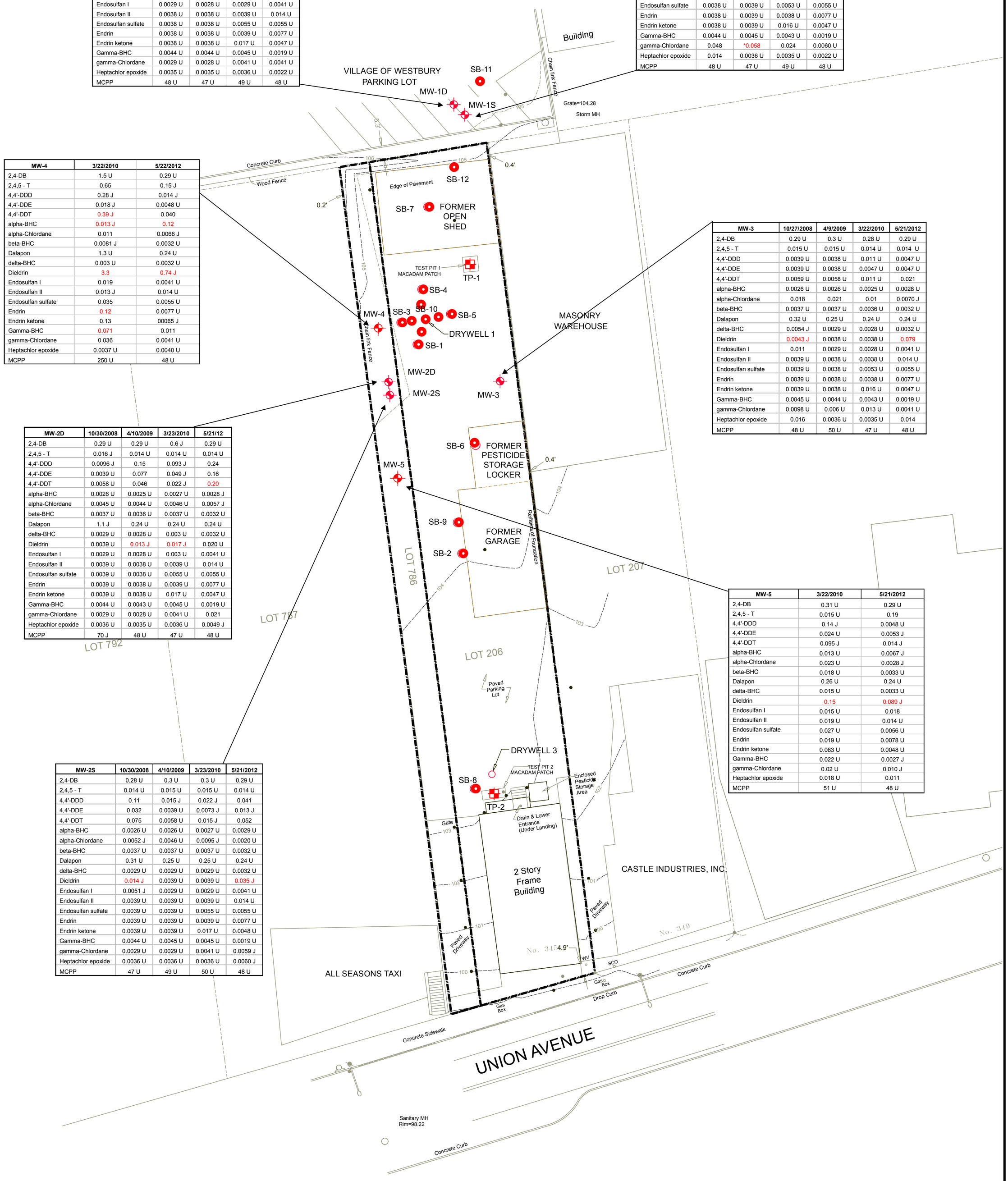
MW-4	3/22/2010	5/22/2012
2,4-DB	1.5 U	0.29 U
2,4,5 - T	0.65	0.15 J
4,4'-DDD	0.28 J	0.014 J
4,4'-DDE	0.018 J	0.0048 U
4,4'-DDT	0.39 J	0.040
alpha-BHC	0.013 J	0.12
alpha-Chlordane	0.011	0.0066 J
beta-BHC	0.0081 J	0.0032 U
Dalapon	1.3 U	0.24 U
delta-BHC	0.003 U	0.0032 U
Dieldrin	3.3	0.74 J
Endosulfan I	0.019	0.0041 U
Endosulfan II	0.013 J	0.014 U
Endosulfan sulfate	0.035	0.0055 U
Endrin	0.12	0.0077 U
Endrin ketone	0.13	00065 J
Gamma-BHC	0.071	0.011
gamma-Chlordane	0.036	0.0041 U
Heptachlor epoxide	0.0037 U	0.0040 U
MCPP	250 U	48 U

MW-3	10/27/2008	4/9/2009	3/22/2010	5/21/2012
2,4-DB	0.29 U	0.3 U	0.28 U	0.29 U
2,4,5 - T	0.015 U	0.015 U	0.014 U	0.014 U
4,4'-DDD	0.0039 U	0.0038 U	0.011 U	0.0047 U
4,4'-DDE	0.0039 U	0.0038 U	0.0047 U	0.0047 U
4,4'-DDT	0.0059 U	0.0058 U	0.011 U	0.021
alpha-BHC	0.0026 U	0.0026 U	0.0025 U	0.0028 U
alpha-Chlordane	0.018	0.021	0.01	0.0070 J
beta-BHC	0.0037 U	0.0037 U	0.0036 U	0.0032 U
Dalapon	0.32 U	0.25 U	0.24 U	0.24 U
delta-BHC	0.0054 J	0.0029 U	0.0028 U	0.0032 U
Dieldrin	0.0043 J	0.0038 U	0.0038 U	0.079
Endosulfan I	0.011	0.0029 U	0.0028 U	0.0041 U
Endosulfan II	0.0039 U	0.0038 U	0.0038 U	0.014 U
Endosulfan sulfate	0.0039 U	0.0038 U	0.0053 U	0.0055 U
Endrin	0.0039 U	0.0038 U	0.0038 U	0.0077 U
Endrin ketone	0.0039 U	0.0038 U	0.016 U	0.0047 U
Gamma-BHC	0.0045 U	0.0044 U	0.0043 U	0.0019 U
gamma-Chlordane	0.0098 U	0.006 U	0.013 U	0.0041 U
Heptachlor epoxide	0.016	0.0036 U	0.0035 U	0.014
MCPP	48 U	50 U	47 U	48 U

MW-2D	10/30/2008	4/10/2009	3/23/2010	5/21/12
2,4-DB	0.29 U	0.29 U	0.6 J	0.29 U
2,4,5 - T	0.016 J	0.014 U	0.014 U	0.014 U
4,4'-DDD	0.0096 J	0.15	0.093 J	0.24
4,4'-DDE	0.0039 U	0.077	0.049 J	0.16
4,4'-DDT	0.0058 U	0.046	0.022 J	0.20
alpha-BHC	0.0026 U	0.0025 U	0.0027 U	0.0028 J
alpha-Chlordane	0.0045 U	0.0044 U	0.0046 U	0.0057 J
beta-BHC	0.0037 U	0.0036 U	0.0037 U	0.0032 U
Dalapon	1.1 J	0.24 U	0.24 U	0.24 U
delta-BHC	0.0029 U	0.0028 U	0.003 U	0.0032 U
Dieldrin	0.0039 U	0.013 J	0.017 J	0.020 U
Endosulfan I	0.0029 U	0.0028 U	0.003 U	0.0041 U
Endosulfan II	0.0039 U	0.0038 U	0.0039 U	0.014 U
Endosulfan sulfate	0.0039 U	0.0038 U	0.0055 U	0.0055 U
Endrin	0.0039 U	0.0038 U	0.0039 U	0.0077 U
Endrin ketone	0.0039 U	0.0038 U	0.017 U	0.0047 U
Gamma-BHC	0.0044 U	0.0043 U	0.0045 U	0.0019 U
gamma-Chlordane	0.0029 U	0.0028 U	0.0041 U	0.021
Heptachlor epoxide	0.0036 U	0.0035 U	0.0036 U	0.0049 J
MCPP	70 J	48 U	47 U	48 U

MW-5	3/22/2010	5/21/2012
2,4-DB	0.31 U	0.29 U
2,4,5 - T	0.015 U	0.19
4,4'-DDD	0.14 J	0.0048 U
4,4'-DDE	0.024 U	0.0053 J
4,4'-DDT	0.095 J	0.014 J
alpha-BHC	0.013 U	0.0067 J
alpha-Chlordane	0.023 U	0.0028 J
beta-BHC	0.018 U	0.0033 U
Dalapon	0.26 U	0.24 U
delta-BHC	0.015 U	0.0033 U
Dieldrin	0.15	0.089 J
Endosulfan I	0.015 U	0.018
Endosulfan II	0.019 U	0.014 U
Endosulfan sulfate	0.027 U	0.0056 U
Endrin	0.019 U	0.0078 U
Endrin ketone	0.083 U	0.0048 U
Gamma-BHC	0.022 U	0.0027 J
gamma-Chlordane	0.02 U	0.010 J
Heptachlor epoxide	0.018 U	0.011
MCPP	51 U	48 U

MW-2S	10/30/2008	4/10/2009	3/23/2010	5/21/2012
2,4-DB	0.28 U	0.3 U	0.3 U	0.29 U
2,4,5 - T	0.014 U	0.015 U	0.015 U	0.014 U
4,4'-DDD	0.11	0.015 J	0.022 J	0.041
4,4'-DDE	0.032	0.0039 U	0.0073 J	0.013 J
4,4'-DDT	0.075	0.0058 U	0.015 J	0.052
alpha-BHC	0.0026 U	0.0026 U	0.0027 U	0.0029 U
alpha-Chlordane	0.0052 J	0.0046 U	0.0095 J	0.0020 U
beta-BHC	0.0037 U	0.0037 U	0.0037 U	0.0032 U
Dalapon	0.31 U	0.25 U	0.25 U	0.24 U
delta-BHC	0.0029 U	0.0029 U	0.0029 U	0.0032 U
Dieldrin	0.014 J	0.0039 U	0.0039 U	0.035 J
Endosulfan I	0.0051 J	0.0029 U	0.0029 U	0.0041 U
Endosulfan II	0.0039 U	0.0039 U	0.0039 U	0.014 U
Endosulfan sulfate	0.0039 U	0.0039 U	0.0055 U	0.0055 U
Endrin	0.0039 U	0.0039 U	0.0039 U	0.0077 U
Endrin ketone	0.0039 U	0.0039 U	0.017 U	0.0048 U
Gamma-BHC	0.0044 U	0.0045 U	0.0045 U	0.0019 U
gamma-Chlordane	0.0029 U	0.0029 U	0.0041 U	0.0059 J
Heptachlor epoxide	0.0036 U	0.0036 U	0.0036 U	0.0060 J
MCPP	47 U	49 U	50 U	48 U



MONITORING WELL

SOIL BORING

DRYWELL

TEST PIT

PAVEMENT EDGE

—103— GROUND SURFACE ELEVATION (FT., NGVD)

PROPERTY LINE

FORMER STUCTURE LOCATION
(APPROXIMATE, DEMOLISHED JULY 2008)

Explanation of Terms and Abbreviations

U-The analyte was analzed for, but not detected. Value shown is the method detection limit (MDL) for the analyzed constituent.

J-Estimated concentration. The result is below the quantitation limit but above the method detection limit.

Results reported in micrograms per liter (ug/L)

Where applicable, table lists the higher concentration from original and duplicate sample.

*Red concentrations are above New York State Class GA Groundwater Standards or Guidance values

0 10 20 40
Feet

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Figure 4

PESTICIDE AND HERBICIDE CONCENTRATIONS IN GROUNDWATER

BARTLETT TREE COMPANY SITE
WESTBURY, NEW YORK

DATE
JULY, 2012

PROJECT NUMBER
139990

BROWN AND CALDWELL
ALLENDALE, NEW JERSEY