New York State Department of Environmental Conservation
Division of Environmental Remediation
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Joe Martens
Commissioner

Via E-mail and Regular Mail

April 15, 2013

Mr. David Lloyds
Beacon Terminals Associates, LLP.
18 East 22nd Street
New York, NY 10021

Ref: Remedial Alternative Analysis
Beacon Terminal, Site No: C314117
City of Beacon, Dutchess County

Dear Mr. Lloyds,

The New York State Department of Environmental Conservation (Department) in consultation with The New York State Department of Health (NYSDOH) has reviewed the Remedial Alternative Analysis (RAA), March 2013 prepared by Ecosystems Strategies, Inc. and finds to be acceptable to prepare a Remedial Work Plan (RWP).

Please submit a RWP to within 30 days of the date of this letter. RWP must meet the requirements of Chapter 5.3 of DER-10.

Please be advised that the cover system recommended by above RAA to allow for restricted residential use of the site encompasses entire "site". The cover shall consist either of the structures such as buildings, pavement, 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).

RWP must describe the precautions to be taken while constructing the remedy to avoid impacting threatened plants species which may be present at the site and in the vicinity. Also, if the remedy construction has potential to disturb the banks of the Fishkill Creek, appropriate control measures and restoration plan should be included in the RWP.

Upon finding RWP to be acceptable, the Department will issue a Proposed Decision Document (PDD) outlining the proposed remedy that will be subject to a public comment period. The PDD will require Site Management Plan (SMP) which includes (Institutional Controls and Engineering Controls-IC/EC) and call for the need of an environmental easement.

If you have any questions, please contact me at 518-402-9662.

Sincerely,

Parag Amin, P.E.
Project Manager
Remedial Section B
Remedial Bureau C

ec : Paul Ciminello, Ecosystems Strategies, Inc
Perretta, NYSDOH
D. Crosby, DER

REMEDIAL ALTERNATIVES ANALYSIS

Prepared for the

Beacon Terminal Site

NYSDEC BCP Site: C314117

Located at

555 South Avenue
City of Beacon
Dutchess County, New York

January 2011 (Revised March 2013)

ESI File: BB04157.51

Prepared By

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Prepared For:

Beacon Terminal Associates, LLP
18 East 22nd Street
New York, New York 10010

Paul H. Ciminello
Ecosystems Strategies, Inc.
President

Peter Setaro P.E.
Morris Associates PLLC
Professional Engineer #077008

CERTIFICATION

I, Peter D. Setaro, certify that I am currently a New York State registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Alternative Analysis was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Peter Setaro P.E.
Professional Engineer #077008

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1.0 INTRODUCTION

1.1 Purpose

Ecosystems Strategies, Inc. (ESI) and Morris Associates PLLC (MA) has prepared this Remedial Alternatives Analysis (RAA) in order to summarize an analysis of potential remedial alternatives for proposed environmental response actions, at the Beacon Terminal property (hereafter referred to as the "Site"), located at 555 South Avenue, City of Beacon, Dutchess County, New York. The proposed environmental response actions address known environmental conditions at the Site, documented in the Remedial Investigation Report (RIR), dated January 2011 and revised December 2012. All work was performed in general conformance with regulations specified in 6 NYCRR Part 375 (Environmental Remediation Programs) and applicable NYSDEC guidance documents (Division of Environmental Remediation-10, Technical Guidance for Site Investigation and Remediation [DER-10] and Draft Brownfield Cleanup Program Guide [BCP Guide]).

The Remedial Alternatives Analysis (RAA) identifies and evaluates alternatives for mitigating documented contamination and/or controlling the impacts of such contamination. Through a process of identifying potential remedies and screening each relative to a predetermined set of criteria, a remedial response is selected that is technically feasible, protective of human health and the environment, cost-effective, and consistent with the local objectives for the property.

1.2 Site Information

1.2.1 Site Location and Description

The Site consists of 11.07 acres located in the City of Beacon, Dutchess County, New York (tax parcel: Section 5954, Block 16, Lot 751258). The Site is located adjacent to the northern edge of Fishkill Creek (the southeast corner of the Site includes a portion of the creek and the southern bank), approximately 2,000 feet east of the Hudson River, and has overall southerly (towards the Creek) slopes. A Site Location Map is provided as Figure 1 in Appendix A.

The Site is presently improved with eight vacant industrial buildings (B-1, B-2, B-3, B-4, B-5 [A and B], B-6, B-7, and B-8) formerly used for various manufacturing and warehousing purposes. These buildings occupy approximately fifty percent of the Site; the remainder of the property includes paved parking areas, paved drives, and undeveloped grassland and woodlands.

1.2.2 Site History

The Site has a long history of known industrial use. A Site sketch and description, obtained from the Beacon Historical Society, depicts three buildings (now buildings B-1 and B-2) on-site. These buildings were constructed in 1878 as the Tioranda Hat Works. Building B-1 is described as an engine room and boiler house, and building B-2 is described as the main factory, housing felting, dyeing, carding, and wool sorting operations. Information regarding specific historical material handling, storage, and disposal is not readily available. However, review of historic Sanborn Fire Insurance Maps indicates that the Site was occupied by the Tioranda Hat Works until at least 1919. Three of the present-day buildings (B-1, B-2, and B-4) were on-site at that time, with dyeing operations in the portions of buildings B-2 and B-4 most proximal to Fishkill Creek. Sanborn maps depict on-site hatworks facilities until at least 1946.

By 1962, the complex, comprising all buildings currently on Site, is called "Beacon Terminal". Six of the buildings are depicted as being in use by the Atlas Fiber Company, a fiber reclaimer, while one building (B-5A and B-5B) is occupied by Chemical Rubber Products, Inc. and one building (B-7) is occupied by BASF Colors & Chemicals. From approximately 1972 to 1995, the buildings were used for storage by various occupants. The buildings have remained vacant since 1995.

1.2.3 Proposed Future Usage of the Site

The Site is presently improved with eight vacant industrial buildings formerly used for various manufacturing and warehousing purposes. These buildings occupy approximately fifty percent of the Site; the remainder of the property includes paved parking areas, paved drives, and undeveloped grassland and woodlands.

It is ESI and MA's understanding that the Site is proposed for re-use as a residential condominium complex with limited commercial uses at the completion of remedial activities. According to the redevelopment plan, buildings B-1 and B-2 will remain on Site while all other buildings (B-3, B-4, B-5A, B-5B, B-6, B-7, and B-8) will be razed to accommodate construction of the complex.

2.0 SITE ENVIRONMENTAL CONDITIONS

This section provides a summary of known and suspected Site environmental conditions. The findings of all previous environmental investigations performed to date are detailed in ESI's RIR, which was performed according to the NYSDEC approved Remedial Investigation Work Plan (RIWP, dated July 2007 and revised October 2007) and the Supplemental Remedial Investigation Work Plan (SRIWP, dated June 2008 and revised November 2008).

2.1 Nature and Extent of Contamination

Analyte concentrations above Restricted Residential Use SCOs are present on the Site.

Significantly elevated concentrations of toluene were found in the vicinity of the abandoned rail spur and wood line. Low concentrations of toluene (at or below guidance levels) were detected in subsurface soils beneath the northwest corner of building B-5A (located in a small enclosed room) and the northeast corner of building B-5B.

Elevated concentrations of PCBs and metals (primarily lead and mercury), were found on the southwest corner of the Site, primarily in the areas where degraded fabric was observed on both sides of the Fisherman's Trail, raising the potential that soils with elevated PCBs could extend off-site. In addition, an elevated concentration of lead was detected southwest of building B-5B.

Elevated levels of PAHs (above guidance levels) were detected in surface soils throughout the Site and in subsurface soils in and near the area of the macadam parking lot. Low levels of pesticides (below guidance levels) were detected in surface soils throughout the Site. An elevated concentration of trichloroethene in soil gas was detected in the vicinity of building B-7.

These findings support the conclusion former commercial/industrial uses have impacted Site soils; areas with significantly elevated contaminant levels, however, are generally restricted to well-defined portions of the Site.

Site groundwater has not been significantly impacted due to on-site contamination and no significant contamination was encountered in Site surface-water, or sediment. It is also noted that water for domestic purposes is available in the local area from the municipality.

2.2 Exposure Assessment

An exposure assessment was conducted to qualitatively assess the potential impacts of known environmental contaminants from the existing Site on human health, cognizant of all possible exposure pathways (i.e. ingestion, inhalation, and direct contact). Both current (existing conditions) and future use (proposed multi-unit residential and/or commercial development) scenarios were considered.
The primary contaminant present in Site soils is toluene, located in subsurface soils beneath the sub-slab of building B-5B and on the northwest corner of the Site. In addition, metals (primarily lead and mercury) and PCBs were detected in near-surface soils located to the southwest of the western parking area and west of the Fisherman's Trail.

To a lesser degree, PAHs, metals, and pesticides were detected in surface soils throughout the Site, with hot-spots located near the southwest corner of building B-5B, south of building B-5A, and in the transformer cage located to the northeast of building B-2.

Low-level contamination was detected in soil gas, groundwater, and sediment. No significant contamination was detected in surface water. All potential exposure pathways for each media were identified in the current and future scenario.

Current Scenario

Under the current scenario the Site will remain vacant; therefore, Site trespassers are the likely receptor population.

Soil Gas

Inhalation is the most like route of exposure to low-level contamination in on-site soil gas in the vicinity of building B-7. Access to soil gas is currently limited by the restricted entrance to the interior of building B-7. This restriction minimizes the exposure to trichoroethene in soil gas by trespassers.

Soils

No existing or potential exposure pathways (through direct contact, inhalation or ingestion) for on-site contaminated subsurface soils are anticipated as subsurface soils will not be disturbed during the current scenario.

Potential exposure pathways for contaminated surface soils, direct contact and ingestion, are anticipated during the current scenario due to limited access to surface soils. Access to surface soils is currently limited by coverage of soils with buildings, limited security fencing, and asphalt. In addition, heavy vegetation covers surface soils in the area near the trails. These restrictions minimize chronic exposure to contaminants in surface soils, although acute exposure may exist if surface soils were to be uncovered.

Groundwater

Ingestion and direct contact are the most like route of exposure to low-level TAL metals contamination in on-site groundwater. On-site groundwater is not being used for drinking water at the Site, as the area is served by the public water supply. Site trespassers could come into contact with the groundwater if they perform ground intrusive work at the Site.

Sediments

Ingestion and direct contact are the most likely route of exposure to low-level TAL metals and PCB contamination in sediments along the Fishkill Creek. Site trespassers could come into contact with sediments if they come into contact with off-shore sediment during recreational activities.

Surface Water

No significant contamination is present in surface water. No significant existing or potential exposure pathways for migration of contamination are anticipated during the current scenario.

Future Scenario (multi-unit residential complex)

In conjunction with construction activities, remedial activities will take place at the Site in order to address soil contamination. Remedial activities are expected to remove and reduce contamination at the Site (see Section 5.0, below). Trespassers, construction workers, remediation personnel, and users of adjoining properties are likely the receptor populations.

Soil Gas

Inhalation of soil gas is the likely route of exposure for receptor populations. The implementation of a Health and Safety Plan (HASP, incorporating a Community Health and Safety Plan), and a Community Air Monitoring Plan (CAMP), will mitigate possible impacts to the on-site and off-site receptor populations.

The potential exist for low-level VOC contamination in soil to remain on-site after development activities. Inhalation of soil vapors is a potential route of exposure for receptor populations (on-site workers, users, and users of adjoining properties). A Sub-Slab Depressurization System (SSDS) is proposed in order to remove any potential vapors that might accumulate beneath all new on-site structures.

Soil

Contaminated soils are a potential source of concern during development activities. Site clearing, soil excavation and removal, and soil grading activities are the most likely release and transport mechanism for contaminants. Inhalation of dust generated on-site, and direct contact with soils, are the likely routes of exposure. The implementation of a HASP and a CAMP will mitigate possible impacts to the on-site and off-site receptor populations. In addition, security fencing and signage will discourage site access to trespassers. Any development activity that involves soil disturbance will require monitoring and mitigation plans to address potential dust generation and contaminant migration.

The potential exist for low-level contamination in soil to remain on-site after development activities. Access to low-level contamination in surface soils will be limited by paved areas, building footprints, and a barrier layer of at least two feet of soil (in specified areas). No potential exposure pathways through direct contact or ingestion for low-level contamination in subsurface soils are anticipated, as subsurface soils will not be disturbed following remediation and construction.

Groundwater

Direct contact with on-site groundwater during construction and periodic sampling is a potential route of exposure for receptor populations. During Site development activities, groundwater exposure will be controlled by strict health and safety protocols. No current use of groundwater exits and no future use is proposed.

Sediments

Ingestion and direct contact are the most like route of exposure to low-level TAL metals and PCB contamination in sediments along the Fishkill Creek. Receptor populations could come into contact with sediments if they come into contact with off-shore sediment during recreational activities.

Surface Water

No significant contamination is present in surface water. No significant existing or potential exposure pathways for migration of contamination are anticipated during the future scenario.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

Section 3.0 of this RAA summarizes the screening process for various remedial alternatives (Section 3.1 and Section 3.2), provides a brief description of each potential remedial alternative (Section 3.3), and presents a thorough analysis of the alternatives with the intent of selecting the most appropriate alternative for this Site (Section 3.4).

3.1 Overview of Screening Process

In order to identify and screen potential remedial technologies, remedial objectives and clean-up criteria have been established. These objectives and criteria are based on NYSDEC regulations (6 NYCRR Part 375) and applicable guidance documents (e.g., DER-10), community input, and risk-based assessments. These criteria are also a function of known environmental conditions on this Site.

Based on the media that are subject to potential remediation, an initial screening of various potential technologies is conducted (see Section 3.3, below). For each alternative, this screening considers three factors: the feasibility of each technology specific to the Site; the estimated cost of implementation; and, the effectiveness in achieving the Site-specific objectives. Remedial approaches that are determined not to be feasible, cost-effective, or sufficiently effective are dropped from further consideration.

The technologies that pass the initial screening are then assessed in greater detail in Section 3.4, using the criteria set forth in Section 3.2.2. The various alternatives are also qualitatively compared to each other to assess which is most successful at achieving each individual criterion (Section 3.4.3), a process instrumental in identifying a preferred alternative (Section 3.4.4).

3.2 Screening Methodology

This section provides a discussion of the overall remedial objectives for this Site (Section 3.2.1) and the methodology used in screening potential remedial alternatives (Section 3.2.2). The goals specified below are consistent with NYSDEC procedures outlined in DER-10.

3.2.1 Remedial Objectives

The remedial objectives considered to be appropriate for this Site have been determined through a process established for this purpose by the NYSDEC. A significant element in that process is the proposed future use of a particular site, so that potential remedial actions can be assessed, and a preferred remedial action can be ultimately recommended and selected that is compatible with the intended future use. As stated above (see Section 1.2.3), this Site is proposed for use as a residential condominium complex.

It is the overall objective of this project to implement remedial actions that provide for the appropriate level of protection of the public health and environment. To the extent feasible and practical, such protection should be maintained for as long as the Site is used for the most sensitive purpose around which the protection was designed (i.e., multi-unit residential development). Objectives are set forth for each media of concern to ensure that appropriate levels of remediation are achieved. Objectives include the protection of public health and also the environmental health of the Site (including wildlife). For this Site, the media warranting remediation include: soils impacted by toluene, PCBs, PAHs, and metals; and soil gas impacted by trichloroethene.

The following remedial objective and guidance levels for soil have been established:

- The remedial objective for soil consists of the elimination, to the extent practical, of potential direct human or wildlife exposure to contamination in on-site soils. Guidance levels for all compounds in soil will be based on NYSDEC Remedial Program Soil Cleanup Objectives (SCOs) for Restricted Residential Use, as provided in 6 NYCRR Subpart 375, Table 375-6.8(a).

- The remedial objective for soil gas consists of the elimination, to the extent practical, of potential direct human or wildlife exposure to contamination in on-site soil gas. Guidance levels for all compounds in soil gas will be based on New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

No remedial objectives were established for groundwater, surface-water, and sediment as these mediums do not warrant remediation at this time.

3.2.2 NYSDEC Review Criteria

Potential technologies and specific Site remedial alternatives are analyzed relative to criteria developed by the NYSDEC outlined in 6 NYCRR Part 375 and DER-10. This section discusses each of these criteria, with particular concern for their relevance to this Site. The following review criteria have been developed to address the technical and policy considerations that are used in selecting the preferred remedial alternative:

1. Overall Protection of Human Health and the Environment: The community's post-remedial exposure to affected materials is evaluated. The surrounding environment's exposure is also evaluated. All media that could directly or indirectly affect the community are evaluated including: air, groundwater, soils, sediments, surface waters, and wildlife vectors.

2. Compliance with Standards, Criteria, and Guidance Values (SCGs): Detected compounds of concern are compared to relevant federal, state, or local regulatory standards, guidance levels, or health risk limits. SCGs for media to be directly or indirectly remediated are presented in Section 3.1.6, above.

3. Short-term Effectiveness: Short-term effectiveness is measured relative to the level of impacts and risks to the community (including workers) during remediation activities. Also, any other impacts to the environment are assessed, as well as the time necessary to implement each alternative.

4. Long-term Effectiveness and Permanence: Long-term effectiveness and permanence of the remedial action is assessed. The ultimate objective is to promote a remedial alternative that is effective for the time period that this Site will be in use. In addition, residual risks are evaluated, and the adequacy and reliability of proposed controls are assessed as they relate to the proposed remedy and the surrounding community.

5. Reduction of Toxicity, Mobility, and Volume: The remedy's ability to provide reduction in toxicity, mobility, and volume of the identified contaminants of concern is assessed. This assessment includes the anticipated reduction in volume, and the post-remedial mobility and toxicity of remaining Site contaminants.

6. Implementability: The suitability of each alternative is analyzed in relation to site-specific conditions, as well as how reasonable is its implementation. As part of this assessment, the availability of services and materials, and the alternative's cost-effectiveness is considered.

7. Community Acceptance: The people most directly impacted by the final selection of a Site remedy are the inhabitants of the local community. The concerns of the community are assessed in conjunction with the first six criteria. Community acceptance is evaluated following the public comment period; however, within this RAA, the issues most likely to be of concern, or generate controversy, are discussed.

8. Land Use: Consideration is given to the current and future land uses of the Site and its surroundings. Factors taken into consideration in the land use evaluation consist of: historical and recent development patterns;; surrounding land use (e.g. residential, commercial, agricultural); cultural and natural resources; floodplains; environmental justice concerns; federal or state land use designations; population growth; accessibility to infrastructure; vulnerability of groundwater; geography and geology; and, current institutional controls.

9. Cost: Consideration is given to the costs associated with each potential remedial alternative. A cost for each alternative is formulated based on reasonably foreseeable expenses (both initial and long term costs). Costs that not easily quantified are also identified.

3.3 Identification/Preliminary Screening of Alternatives

This section identifies and assesses remedial alternatives that have been selected for possible implementation on the Site. These alternatives are identified utilizing the remedial objectives (see Section 3.2.1, above) as a guide.

Subsequent to identification, each alternative is assessed relative to the review criteria specified by the NYSDEC for BCP sites. Specifically, each alternative is assessed relative to:

- Overall Protection of Human Health and the Environment
- Compliance with Standards, Criteria, and Guidance Values
- Short-term Effectiveness
- Long-term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, and Volume
- Implementability
- Community Acceptance
- Land Use
- Cost

3.3.1 Identification of Possible Remedial Alternatives

This section identifies potential remedial options; a summary of options is provided in Table 1, below. Preliminary screening and comparison of the alternatives is provided below in Sections 3.3.2 and 3.3.3.

Table 1: Summary of Alternative Technologies Subject to Screening

Alternative	Benefits	Deficiencies
No Further Action (Section 3.3.2.1)	• Easily implemented • No additional costs	• No short- or long-term effectiveness • Not protective of human health or the environment
Full Soil Removal (Section 3.3.2.2)	• Protective of human health and the environment • Long- & short-term effectiveness • Allows for flexible Site re-use	• Moderate cost • Relatively easy to implement • Potential for remaining inaccessible contamination requiring institutional controls • Disturbance of any natural communities in the areas excavated
Partial Soil Removal and In-Situ Remediation Alternative (Section 3.3.2.3)	• Protective of human health and the environment • Long- & short-term effectiveness • Allows for flexible Site re-use	• Moderate cost • Potentially difficult to implement due to location of contaminant (overburden above groundwater table) • Extended timeline due to the potential need for bench scale and pilot testing • If bench scale and pilot testing unsuccessful, would need to implement soil removal option

3.3.2 Preliminary Screening of Alternatives

The alternatives identified above for this Site are summarized below, and are evaluated for effectiveness, implementability, and cost. Alternatives passing the preliminary assessment are thoroughly described and analyzed in Section 3.4, below.

3.3.2.1 No Further Action Alternative

Description

The No Further Action Alternative would involve no active remediation of the Site. In this alternative, it is assumed that the existing buildings would remain and all existing contaminated media would remain in place. No attempt to minimize, treat, or eliminate known on-site contaminants would occur. Consideration of this alternative is required by the NYSDEC to establish a baseline against which other alternatives are compared.

Feasibility

The No Further Action Alternative would be simple to carry out. No local approvals would be required for implementation, no resources would be required and no changes would be made to the Site.

Cost

The costs associated with this alternative are related to site security and long term monitoring of on-site groundwater (for budgetary purposes, five years of monitoring is assumed). Projected costs for this alternative are $97,900, as detailed in Appendix B.

Effectiveness

The No Further Action Alternative is not considered to be protective of human health and the environment in either the short or long term. Site access will remain relatively unrestricted and the potential will therefore exist for contact by future Site users with toluene, PCB, and metals-contaminated soils, which will remain on-site. Based on these findings, it is concluded that the No Further Action Alternative does not meet the requirement for long-term protection of public health from the known on-site contaminants.

3.3.2.2 Full Soil Removal Alternative

Description

The Full Soil Removal Alternative would involve:

- Installation of security fencing to discourage site access and potential exposure to trespassers;
- Site clearing and demolition of several existing structures (at this time it is anticipated that buildings B-1 and B-2, will remain on-site and be renovated as part of Site development);
- Excavation of lead contaminated soils west of building 5B at the location of sample 2HB-02;
- Removal of accessible subsurface soils known or suspected to contain elevated levels of toluene (northwest and north central portion of the Site) and surface/near surface soils located to the south and west of the western parking area containing elevated levels of PCBs, PAHs, and/or metals contamination (generally areas observed to contain degraded fabric from former on-site activities) above SCOs outlined in the NYSDEC BCP for Restricted Residential Use;
- Back-filling excavated areas not subject to construction with certified clean fill soils;
- Importation of a clean fill cover for surface soils with low level exceedences of PAHs, and metals. A two foot layer of clean fill will be installed above a demarcation layer for areas not covered with new structures, roadways, parking lots, or other impervious surfaces. A one foot layer of clean fill will be installed above a demarcation layer for areas with impervious surfaces, including new structures. Preliminary calculations suggest that approximately 30% of the Site will require the installation of such a soil cover, requiring the importation of approximately 10,600 cubic yards of clean fill. The locations of the two and the one foot layers of clean fill remain to be determined as precise site plans have not been developed (Note: Specific amount and location of clean fill material will be discussed in detail in the Remedial Action Work Plan.);

- Installation of a Sub Slab Depressurization System for future buildings at locations where proposed on-site structures will over lay toluene impacted soils and the area with an elevated concentration of trichloroethene in soil gas (i.e. at the northwest corner of building B5A, northeast corner of B-5B, and in the vicinity of building B-7);

- Groundwater monitoring to document the continued absence of VOCs; and,

- Imposition of Institutional Controls (a deed restriction) to restrict future use of the site and implementation of a Site Management Plan to manage and document the integrity of the soil cover.

It is anticipated that as much as 1,500-2,000 cubic yards of soil will be removed as a result of contamination located on-site. If necessary, additional material will be excavated until all accessible contaminated Site soils are removed and clean end points are encountered. Proposed areas of excavation are depicted in Appendix A, Figures 2 and 3.

Feasibility

The Full Soil Removal Alternative is considered to be relatively easy to implement and technically feasible, although some soil may be practically inaccessible due to depth. Excavated soils and imported clean fill will be transported via trucks.

Cost

The costs associated with this alternative include: the design process; removal of on-site structures; excavation, removal, and proper disposal of contaminated soils; and importation and handling of clean fill materials. Associated laboratory costs for post-excavation confirmatory sampling will also be incurred. Total costs for the Full Soil Removal Alternative are estimated at $851,400 as detailed in Appendix B.

Effectiveness

This alternative is effective in protecting human health and the environment. Impacted soil will be removed from the Site; however some contamination may remain if it is inaccessible due to depth or other factors (e.g., presence of utilities).

3.3.2.3 Partial Soil Removal/In-Situ Remediation Alternative

Description

The Partial Soil Removal/In-Situ Remediation Alternative would involve:

- Installation of security fencing to discourage site access and potential exposure to trespassers;

- Site clearing and demolition of several existing structures (at this time it is anticipated that buildings B-1 and B-2, will remain on-site and be renovated as part of Site development);

- Removal of surface/near surface soils located to the south and west of the western parking area containing elevated levels of PCBs, PAHs, and/or metals contamination (generally areas observed to contain degraded fabric from former on-site activities) above SCOs outlined in the NYSDEC BCP for Restricted Residential Use;

- Removal of limited area of surface soil to the southwest of building B-5B at sample location 2HB-02;

- Back-filling excavated areas (as required for Site development) with certified clean fill;

- Implementing an in-situ remediation treatment (chemical oxidation) for the purpose of reducing toluene contamination in soils located beneath buildings B-5A and B-5B and on the northwestern corner of the Site near the abandoned rail spur;

- Importation of a clean fill cover for surface soils with low level exceedences of PAHs, and metals. A two foot layer of clean fill will be installed above a demarcation layer for areas not covered with new structures, roadways, parking lots, or other impervious surfaces. A one foot layer of clean fill will be installed above a demarcation layer for areas with impervious surfaces, including new structures. Preliminary calculations suggest that approximately 30% of the Site will require the installation of such a soil cover, requiring the importation of approximately 10,600 cubic yards of clean fill. The locations of the two and the one foot layers of clean fill remain to be determined as precise site plans have not been developed (Note: Specific amount and location of clean fill material will be discussed in detail in the Remedial Action Work Plan.);

- Installation of a Sub Slab Depressurization System for future buildings at locations where proposed on-site structures will over lay toluene impacted soils and the area with an elevated concentration of trichloroethene in soil gas (i.e. at the northwest corner of building B-5A, northeast corner of B-5B, and in the vicinity of building B-7);

- Groundwater monitoring to document the continued absence of VOCs; and,

- Imposition of Institutional Controls (a deed restriction) to restrict future use of the site and implementation of a Site Management Plan to manage and document the integrity of the soil cover.

Proposed areas of excavation and in-situ remediation are depicted in Appendix A, Figures 3 and 4.

Feasibility

The Partial Soil Removal/In-Situ Remediation Alternative is considered to be potentially difficult to implement and may require bench scale or pilot testing. In addition, it is likely that several treatment rounds will be necessary to remediate the areas with toluene contamination and that residual contamination may remain subsequent to the treatment which may require the installation of sub-slab depressurization systems in the proposed residential structures.

Appropriate coordination and management of remedial actions and Site development activities will be necessary to ensure that Site development does not interfere with the implementation of the Partial Soil Removal/In-Situ Remediation Alternative.

Cost

The costs associated with this alternative include: the design process; removal of on-site structures; excavation, removal, and proper disposal of contaminated PCB-containing soils; importation and handling of clean fill materials; and, implementation, monitoring and maintenance of in-situ remediation treatment. Professional and laboratory costs associated with the testing of the in-situ remediation treatment will also be incurred. Total costs for the Partial Soil Removal/In-Situ Remediation Alternative are $778,910 as detailed in Appendix B.

Effectiveness

This alternative is effective in protecting human health and the environment.

3.3.3 Preliminary Comparative Analysis of Alternatives

The No Further Action Alternative is not consistent with the goals of the NYSDEC Brownfields program as they would not permit the re-use of the Site as planned by the Volunteer (multi-unit residential complex). Furthermore, this Alternative is not likely to meet the criteria of public acceptance and will not provide long-term protection of public health and the environment. Therefore, the No Further Action Alternative is not considered to be an appropriate remedial strategy for this Site.

The Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives are appropriate remedial strategies for this Site. These alternatives provide for effective long-term protection of public health and the environment. Additionally, because all significantly impacted soils are likely to be removed and/or treated, there will be more flexibility in future Site use. The Full Soil Removal and the Partial Soil Removal/In-Situ Remediation Alternatives are assessed in greater detail in Section 3.4, below.

3.4 Detailed Analysis of Remedial Alternatives

This Section provides a detailed analysis of the Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives. A detailed analysis is not warranted for the No Further Action Alternative.

3.4.1 Common Elements and Considerations

Several work elements are common to the Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives. By reference, these common elements are incorporated in the detailed description and/or implementation of these alternatives provided in Section 3.4.2.

Design Process

A full-scale remedial design is necessary for the project. Design components and design deliverables will be established in the design process for the preferred Remedial Alternative. The design process will occur in consultation with the NYSDEC and NYSDOH. The design components and design deliverables will be outlined in a separate Remedial Action Work Plan (RAWP) for the preferred remedial alternative (See Section 3.4.4, below). Specifications, drawings, and design details for the preferred remedial alternative will be presented in the RAWP, to be submitted at a later date.

Site Work Boundaries and Utility Locations

Prior to any substantive on-site remedial work, Site work boundaries and utility locations will be established. The Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives will both require utility “markouts”. As part of this task, underground utility demarcations will be ordered from the appropriate utility providers. These demarcations will be field-checked prior to fieldwork activities. In addition, a geophysical survey utilizing a ground penetrating radar (GPR) may be necessary to identify utilities which may be present on-site. Security fencing will be installed to discourage site access to trespasser during remedial activities.

Site Clearing

All on-site structures, with the exception of the buildings B-1 and B-2, will be demolished prior to the implementation of remedial activities. Specifically, all on-site structures will be razed using mechanized equipment and hand tools, as required, after proper removal of all asbestos-containing materials. Any encountered waste materials will be disposed of in accordance with applicable NYSDEC regulations (6 NYCRR Part 360).

Prior to any demolition, a HASP will be prepared for the selected alternative that provides comprehensive and appropriate protections for all on-site personnel and surrounding populations. The HASP will detail known and possible areas of concern. The HASP will include safety and monitoring plans that conform to the standards and requirements of applicable agencies, including the New York State Department of Labor (NYSDOL) and the Occupational Safety and Health Administration (OSHA).

Soil Removal Activities and Confirmatory Soil Sampling

All soils will be excavated and disposed of in accordance with applicable regulations (6 NYCRR Part 360). Dewatering measures for soils below or in the proximity of the groundwater table will implemented, if necessary, but is not anticipated to be needed at this time. Soil sampling will be conducted during soil excavation in order to characterize soils for off-site disposal. Confirmatory endpoint sampling will be conducted to document the integrity of remaining soils. Soil sampling will be conducted according to protocols outlined in the RAWP and according to repository analytical requirements.

Personnel performing soil excavation and sampling will be properly trained in accordance with OSHA and NYSDOL requirements. Site personnel will be informed of site-specific concerns and properly instructed with regard to pertinent details. These concerns, details, and procedures will be detailed in the RAWP.

3.4.2 Detailed Analysis of Alternatives

3.4.2.1 Full Soil Removal Alternative

Description

The Full Soil Removal Alternative would include the common elements in Section 3.4.1, above, and the following tasks:

- Removal of accessible subsurface soils (800-1,200 cubic yards) known or suspected to contain elevated levels of toluene (northwest and north central portions of the Site), surface/near surface soils located to the south and west of the western parking area containing elevated levels of PCBs, PAHs, and/or metals contamination (generally areas observed to contain degraded fabric from former on-site activities), and limited areas of surface soil to the southwest of building B-5B (approximately 300 cubic yards) above SCOs outlined in the NYSDEC BCP for Restricted Residential Use;

- Excavation of contaminated soils west of building 5B at the location of sample 2HB-02;

- Back-filling excavated areas not subject to construction with certified clean fill soils;

- Importation of a clean fill cover for surface soils with low level exceedances of PAHs, and metals. A two foot layer of clean fill will be installed above a demarcation layer for areas not covered with new structures, roadways, parking lots, or other impervious surfaces. A one foot layer of clean fill will be installed above a demarcation layer for areas with impervious surfaces, including new structures. Preliminary calculations suggest that approximately 30% of the Site will require the installation of such a soil cover, requiring the importation of approximately 10,600 cubic yards of clean fill. The locations of the two and the one foot layers of clean fill remain to be determined as precise site plans have not been developed (Note: Specific amount and location of clean fill material will be discussed in detail in the Remedial Action Work Plan.);

- Installation of a Sub Slab Depressurization System for future buildings at locations where proposed on-site structures will over lay toluene impacted soils and the area with an elevated concentration of trichloroethene in soil gas (i.e. at the northwest corner of Building B5A, northeast corner of B-5B, and in the vicinity of building B-7);

- Groundwater monitoring to document the continued absence of VOCs; and,

- Imposition of Institutional Controls (a deed restriction) to restrict future use of the site and implementation of a Site Management Plan to manage and document the integrity of the soil cover.

Proposed areas of excavation are depicted in Appendix A, Figures 2 and 3.

Implementation Schedule

It is estimated that the time necessary to design and conduct soil removal is expected to be approximately 7 months. This time schedule is divided into a design phase of one month, a bid solicitation and award phase of one month, a fieldwork phase of four months (subsequent to the demolition and removal of the on-site structures; it is anticipated that two of the structures B-1 and B-2 will remain and be renovated as part of the project), and a report preparation phase of one month. This schedule is subject to revision and assumes that soil removal and importation will not be constrained by seasonal weather patterns (i.e., frozen soil, ice, and snow). Should the project schedule result in the construction occurring in the winter, the total project schedule timetable will be extended.

Criteria Assessment

Overall Protection of Human Health and the Environment: This alternative provides for the protection of human health and the environment in both the short (provided that appropriate HASP and CAMP procedures are implemented) and long term.

Compliance with Standards, Criteria, and Guidance Values: This alternative removes significant known sources of contamination and associated contaminated soil from the Site. Post-remedial conditions would meet or exceed BCP requirements for Restricted Residential Use for toluene and PCBs. It is anticipated that low-level contamination of PAHs and metals may remain on-site beneath and that an SSDS may be needed beneath the on-site structures.

Short Term Effectiveness: The Full Soil Removal Alternative is considered to be effective in protecting human health and the environment in the short term. This alternative would involve the removal of all on-site significantly contaminated soils, and would eliminate exposure to contaminant sources.

The implementation of appropriate measures during building demolition and/or on-site soil disturbance activities will effectively prevent the release of significant contaminants into the environment. Construction workers operating under appropriate health and safety procedures are not likely to be significantly impacted by on-site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones). This alternative provides short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-site contaminants. The implementation of a HASP (incorporating a Community Health and Safety Plan) and a CAMP will serve to minimize potential short term impacts to the surrounding community from increased vehicle traffic, dust, vapors, and noise.

Long Term Effectiveness: The Full Soil Removal Alternative would remove the on-site sources of contamination and remove future concerns with regard to historic Site activities. Long term impacts to the surrounding community will be positive because future threats to human health and the environment will be eliminated and the Site would be beneficially utilized.

Reduction in Toxicity, Mobility, and Volume: The Full Soil Removal Alternative will eliminate all on-site material considered to be significantly contaminated. Although it does not directly reduce the toxicity or volume of contaminated soil, it will result in the removal and proper disposal of the contamination off-site.

Feasibility: The Full Soil Removal Alternative is considered to be relatively easy to implement and technically feasible, although some soil may be practically inaccessible due to depth. Excavated soils and imported clean fill will be transported via trucks.

Supervision of demolition personnel will be necessary during the demolition of the relevant structures in order to avoid accidental dispersion of impacted soils and/or human contact with these soils. The Site has reasonably clear access for trucks to enter and exit and sufficient space for the loading and unloading (including temporary stockpiling) of materials.

Community Acceptance: This alternative provides the community with a former industrial Site with vacant buildings that is transformed to a more desirable residential development; with associated green space (i.e., currently existing walking path and fisherman's trail). The existing green space is utilized by the surrounding community and will be greatly improved once the existing vacant structures are removed and the area is redeveloped. Community concern is most likely to focus on the anticipated increase in truck traffic, noise, and possible disruption to the green space during remedial activities.

Land Use: This alternative provides improvement in Site and local area land use by transforming the Site from a vacant, former industrial property to a residential development.

With the exception of the original hat factory buildings, no historical or archeological resources are located within the Site. The Site is located adjacent to Madam Brett Park, Fishkill Creek, and in the general vicinity of Tioronda Falls and the mouth of Fishkill Creek. The proposed action is expected to have a positive impact in surrounding resources by enhancing the area's visual quality.

A partial Fish and Wildlife Impact Analysis was completed for the Site (Appendix C) in order to determine the Site flora and fauna during the growing season on or in close proximity to the Site. Although Site flora and fauna was reasonably diverse, it was determined that the flora and fauna is typical of industrial sites with extensive buildings, pavement, impoverished soils, and chronically disturbed vegetation that substantially reduce habitat value. Most of the species observed were development-associated species and no evidence of atypical or aberrant growth, atypical external morphology or behavior or other observable indications of environmental stress was observed.

A small population of Davis' sedge (*Carex davisii*), a NYSDEC-listed threatened Natural Heritage Program rare plant species, was found in the westerly area of the Site near a tree line bordering an old field (northwest corner of Site, near abandoned rail spur). This area will be affected by the Full Soil Removal Alternative; however, beneficial impacts are anticipated for the remainder of the Site as the proposed action will result in the removal of contaminated surface and subsurface soil, removal of debris, and the implementation of a landscaping plan which will include the green belt area located on the southern and western sides of the Site. Methods can be implemented to either protect or relocate the Davis' sedge during Site remediation.

The southeastern corner of the Site is submerged in Fishkill Creek. Proper implementation of a stormwater management plan, sediment and erosion controls, and construction site management during the construction phase of the project is expected to reduce any potential impact to the creek. Construction activities are expected to have little to no impact in the aquatic ecology of Fishkill Creek and will be of short-term duration.

The proposed action is consistent with existing geography and geology at the Site. The vulnerability of the groundwater is not a significant concern with this remedial alternative as the removal of contaminated soils is expected to be above the groundwater table. In addition, groundwater is not expected to be used as a drinking water source under existing or future conditions. No institutional controls are known to currently exist at the Site.

Cost: The costs associated with the Full Soil Removal Alternative include: the design process; excavation, removal, and proper disposal of contaminated soils; and importation and handling of clean fill materials. Associated laboratory costs for post-excavation confirmatory sampling will also be incurred. Costs for the Full Soil Removal Alternative (excluding building demolition) are $851,400.

3.4.2.2 Partial Soil Removal/In-Situ Remediation Alternative

Description

The Partial Soil Removal/In-Situ Remediation Alternative would include the common elements in Section 3.4.1, above, and the following tasks:

- Removal of surface/near surface soils located to the south and west of the western parking area containing elevated levels of PCBs, PAHs, and/or metals contamination (generally areas observed to contain degraded fabric from former on-site activities) and limited areas of surface soil to the southwest of building B-5B at sample location 2HB-02 (approximately 300 cubic yards) above SCOs outlined in the NYSDEC BCP for Restricted Residential Use;

- Back-filling excavated areas (as required for Site development) with certified clean fill;

- Implementing a in-situ remediation treatment (chemical oxidation) for the purpose of reducing toluene contamination in soils on the northwestern corner of the Site near the abandoned rail spur and in soils located beneath buildings B-5A and B-5B;

- Importation of a clean fill cover for surface soils with low level exceedences of PAHs, and metals. A two foot layer of clean fill will be installed above a demarcation layer for areas not covered with new structures, roadways, parking lots, or other impervious surfaces. A one foot layer of clean fill will be installed above a demarcation layer for areas with impervious surfaces, including new structures. Preliminary calculations suggest that approximately 30% of the Site will require the installation of such a soil cover, requiring the importation of approximately 10,600 cubic yards of clean fill. The locations of the two and the one foot layers of clean fill remain to be determined as precise site plans have not been developed (Note: Specific amount and location of clean fill material will be discussed in detail in the Remedial Action Work Plan.);

- Installation of a Sub Slab Depressurization System for future buildings at locations where proposed on-site structures will over lay toluene impacted soils and the area with an elevated concentration of trichloroethene in soil gas (i.e. at the northwest corner of building B5A, northeast corner of building B-5B, and in the vicinity of building B-7);

- Groundwater monitoring to document the continued absence of VOCs; and,

- Imposition of Institutional Controls (a deed restriction) to restrict future use of the site and implementation of a Site Management Plan to manage and document the integrity of the soil cover.

Proposed areas of excavation and in-situ remediation are depicted in Appendix A, Figures 3 and 4.

Implementation Schedule

It is estimated that the time necessary to design and conduct soil removal, and in-situ remediation is expected to be approximately 6 to 8 months (subsequent to the demolition and removal of the on-site structures; it is anticipated that two of the structures B-1 and B-2 will remain and be renovated as part of the project). This time schedule is divided into a design phase of one month, a bid solicitation and award phase of one month, a fieldwork phase of 3 to 5 months, and a report preparation phase of one month. This schedule is subject to revision and assumes no seasonal constraints. Should the project schedule result in the remediation occurring in the winter, the total project schedule timetable will be extended.

Criteria Assessment

Overall Protection of Human Health and the Environment: This alternative provides for the protection of human health and the environment in both the short and long term.

Compliance with Standards, Criteria, and Guidance Values: This alternative is likely to remove and/or remediate all significantly contaminated soils from the Site. Post-remedial conditions will meet or exceed cleanup requirements. It is anticipated that low-level contamination may remain on-site beneath and a SSDS may be needed beneath the on-site structures.

Short Term Effectiveness: The Partial Soil Removal/In-Situ Remediation Alternative is considered to be effective in protecting human health and the environment in the short term. This alternative is likely to remove significantly contaminated soils on-site, and would greatly reduce exposure to contaminant sources (any remaining low-level contaminants would be buried beneath the barrier layer, asphalt, or future on-site structure).

The implementation of appropriate measures during building demolition, chemical oxidation treatment, and/or on-site soil disturbance activities is likely to effectively prevent the release of significant contaminants into the environment. Construction workers operating under appropriate health and safety procedures are not likely to be significantly impacted by on-site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones). The implementation of a HASP (incorporating Community Health and Safety Plan) and a CAMP will serve to minimize potential short term impacts to the surrounding community from increased vehicle traffic, odors, vapors, dust, noise and chemical oxidation compounds.

Long Term Effectiveness: The Partial Soil Removal/In-Situ Remediation Alternative is likely to remove significant on-site sources of contamination and remove future concerns with regard to historic Site activities. Long term impacts to the surrounding community will be positive because future threats to human health and the environment are likely to be extremely limited and the Site would be beneficially utilized.

Reduction in Toxicity, Mobility, and Volume: The Partial Soil Removal/In-Situ Remediation Alternative is likely to drastically reduce the volume and toxicity of all on-site material considered to be significantly contaminated; however, may increase the mobility (due to addition of the chemical oxidation compounds and water) of the contaminates at least in the short term.

Feasibility: The Partial Soil Removal/In-Situ Remediation Alternative is considered to be potentially difficult to implement (partially due to the location of the contamination above the water table) and may require bench scale or pilot testing. In addition, it is likely that several treatment rounds will be necessary to remediate the areas with toluene contamination and that residual contamination may remain subsequent to the treatment which may require the installation of sub-slab depressurization systems in the proposed residential structures.

Appropriate coordination and management of remedial actions and Site development activities will be necessary to ensure that Site development does not interfere with the implementation of the Partial Soil Removal/In-Situ Remediation Alternative. It is technically feasible to coordinate Site development (demolition of structures, Site preparation, Site grading, etc.) with remedial activities. Remedial activities proposed under the Partial Soil Removal/In-Situ Remediation Alternative will take priority over Site development activities if Site development activities would interfere with the implementation of this alternative.

Community Acceptance: This alternative provides the community with a former industrial Site with vacant buildings that is transformed to a more desirable residential development; with associated green space (i.e., currently existing walking path and fisherman's trail). The existing green space is heavily utilized by the surrounding community and will be greatly improved once the existing vacant structures are removed and the area is redeveloped. Community concern is most likely to focus on the anticipated increase in truck traffic, noise, and possible disruption to the green space during remedial activities.

Land Use: This alternative provides improvement in Site and local area land use by transforming the Site from a vacant, former industrial property to a residential development. With the exception of the original hat factory buildings, no historical or archeological resources are located within the Site. The Site is located adjacent to Madam Brett Park, Fishkill Creek, and in the general vicinity of Tioronda Falls and the mouth of Fishkill Creek. The proposed action is expected to have a positive impact in surrounding resources by enhancing the area's visual quality.

A partial Fish and Wildlife Impact Analysis was completed for the Site (Appendix C) in order to determine the Site flora and fauna during the growing season on or in close proximity to the Site. Although Site flora and fauna was reasonably diverse, it was determined that the flora and fauna is typical of industrial sites with extensive buildings, pavement, impoverished soils, and chronically disturbed vegetation that substantially reduce habitat value. Most of the species observed were development-associated species and no evidence of atypical or aberrant growth, atypical external morphology or behavior or other observable indications of environmental stress was observed.

A small population of Davis' sedge (*Carex davisii*), a NYSDEC-listed threatened Natural Heritage Program rare plant species, was found in the westerly area of the Site near a tree line bordering an old field (northwest corner of Site, near abandoned rail spur). This area will be affected by the Partial Soil Removal/In-Situ Remediation Alternative; however, beneficial impacts are anticipated for the remainder of the Site as the proposed action will result in the removal of contaminated surface and subsurface soil, removal of debris, and the implementation of a landscaping plan which will include the green belt area located on the southern and western sides of the Site. Methods can be implemented to either protect or relocate the Davis' sedge during Site remediation.

The southeastern corner of the Site is submerged in Fishkill Creek. Proper implementation of a stormwater management plan, sediment and erosion controls, and construction site management during the construction phase of the project is expected to reduce any potential impact to the creek. Construction activities are expected to have little to no impact in the aquatic ecology of Fishkill Creek and will be of short-term duration.

The proposed action is consistent with existing geography and geology at the Site. The vulnerability of the groundwater is not a significant concern with this remedial alternative as the removal of contaminated soils is expected to be above the groundwater table. In addition, groundwater is not expected to be used as a drinking water source under existing or future conditions. No institutional controls are known to currently exist at the Site.

Cost: The costs associated with the Partial Soil Removal/In-Situ Remediation Alternative would include: the design process; excavation, removal, and proper disposal of surface soils; injection of the in-situ chemical oxidation treatment and monitoring; and importation and handling of clean fill materials. Costs for the Partial Soil Removal/In-Situ Remediation Alternative (excluding building demolition and clean fill cover) are estimated to be $778,910.

3.4.3 Comparative Analysis of Alternatives

In this Section, the strengths and weaknesses of the Full Soil Removal and the Partial Soil Removal/ In-Situ Remediation Alternatives are assessed relative to each other, for each analysis criteria.

3.4.3.1 Overall Protection of Human Health and the Environment

The Full Soil Removal Alternative best protects human health and the environment; however, this Alternative is only marginally better than the Partial Soil Removal/In-Situ Remediation Alternative. Short periods will occur during remedial activities when dust generation and contaminant exposure have the potential to impact human health and the environment. However, the strict implementation of a NYSDEC-approved HASP and the CAMP will mitigate these concerns.

3.4.3.2 Compliance with Standards, Criteria, and Guidance Values

The Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives comply with established SCGs. The Full Soil Removal Alternative best complies with established SCGs, by eliminating soil materials containing significant contamination above Restricted Residential Use SCOs. The Partial Soil Removal/In-Situ Remediation Alternative also complies with SCGs by eliminating surface soils containing PCBs and metals to the south and west of the parking area and treating elevated levels of toluene.

3.4.3.3 Short-Term Effectiveness

The Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives are considered to be effective in the short term in protecting human health and the environment; however, in-situ treatment is expected to require more time (and several injection events) to be effective when compared to removal of the soil.

3.4.3.4 Long Term Effectiveness

The Full Soil Removal Alternative is considered to be the best alternative with regard to long-term effectiveness due to the removal and off-site disposal of impacted soils. However, this Alternative is only marginally better than the Partial Soil Removal/In-Situ Remediation Alternative because the in-situ treatment should decrease on-site contamination to the SCOs over time. The Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives are protective of human health and the environment in the long-term by eliminating on-site contaminants.

3.4.3.5 Reduction of Toxicity, Mobility, and Volume

The Full Soil Removal Alternative does not reduce the toxicity or volume of contaminated soil; however, the soil is removed from the Site and disposed of per applicable regulations. The Partial Soil Removal/In-Situ Remediation Alternative is the most successful at reducing the toxicity and volume of on-site contaminants, but could increase the mobility of the contamination, at least in the short term, due to the addition of in-situ chemicals and water. In these alternatives, all areas of significant contamination will either be removed or will be adequately treated. This would eliminate future toxicity and mobility concerns.

3.4.3.6 Feasibility

The Full Soil Removal Alternative is considered to be relatively simple to implement with well known and tested methods. The Partial Soil Removal/In-Situ Remediation Alternatives is consider more difficult to implement due to the complexity of implementing the treatment and may require bench scale or pilot testing. In addition, it is likely that several treatment rounds will be necessary to remediate the areas with toluene contamination and that residual contamination may remain subsequent to the treatment.

3.4.3.7 Community Acceptance

Community acceptance cannot be definitively determined until public comment has been solicited and incorporated into this RAA. The presence of continued on-site contamination, increased truck traffic, noise, and reduced access to the green belt are the potential issues most like to generate public concern and controversy. Given that the Full Soil Removal Alternative would result in no significant contamination left on-site and the Partial Soil Removal/In-Situ Remediation Alternative would result in no exposure to remaining low-level contamination, these alternatives are both likely to have community support.

3.4.3.8 Land Use

The Full Soil Removal and Partial Soil Removal/In-Situ Remediation Alternatives will allow for the re-use of the Site because significantly contaminated soils will be removed and/or remediated. These Alternatives are consistent with local land uses and provide access to an improved and aesthetically pleasing green belt.

3.4.3.9 Cost

The Partial Soil Removal/In-Situ Remediation Alternative ($778,910) is more expensive than the Full Soil Removal Alternative ($851,400). Several assumptions are included in these costs including:

- Additional treatment rounds (beyond 3 rounds) are not necessary for the in-situ treatment; and,
- Bench-scale testing and pilot testing will not be needed to treat the Site.

If additional treatment rounds, bench-scale, or pilot testing is required, the Partial Soil Removal/In-Situ Remediation Alternative would increase in cost.

Further, successful in-situ treatment of VOC-contaminated soil is not synonymous with the complete removal of the contamination. Low levels of VOC contamination will likely remain requiring both institutional and engineering controls.

3.4.4 Recommendation of Preferred Alternative

The recommended remedial alternative for this Site is the Full Soil Removal Alternative, for the following reasons:

1. This alternative meets remedial objectives set forth in Section 3.2.1, consistent with the development and future use of the Site.

2. Based on available environmental data, it is very likely that this alternative will lead to the removal of all significant on-site contamination; remaining contamination is likely to be minimal and will be buried beneath a protective barrier layer (building footprints, pavement plus one foot of clean fill and a demarcation layer, or site-wide two foot barrier layer of imported soil above a demarcation layer). This Alternative therefore provides effective protection of public health and the environment in both the short-term and the long term, and eliminates the possibility that future users would come into contact with on Site contaminants.

3. This alternative provides the owner with both short-term and long-term effective methods of securing the Site and preventing contaminants from migrating off-site or impacting future users.

4. The Full Soil Removal Alternative is less difficult to implement than the Partial Soil Removal/In-Situ Remediation Alternative based on the technical requirements for the remedial activities.

APPENDIX A

Figures

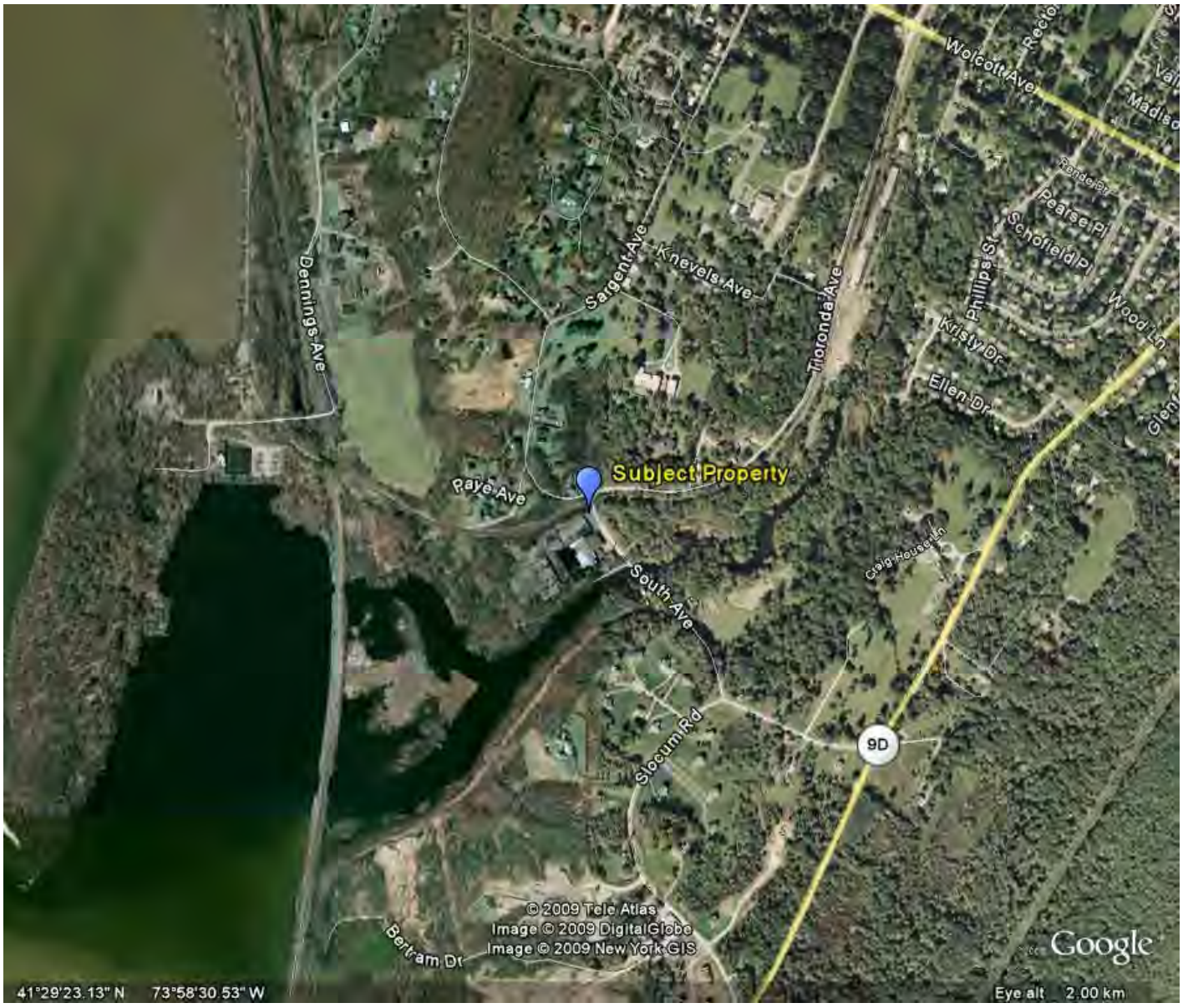

Figure 1 - Site Location Map
Beacon Terminal Site
Site ID C314117
555 South Avenue
City of Beacon
Dutchess County, New York

N

ESI File: BB04157.51

March 2013

Appendix A

Ecosystems Strategies, Inc.

N

2HB-02 (0-4")	
Benzo(a)anthracene	5,200
Benzo(a)pyrene	3,800
Benzo(b)fluoranthene	5,100
Benzo(k)fluoranthene	1,700
Chrysene	3,800
Dibenzo(a h)anthracene	1,100
Indeno(1 2 3-cd)pyrene	4,700

2HB-02 (0-4")	
Arsenic	19.1
Cadmium	3.9
Calcium	37,200
Chromium	491
Copper	219
Lead	2,830
Magnesium	23,400
Nickel	41.9
Zinc	854

2B-15 (4-5')	
Toluene	22,000

2B-15C (5-6')	
Toluene	1,600

2B-15A (7-8')	
Toluene	100,000

METRO NORTH

Wooded Area

Area 2

Area 3

Area 1

C.H.G.&E. Sub Station

relocated soil

(see inset)

Abandoned Railroad Tracks

Existing Macadam Parking Lot

City of Beacon

SOUTH AVENUE

ONE STORY BRICK COMMERCIAL BUILDING

550 – GALLON UST (REMOVED)

B-1, B-2, B-3, B-4, B-5A, B-5B, B-6, B-7, B-8

four chemial ASTs

Elevated Walkway

CREEK

Bridge

Trail

parking area

Island

Sluiceway

Over

wood line

wet weather creek (former rail spur)

Existing Fr

FISHK

3B-07				
	3-4'	6-8'	11-12'	15-16'
Toluene	140,000	3,400	14,000	5,600

3B-08				
	2-4'	5.5' - 6'	13'	18'
Toluene	970,000	230,000	120,000	4,700

Duplicate 3B-08 (18')	
Toluene	7,900

2B-01C (1-3')	
Toluene	4,600,000

4SS-2 (0-3")	
PCB, 1268	8,530

4SS-2 (0-3")	
Barium	1,620
Chromium	692
Copper	1,070

INSET

Legend:

- surface water sample location
- monitoring well location
- boring location
- soil vapor sample location
- surface sample location
- sediment sample location
- approximate area of excavation

PCBs
SVOCs
VOCs
all results in µg/kg

Metals
all results in mg/kg

Figure 2 - Full Soil Removal Alternative - Proposed Site Remediation Map

Beacon Terminal Site
Site ID C314117
555 South Avenue
City of Beacon
Dutchess County, New York

ESI File: BB04157.51

Scale: 100'

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Tracks

approximate slope location

Wooded Area

2TP-6
2TP-7
2TP-8
2TP-9
2TP-10
2TP-21
2TP-2
2SST-1
2TP-20
2TP-19
T2P-3
2TP-18
2TP-22
2TP-17
2TP-16
2TP-4
2TP-5
2TP-23
2TP-24
2TP-15
2TP-13
2TP-12
2TP-11

City of Beacon

20' Wide Sew

Existing Macadam Parking Lot

POSSIBLE SUBSURFACE DEBRIS (APPROX.)

B-7

B-8

oh

oh

2TP-15B (3.5')	
Magnesium	5,970

2TP-15 (1-2')	
Magnesium	18,000

2TP-15 (1-2')	
PCB 1254	3,400

2TP-15	
Benzo(a)anthracene	11,000
Benzo(a)pyrene	11,000
Benzo(b)fluoranthene	13,000
Benzo(k)fluoranthene	4,200
Chrysene	10,000
Dibenzo(a,h)anthracene	2,100
Indeno(1 2 3-cd)pyrene	10,000

2TP-11B (6"-1')	
Copper	1,210

2TP-11 (0-6")	
Chromium	788
Copper	4,530
Lead	531
Mercury	4.0

2TP-11	
TICs	15,050

2TP-11 (0-6")	
PCB 1254	7,500

2TP-11B (6"-1')	
PCB 1268	1,600

Legend:
- test pit
- surface sample under abandoned tank
- approximate areas of excavation
- SVOCs
- Metals
- PCBs
- VOCs

all results in µg/kg

Figure 3 - Full/Partial Soil Removal Alternatives - Western Parking Area Proposed Remediation Map

Beacon Terminal Site
Site ID C314117
555 South Avenue
City of Beacon
Dutchess County, New York

ESI File: BB04157.51

Scale: 37' approximately

March 2013 | Appendix A

Ecosystems Strategies, Inc.

N

2HB-02 (0-4")	
Benzo(a)anthracene	5,200
Benzo(a)pyrene	3,800
Benzo(b)fluoranthene	5,100
Benzo(k)fluoranthene	1,700
Chrysene	3,800
Dibenzo(a h)anthracene	1,100
Indeno(1 2 3-cd)pyrene	4,700

2HB-02 (0-4")	
Arsenic	19.1
Cadmium	3.9
Calcium	37,200
Chromium	491
Copper	219
Lead	2,830
Magnesium	23,400
Nickel	41.9
Zinc	854

2B-15 (4-5')	
Toluene	22,000

2B-15C (5-6')	
Toluene	1,600

2B-15A (7-8')	
Toluene	100,000

3B-07				
	3-4'	6-8'	11-12'	15-16'
Toluene	140,000	3,400	14,000	5,600

3B-08				
	2-4'	5.5' - 6'	13'	18'
Toluene	970,000	230,000	120,000	4,700

Duplicate 3B-08 (18')	
Toluene	7,900

2B-01C (1-3')	
Toluene	4,600,000

4SS-2 (0-3")	
PCB, 1268	8,530

4SS-2 (0-3")	
Barium	1,620
Chromium	692
Copper	1,070

3B-03		
	3'	4-6'
Methylcyclohexane	NA	62,000
Toluene	86,000	13,000

Duplicate 3B-03 (4-6')	
Toluene	20,000

INSET

Legend:
- approximate area of excavation
- approximate area of in-situ remediation
- surface water sample location
- monitoring well location
- boring location
- soil vapor sample location
- surface sample location
- sediment sample location
- PCBs
- SVOCs
- VOCs
- all results in µg/kg
- Metals
- all results in mg/kg

Figure 4 - Partial Soil Removal/In-Situ Remediation Alternative - Proposed Site Remediation Map

Beacon Terminal Site
Site ID C314117
555 South Avenue
City of Beacon
Dutchess County, New York

ESI File: BB04157.51

Scale: 100'

March 2013 | Appendix A

APPENDIX B

Cost Estimates for Remedial Alternatives
(Not Provided in Public Copies)

BEACON TERMINAL REMEDIATION COST ESTIMATE
555 South Avenue, Beacon, New York
BCP Site: C314117
"Full Soil Removal Alternative"

Task 1: Pre-remedial Services	
ESI professional time	$10,000
Remedial Engineer	$5,000
Disbursements	$1,000
Task Subtotal	**$16,000**
Task 2: Soil Removal	
Excavator (10 days @ $2,500/day)	$25,000
ESI time (10 days @ $1,200/day)	$12,000
Toluene Soil disposal/T&D ($70/ton x 1,500 tons)	$105,000
PCBs/Metals Soil Disposal/T&D ($90/ton x 1,000 tons)	$90,000
Import fill soils (2,000 cy@ $25/yd^3)	$50,000
Laboratory (toluene soils area)	$5,000
Laboratory (PCBs/metal soils area)	$1,000
Materials/disbursements	$3,000
Dust monitoring (10 days)	$3,000
Task Subtotal	**$294,000**
Task 3: Soil Cover	
Installation (10,600 yd^3 at $25 per yd^3)	$265,000
Soil Testing	$15,000
Task Subtotal	**$280,000**
Task 4: Groundwater Monitoring	
Well Installation (6 wells)	$12,000
Well Dev't/Sampling	$13,000
Laboratory ($2,000/round)	$16,000
Reporting	$4,000
Task Subtotal	**$45,000**
Task 5: Subslab Depressurisation System	
Design/Approval	$8,000
Installation	$40,000
Reporting	$5,000
Task Subtotal	**$53,000**
Task 6: Site Management services	
Annual Inspection (30 years)	$45,000
Maintenance (wells and SSDS)	$6,000
Task Subtotal	**$51,000**
Task 7: Deed Restriction	
Legal	$6,000
Task 7: Administrative Services	
Status Reports/Communications	$8,000
Final Engineering Report	$12,000
Meetings	$4,000
Inspections	$5,000
Task Subtotal	**$29,000**
BASE TOTAL	**$774,000**
Contingency (10%)	**$77,400**
TOTAL	**$851,400**

Notes:
1. Costs exclude building demolition and asbestos abatement costs.
2. Costs assume all soil wastes will be managed as non-hazardous wastes.

BEACON TERMINAL REMEDIATION COST ESTIMATE
555 South Avenue, Beacon, New York
BCP Site: C314117
"Partial Soil Removal/In-Situ Remediation Alternative"

Task 1: Pre-remedial Services	
ESI professional time	$10,000
Remedial Engineer	$5,000
Disbursements	$1,000
Task Subtotal	**$16,000**
Task 2: Soil Removal	
Excavator (3 days @ $2,500/day)	$7,500
ESI time (3 days @ $1,200/day)	$7,600
PCBs/Metals Soil Disposal/T&D ($90/ton x 1000 tons)	$9,000
Imported fill soils (700 cy@ $25/cy)	$17,500
Laboratory	$1,000
Materials/disbursements	$3,000
Dust monitoring (3 days)	$500
Task Subtotal	**$46,100**
Task 3: In-situ Bioremediation	
Pilot Study	$32,500
Driller	$7,500
ESI time (10 days)	$12,000
Treatment (3 applications)	$150,000
Reporting (3)	$6,000
Task Subtotal	**$208,000**
Task 3: Soil Cover	
Installation (10,600 yd^3 at $25 per y^3)	$265,000
Soil Testing	$15,000
Task Subtotal	**$280,000**
Task 4: Groundwater Monitoring	
Well Installation (6 wells)	$12,000
Well Dev't/Sampling	$13,000
Laboratory ($2,000/round)	$16,000
Task Subtotal	**$41,000**
Task 4: Subslab Depressurisation System	
Design/Approval	$8,000
Installation	$25,000
Reporting	$5,000
Task Subtotal	**$38,000**
Task 5: Site Management services	
Annual Inspection (30 years)	$45,000
Maintenance (wells and SSDS)	$6,000
Task Subtotal	**$51,000**
Task 6: Deed Restriction	
Legal	$6,000
Task 7: Administrative Services	
Status Reports/Communications	$8,000
Final Engineering Report	$5,000
Meetings	$4,000
Inspections	$5,000
Task Subtotal	**$22,000**
BASE TOTAL	**$708,100**
Contingency (10%)	**$70,810**
TOTAL	**$778,910**

BEACON TERMINAL REMEDIATION COST ESTIMATE

555 South Avenue, Beacon, New York

BCP Site: C314117

"No Action Alternative"

Task 1: Pre-remedial Services	
ESI professional time	$5,000
Disbursements	$1,000
Task Subtotal	**$6,000**
Task 2: Site Security	
Fence Installation	$24,000
ESI time (3 days)	$3,000
Task Subtotal	**$27,000**
Task 3: Groundwater Monitoring/Treatment	
Well sampling (14 rounds)	
ESI (14 days)	$21,000
Equipment	$7,000
Laboratory	$14,000
Monitoring Reports	$14,000
Task Subtotal	**$56,000**
BASE TOTAL	**$89,000**
Contingency (10%)	**$8,900**
TOTAL	**$97,900**

APPENDIX C

Fish and Wildlife Impact Analysis

FISH AND WILDLIFE IMPACT ANALYSIS FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

555 South Avenue
City of Beacon, Dutchess County, New York

Prepared for:

Ecosystems Strategies, Inc.

Prepared by:

Matthew D. Rudikoff Associates, Inc.
427 Main Street - Suite 201
Beacon, New York 12508
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845.831.1182

January 5, 2009

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BEACON TERMINAL
City of Beacon, Dutchess County, New York

January 5, 2009

I. EXECUTIVE SUMMARY

A Fish and Wildlife Impact Analysis pertaining to the Beacon Terminal property (the Site), a New York State Brownfield Cleanup Program Site (BCP) located in the City of Beacon, Dutchess County, New York, was conducted during the period of late May to early September 2008 by Matthew D. Rudikoff Associates, Inc. (***MDRA***). The Site encompasses 11.07 acres and includes eight vacant industrial buildings and paved parking areas occupying approximately 70% of the property. The remaining 30% of the Site consists of patches of woody and herbaceous cover types, the largest of which occurs in the westerly one-third of the property.

The objectives of the analysis included the following:

- Document the extent of cover types, flora and fauna on and in the vicinity of the Site.
- Evaluate the extent to which Site biological resources showed evidence of stress.
- Assess the potential for reported Site contaminants to migrate from the Site.
- Identify the potential pathway(s) of contaminant movement from Site sources to potential biological receptors.

The procedures used to conduct the assessment complied with the guidelines provided in: Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA) (NYSDEC 1994) up to but not including Step II B of the guidelines, as indicated in a letter to Ecosystems Strategies, Inc. (ESI) from the New York State Department of Environmental Conservation (NYSDEC), dated August 27, 2007.

Site Cover Types, Flora & Fauna

The results of ecological surveys conducted on May 28, June 3, June 12 and September 5, 2008 determined that seven cover types, identified largely as cultural or natural/semi-natural ecological communities (Edinger *et al.* 2002), including 117 vascular plant species (trees, shrubs and herbs) and 35 species of fish and wildlife (mammals, birds/waterfowl, snakes and fish), were identified on or in close proximity to the Site.

Overall, site flora and fauna appeared to be reasonably diverse, yet typical of industrial sites with extensive buildings, pavement, impoverished soils and chronically disturbed vegetation. Most of the Site's herbaceous flora was comprised of nonnative, ruderal weed species typically associated with chronically disturbed cut and fill soils and pavement/building edges; e.g., common mugwort (*Artemisia vulgaris*), common ragweed (*Ambrosia artemisiifolia*), spotted knapweed (*Centaurea maculosa*) and common dandelion (*Taraxacum officinale*). Site cover types and their representative biota, were similar to those observed elsewhere in off-site locations.

There was no evidence of atypical or aberrant growth, atypical external morphology or behavior, or other observable indications of environmental stress to Site flora and fauna, including to observed macrobenthic invertebrates (e.g., scuds [*Gammarus* sp], snails [Physidae] or leeches [Hirudinae]) and other aquatic fauna, (e.g., northern water snake hunting for eels near the northerly bank of Fishkill Creek bordering the Site). An eastern garter snake and white-tailed deer observed up-close also appeared normal in external morphology and movement. Apart from a few elm trees at the northeasterly boundary of the Site observed to be heavily infested with wasp leaf galls and evidence of chlorosis along leaf veins, there was no evidence of environmental stress to Site flora; i.e., no evidence of stunted growth, aborted apices, wilt, rot, paucifoliation, widespread chlorosis, etc., that could be attributed to Site contaminants.

The extent of existing buildings, paved surface, debris-littered impoverished soils and the limited extent of forage, mast or berry trees and cover, substantially reduces the habitat value of the Site for wildlife. Most species observed on the Site were development-associated species (Miller and Klemens 2004) that do well in developed or disturbed areas; e.g., European starling, American robin, Northern cardinal, American crow, English sparrow, barn swallow, brown-headed cowbird and white-tailed deer. Development sensitive wildlife; e.g., bald eagle, least bittern, pied-billed grebe and osprey, which have been recorded at the mouth of Fishkill Creek are not expected to utilize the Site, nor is there suitable habitat for these species on the Site.

A small population of a rare plant species, Davis' sedge (*Carex davisii*; NYSDEC-listed threatened, Natural Heritage Program (NHP)-listed G4 S2) was found in the westerly area of the Site near a tree line bordering an oldfield. No other rare plants were found on the Site; nor were rare animals observed or detected on or near the Site during the ecological surveys. Two rare cover types, Freshwater Intertidal Shore (FIS) (NHP-listed S2/S3) and Freshwater Subtidal Aquatic Bed (FSA) (NHP-listed S3) occur along the southerly boundary of the Site.

The mouth of Fishkill Creek to its upper tidal limit, which borders the southerly boundary of the Site, is designated as a Significant Coastal Fish and Wildlife Habitat by the New York State Department of State (NYSDOS) (1990). Reported rare plant species for the mouth of Fishkill Creek by the NYSDEC (2008) and the NYSDOS (1990) include:

- Delmarva Beggar-ticks (*Bidens bidentoides*) [NYSDEC-listed Rare, last reported 2004].
- Smooth Bur-marigold (*Bidens laevis*) [NYSDEC-listed Threatened, last reported 1987].
- Spongy arrowhead (*Sagittaria montevidensis* var *spongiosa*) [NYSDEC-listed Threatened, last reported 1936].

Rare animals recorded by the NYSDEC (2008) near the Site (mouth of Fishkill Creek, Dennings Point and nearby areas of Hudson River) include:

- Bald eagle (*Haliaeetus leucocephalus*) [NYSDEC-listed Threatened].
- Least bittern (*Ixobrychus exilis*) [NYSDEC-listed Special Concern].
- Pied-billed grebe (*Podilymbus podiceps*) [NYSDEC-listed Threatened].
- Osprey (*Pandion haliaetus*) [NYSDEC-listed Special Concern].
- Shortnose sturgeon (*Acipenser brevirostrum*) [NYSDEC/Federally-listed Endangered].
- Atlantic sturgeon (*Acipenser oxyrhincus*) [Candidate for Federal listing].

Contaminants of Concern

The following contaminants of concern were recorded at the Site by ESI:

- ***Volatile Organic Compounds (VOCs)***
  Concentrations of toluene and methyl ethyl ketone substantially above NYSDEC guidance levels (700 µg/kg and 120 µg/kg, respectively) were found in subsurface soils beneath site buildings or generally at depths of four (4) feet or greater in soil borings and test pits. No significant concentrations of VOCs were detected in groundwater or surface water samples. Exposure of Site biota to areas of elevated VOC's was assessed to be very low.

- **Semi-Volatile Organic Compounds (SVOCs)**
  Slightly elevated levels of polycyclic aromatic compounds (PAHs) were detected across the Site in soil samples taken at the surface and beneath the surface in test pits and from a soil boring at the western parking area. No significant SVOC concentrations were detected in Site groundwater. The Site location where the elevated SVOCs were recorded was determined to provide little if any significant wildlife habitat or foraging area and therefore, exposure to, uptake and bioaccumulation of these compounds in the local food web was assessed as very limited.

- **PCBs and Pesticides**
  Elevated concentrations of PCBs at one order of magnitude above the guidance level of 100 µg/kg were recorded in soil samples collected from test pits dug in wooded areas in the southwest corner (three test pits) of the Site and from one test pit further to the northwest. Low level pesticide contamination (DDD, DDE and DDT) was detected in surface soils throughout the Site. Given the limited area where elevated levels of PCBs were recorded, overall exposure risk to Site biota was assessed to be low; i.e., a small portion of the area-wide populations of wildlife utilizing this limited area of the Site appeared to be at risk of exposure to Site contaminants.

- **Target Analyte List Metals**
  Elevated metal contamination was detected at surface soil sampling location 2HB-02 west of Building B-5B near the loading dock and in the test pit areas where fabric was observed at the far westerly side of the Site to the south and east of the centrally located paved parking

area. Low level exceedences of metal concentrations were detected throughout the Site in soils, sediment and groundwater, which is indicative of the former industrial usage of the Site. Because of the limited area of the Site where elevated concentrations of metals were recorded, risk of exposure of area-wide wildlife populations to these and other Site contaminants was assessed as low. Moreover, in the case of Site metal-contaminated streambed sediments, attribution of the analytical results solely to Site activities is confounded by historical upstream sources of heavy metals and other contaminants, which may have been transported to the Site reach of Fishkill Creek during periods of high flow.

Potential Contributing Contaminants of Concern

Assessment of exposure risk of fish and wildlife to levels of contaminants in Fishkill Creek that might be attributable to past industrial activities at the Site is confounded by contaminants from potential upstream industrial dischargers. A NYSDEC toxics survey conducted in 1983 (Schmidt and Kiviat 1986) listed the following toxic materials recorded in Fishkill Creek at the City of Beacon: cadmium, mercury, selenium, zinc (including an identified source- release by one industrial discharger located approximately 2,000 feet upstream), benzene, chlorobenzene and trichloroethylene. The cadmium levels were reported to exceed human safety limits and the concentrations of mercury and selenium were greater than those permitted for protection of aquatic biota (Schmidt and Kiviat 1986). The current status of these dischargers was not determined.

A long-trending impact of pollutants from various sources in Fishkill Creek near the Site is reflected in the results of benthic macroinvertebrate surveys conducted by Stevens et al. (1994) just upstream of the Site. The analysis conducted at this and another upstream reach of the Creek recorded a community assemblage of macroinvertebrate taxa with the highest mean tolerance quotient (a measure of pollution tolerance) of a total of 12 sampling stations established on the Creek and its principal tributaries. That some of these pollutants are toxicants of potential biological concern has been documented through tissue analysis of aquatic biota where elevated levels of PAHs, lead and selenium, including high levels of lead in crayfish, were recorded for Creek sampling sites in Beacon (Bode *et al.* 2001, Fishkill Creek Watershed Committee 2005).

The effect of cumulative toxicant sources, including those documented at the Site, on fish and wildlife in significant habitats at and near the mouth of Fishkill Creek just below the Site are not well understood. However, no records of fish kills have been reported near the Site, nor is ***MDRA*** aware of any reports or studies of morphological or physiological abnormalities in Creek biota that have been attributed to recorded tissue toxicant concentrations (Bode et al. 2001).

While historical runs of rainbow smelt (*Osmerus mordax*) no longer occur at the mouth of Fishkill Creek and the use of the Creek mouth by spawning Hudson River fishes appears to have diminished (Stevens et al. 1994; Limberg and Schmidt 1990), the icthyofauna biodiversity *per se* near the mouth of the Creek appears to remain substantially unchanged, – with the exception of a possible increase in common carp (*Cyprinus carpio*).

Potential Movement Pathways of Contaminants of Concern

Potential exposure of fish and wildlife to combined Site and upstream sources of contaminants, particularly to elevated levels of PCBs and heavy metals, was assessed to be greater in stream sediments than in surface water, as these contaminants are insoluble or have limited solubility in water and are more likely to adsorb to sediment particles. Potential exposure of wildlife to Site contaminants is greatest in the westerly one-third of the Site where elevated levels of heavy metals and PCBs exceeding guidance levels and low levels of pesticides were detected within 1-foot of the soil surface and where the highest plant biomass, plant species richness and most wildlife (predominantly birds and several mammals) were observed or detected.

Exposure to elevated levels of contaminants were assessed to occur predominantly in two media: (1) soils within the soil aerobic zone; and (2) shallow streambed sediment. These media support the lowest trophic (feeding) level at which the Contaminants of Concern are assimilated by photosynthetic plants (autotrophs) and soil/sediment feeding organisms (saprotrophs) and then passed to higher trophic levels (various taxa of herbivores, omnivores and carnivores). The top trophic level, usually a top carnivore (apex predator) such as a red-tailed hawk, is at greatest risk of contaminant-loading because of the increased bioamplification of contaminants as they move from the lowest to highest trophic level.

(1) Soil Medium

Potential exposure of Site contaminants to terrestrial wildlife, particularly to elevated levels of PCBs and heavy metals is greatest for biota living within one-foot of the surface of exposed or vegetated soils, as soil organisms are more prevalent to this depth and these contaminants are known to adsorb strongly to soil particles, particularly to soil organic matter.

Two principal potential movement pathways of Site contaminants to terrestrial wildlife were identified as:

- The Soil → Rooted Plants → Herbivore / Omnivore → Carnivore Pathway
  Example: Clover → Woodchuck/White-footed Mouse → Red-tailed Hawk

- The Soil-feeding Invertebrates → Carnivore Pathway
  Example: Earthworms and Grubs → Short-tailed Shrew → Barred-owl

(2) Aquatic Medium

Sediment and periodically suspended particulate matter was assessed to be the principal source of potential contamination to aquatic biota. Two potential biological transmission pathways of contaminants to aquatic biota were identified as:

- Rooted Aquatic Plants → Herbivores → Carnivores
  Example: Curly pondweed → Physid snails → White sucker

- Sediment / Suspended Particulate Matter Saprotrophs → Carnivores
  Example: Assorted macroinvertebrates (e.g., midge larvae, certain copepods, planarians and various worm taxa) → larval Pumpkinseed → juvenile Largemouth Bass → Belted Kingfisher

II. INTRODUCTION AND OBJECTIVES

During the period of late-May to early September 2008, Matthew D. Rudikoff Associates, Inc. (***MDRA***) conducted a Fish and Wildlife Impact Analysis pertaining to the Beacon Terminal property (the Site) located in the City of Beacon, Dutchess County, New York. The Site is a New York State Brownfield Cleanup Program Site encompassing 11.07 acres on which are located eight vacant industrial buildings formerly used for various manufacturing and warehousing purposes. The Site surrounding the buildings is largely covered by impervious concrete and asphalt surface, but supports wooded and herbaceous upland cover types, a diversity of largely nonnative ruderal plant species (weedy species associated with buildings and parking lots), as well as tidal aquatic and riparian habitats at the Site's southerly boundary bordering Fishkill Creek. The fish and wildlife impact analysis addresses the comments of the New York State Department of Environmental Conservation (NYSDEC) expressed in its letter to Ecosystem Strategies, Inc. (ESI) dated August 27, 2007, which states: "Because the characterization and extent of contamination is not yet defined, it is not possible to determine if the site causes potential impact to fish and wildlife. Therefore, the Department recommends a partial Fish and Wildlife Resources Impact Analysis (FWRIA) be conducted."

The objectives of the Fish and Wildlife Impact Analysis (FWIA) include:

- Identify and assess the condition of biological resources of the Site (flora, fauna, and cover types.
- Prepare a vegetation map showing the extent of identified cover types on and adjacent to the Site.
- Visually assess the extent to which Site biological resources appear to have been impacted by the hazardous waste materials identified by ESI.
- Evaluate the potential pathway(s) of the movement of the identified contaminants within Site biota and the local food web.

MDRA's analysis is based on a review of preliminary contaminant data provided by ESI ***(refer to Appendix A, Ecosystem Strategies, Inc.: Summary of Initial Remedial Findings for the Beacon Terminal Site).*** To the extent that new or amended findings are made by ESI in any subsequent or Final Remedial Investigation Report, ***MDRA***'s analysis contained herein may warrant review and adjustment accordingly.

III. FISH AND WILDLIFE IMPACT ANALYSIS PROCEDURES

The report outline and procedures used to conduct the Fish and Wildlife Impact Analysis on and in the vicinity of the Site follow the guidelines provided in: Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA) (NYSDEC 1994). However, as stipulated by the NYSDEC, this report provides only an analysis of Site conditions up to but not including Step II B of the FWIA guidelines, as indicated in a letter to ESI from NYSDEC, dated August 27, 2007. As such, the following FWIA steps/topics are covered and detailed in this report:

- Step I: Site Description
  A. Site Information
  B. Fish and Wildlife Resources
  C. Description of Fish and Wildlife Resource Value
  D. Fish and Wildlife Regulatory Criteria

- Step II: Contaminant-Specific Impact Assessment
  A. Pathway Analysis

Step I: Site Description

A. Site Information

Site Location and Geophysical Features

The Site encompasses approximately 11.07 acres located on the westerly side of South Avenue in the City of Beacon, Dutchess County, New York. ***Refer to Figure 1, Site Location Map***. The Site is somewhat rectangular in shape and is bounded on the north by an inactive spur of the Metro-North rail-line. North of the rail-line, several single family residences are located on Tioranda Avenue and Paye Avenue. The Site is bounded on the east by South Avenue. Immediately east of South Avenue and along its western boundary, the Site borders Madam Brett Park, a public park owned and maintained by The Scenic Hudson Land Trust, Inc. Madam Brett Park encompasses approximately 13 acres and is irregularly "bow-tie" shaped, consisting of eastern and western parts bordering the Site and a narrow, public access easement via an elevated pedestrian walkway and a foot path which traverse the southerly boundary of the Site. The southerly boundary of the Site borders the northerly bank of Fishkill Creek and includes an approximate 183-foot long section of the Creek to its far (southeasterly) bank, extending downstream from the former Tioranda Bridge at South Street. Approximately 2,000 feet downstream of the Site, Fishkill Creek converges with Hudson River. The entire reach of Fishkill Creek bordering the Site is tidal.

Source: *Base Map: ESRI. ArcGIS Online. http://arcgisonline.com. Accessed June 15, 2007.*

MDRA

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SITE LOCATION MAP

BEACON TERMINAL
CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

DATE	**October 2008**
SCALE	**1 INCH = 2,000 FEET**
FILE #	**ES08110**

FIGURE 1

The eight (8) vacant industrial buildings on the Site occupy approximately 50% of the property. Approximately 20% of the Site is asphalt covered with the remaining approximately 30% consisting of woody and herbaceous dominated cover types. A narrow drainage way supporting sparse hydrophytic vegetation enters the Site at its northwesterly corner and ends at the southwesterly edge of an oldfield located on the property (***refer to Site Cover Types below***). A sewer easement crosses within and generally parallel to the westerly and southerly property boundary. Railroad ties of a former rail-line spur of an inactive Metro-North rail-line also enters the property from the northwest, extending a short distance into the Site in a southeasterly direction.

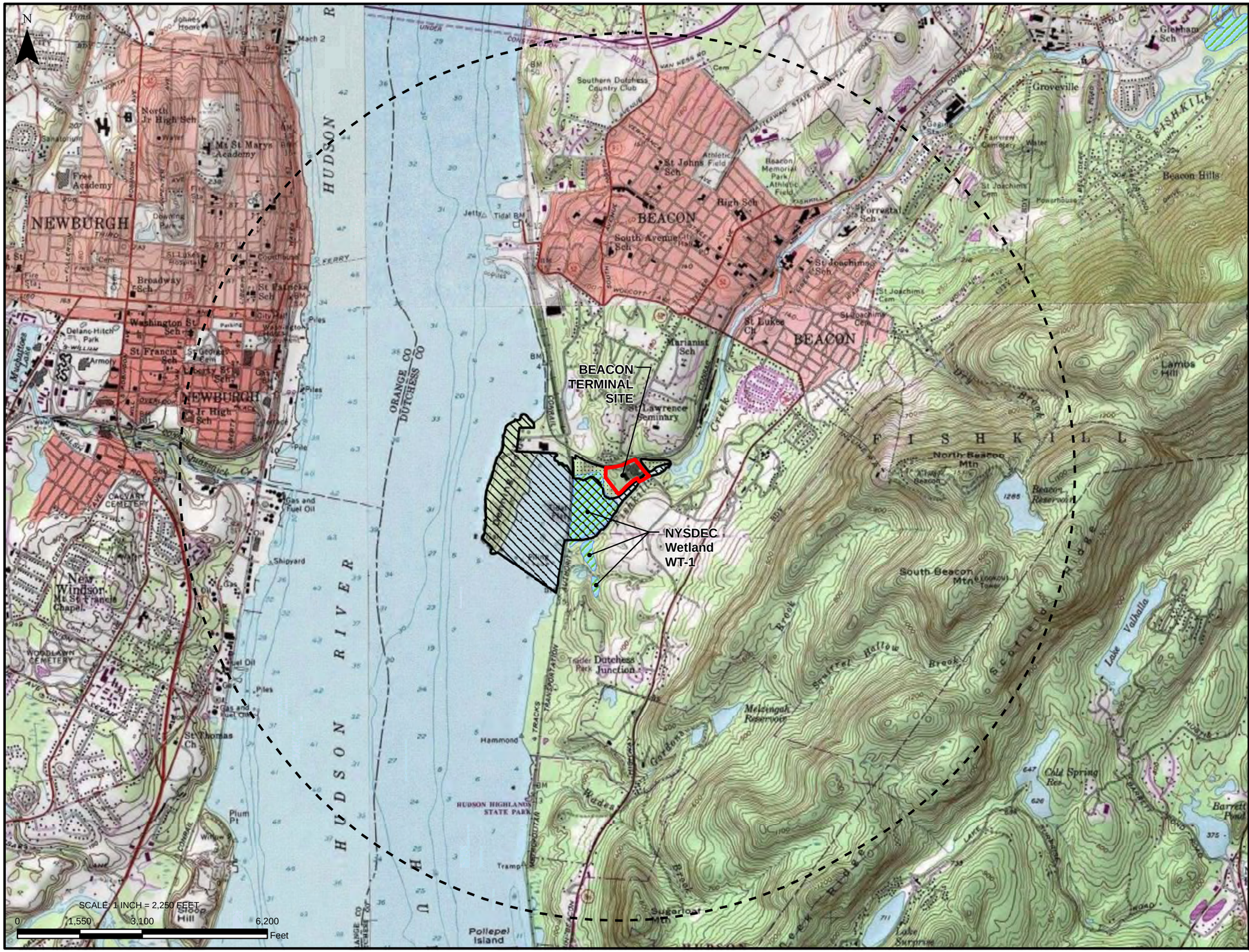
Topography

The Site occupies the lower, near-central area of a small watershed basin drained by Fishkill Creek and several small intermittent tributaries. The watershed below the Tioranda Dam on Fishkill Creek encompasses an area of approximately 1.05 square miles. ***Refer to Figure 2, Site & Area Features.*** Areas to the north, northeast and south of the Site, slope gently to somewhat steeply toward the Site from an arc of rounded hills. Elevations at the height of the watershed range from approximately 6 to 1,400 feet above sea level (ASL) on the south-southeasterly side of Fishkill Creek and from approximately 20 to 250 feet ASL north and northwest of the Site. The westerly and southerly areas of the Site from approximate elevations 20 to 40 feet ASL slope gradually toward the mouth of Fishkill Creek and Hudson River.

The Site appears to have been historically graded to nearly level in its central area by cutting into a moderately steep, southeast-facing slope in order to develop a level building site. Elevations on the Site range from approximately 50 feet ASL along the northerly boundary of the property to approximately 4 feet ASL near the southwest corner. ***Refer to Figure 3, Site Survey.*** Elevations in the developed areas of the Site range from nearly 40 feet ASL in the northeasterly corner to 32.5 feet ASL at its southwesterly corner. The developed area of the Site generally slopes south and southwest. Steep, southeasterly-facing slopes are present along the northerly boundary of the property and in the southwesterly area of the Site above Fishkill Creek. Steep southwesterly-facing slopes are also present near the westerly Site boundary.

Drainage

Site surface drainage is determined by the topography of the property and surrounding area. Runoff moves across the Site from northeast-northwest to southeast-southwest. The direction of groundwater flow is unknown. ***Refer to Figure 4, Site Drainage Map.***



BEACON TERMINAL

City of Beacon
Dutchess County, New York State

SITE & AREA FEATURES

LEGEND:

- MOUTH OF FISHKILL CREEK: NYSDOS SIGNIFICANT COASTAL FISH & WILDLIFE HABITAT
- MADAM BRETT PARK
- NYSDEC WETLANDS
- BEACON TERMINAL SITE
- 2-MILE RADIUS

Source:
Base Map: ESRI. ArcGIS Online. <<http://arcgisonline.esri.com>>. Accessed June 15, 2007.

MDRA MATTHEW D. RUDIKOFF ASSOCIATES, INC.

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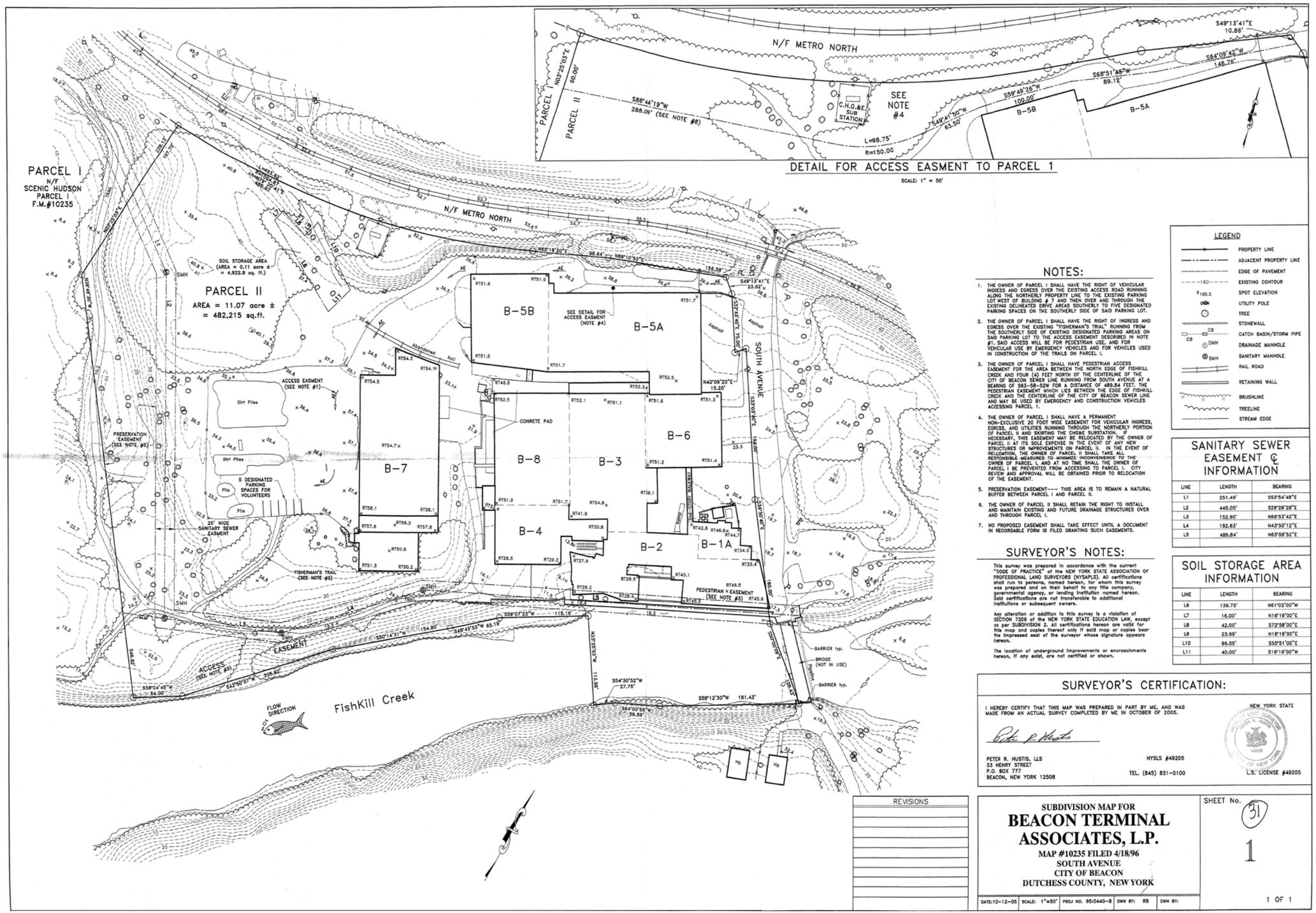
FIGURE 2	
Date	October 2008
Revised	
File #	ES08110

BEACON TERMINAL

City of Beacon
Dutchess County, New York State

SITE SURVEY



DETAIL FOR ACCESS EASEMENT TO PARCEL 1

SCALE: 1" = 50'

NOTES:

1. THE OWNER OF PARCEL I SHALL HAVE THE RIGHT OF VEHICULAR INGRESS AND EGRESS OVER THE EXISTING ACCESS ROAD RUNNING ALONG THE NORTHERLY PROPERTY LINE TO THE EXISTING PARKING LOT WEST OF BUILDING # 7 AND THEN OVER AND THROUGH THE EXISTING DELINEATED DRIVE AREAS SOUTHERLY TO FIVE DESIGNATED PARKING SPACES ON THE SOUTHERLY SIDE OF SAID PARKING LOT.
2. THE OWNER OF PARCEL I SHALL HAVE THE RIGHT OF INGRESS AND EGRESS OVER THE EXISTING "FISHERMAN'S TRIAL" RUNNING FROM THE SOUTHERLY SIDE OF EXISTING DESIGNATED PARKING AREAS ON SAID PARKING LOT TO THE ACCESS EASEMENT DESCRIBED IN NOTE #1. SAID ACCESS WILL BE FOR PEDESTRIAN USE, AND FOR VEHICULAR USE BY EMERGENCY VEHICLES AND FOR VEHICLES USED IN CONSTRUCTION OF THE TRAILS ON PARCEL I.
3. THE OWNER OF PARCEL I SHALL HAVE PEDESTRIAN ACCESS EASEMENT FOR THE AREA BETWEEN THE NORTH EDGE OF FISHKILL CREEK AND FOUR (4) FEET NORTH OF THE CENTERLINE OF THE CITY OF BEACON SEWER LINE RUNNING FROM SOUTH AVENUE AT A BEARING OF S63-58-52W FOR A DISTANCE OF 489.84 FEET. THE PEDESTRIAN EASEMENT WHICH LIES BETWEEN THE EDGE OF FISHKILL CREEK AND THE CENTERLINE OF THE CITY OF BEACON SEWER LINE AND MAY BE USED BY EMERGENCY AND CONSTRUCTION VEHICLES ACCESSING PARCEL I.
4. THE OWNER OF PARCEL I SHALL HAVE A PERMANENT NON-EXCLUSIVE 20 FOOT WIDE EASEMENT FOR VEHICULAR INGRESS, EGRESS, AND UTILITIES RUNNING THROUGH THE NORTHERLY PORTION OF PARCEL II AND SKIRTING THE CHG&E SUBSTATION. IF NECESSARY, THIS EASEMENT MAY BE RELOCATED BY THE OWNER OF PARCEL II AT ITS SOLE EXPENSE IN THE EVENT OF ANY NEW STRUCTURES OR IMPROVEMENTS ON PARCEL II. IN THE EVENT OF RELOCATION, THE OWNER OF PARCEL II SHALL TAKE ALL RESPONSIBLE MEASURES TO MINIMIZE INCONVENIENCE TO THE OWNER OF PARCEL I, AND AT NO TIME SHALL THE OWNER OF PARCEL I BE PREVENTED FROM ACCESSING TO PARCEL I. CITY REVIEW AND APPROVAL WILL BE OBTAINED PRIOR TO RELOCATION OF THE EASEMENT.
5. PRESERVATION EASEMENT--- THIS AREA IS TO REMAIN A NATURAL BUFFER BETWEEN PARCEL I AND PARCEL II.
6. THE OWNER OF PARCEL II SHALL RETAIN THE RIGHT TO INSTALL AND MAINTAIN EXISTING AND FUTURE DRAINAGE STRUCTURES OVER AND THROUGH PARCEL I.
7. NO PROPOSED EASEMENT SHALL TAKE EFFECT UNTIL A DOCUMENT IN RECORDABLE FORM IS FILED GRANTING SUCH EASEMENTS.

SURVEYOR'S NOTES:

This survey was prepared in accordance with the current "CODE OF PRACTICE" of the NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS (NYSAPLS). All certifications shall run to persons, named hereon, for whom this survey was prepared and on their behalf to any title company, governmental agency, or lending institution named hereon. Said certifications are not transferable to additional institutions or subsequent owners.

Any alteration or addition to this survey is a violation of SECTION 7209 of the NEW YORK STATE EDUCATION LAW, except as per SUBDIVISION 2. All certifications hereon are valid for this map and copies thereof only if said map or copies bear the impressed seal of the surveyor whose signature appears hereon.

The location of underground improvements or encroachments hereon, if any exist, are not certified or shown.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- EDGE OF PAVEMENT
- 160 EXISTING CONTOUR
- X165.5 SPOT ELEVATION
- UTILITY POLE
- TREE
- STONEWALL
- CB CATCH BASIN/STORM PIPE
- DMH DRAINAGE MANHOLE
- SMH SANITARY MANHOLE
- RAIL ROAD
- RETAINING WALL
- BRUSHLINE
- TREELINE
- STREAM EDGE

SANITARY SEWER EASEMENT ℄ INFORMATION

LINE	LENGTH	BEARING
L1	251.49'	S53°54'48"E
L2	445.05'	S29°29'28"E
L3	152.90'	N66°53'42"E
L4	192.63'	N43°50'12"E
L5	489.84'	N63°58'52"E

SOIL STORAGE AREA INFORMATION

LINE	LENGTH	BEARING
L6	136.75'	N61°02'00"W
L7	16.00'	N16°19'00"E
L8	42.00'	S72°58'00"E
L9	23.99'	N16°19'00"E
L10	96.05'	S55°51'00"E
L11	40.00'	S16°19'00"W

SURVEYOR'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS MAP WAS PREPARED IN PART BY ME, AND WAS MADE FROM AN ACTUAL SURVEY COMPLETED BY ME IN OCTOBER OF 2005.

NEW YORK STATE

PETER R. HUSTIS, LLS
33 HENRY STREET
P.O. BOX 777
BEACON, NEW YORK 12508

NYSLS #49205
TEL. (845) 831-0100
L.S. LICENSE #49205

REVISIONS

SUBDIVISION MAP FOR
BEACON TERMINAL ASSOCIATES, L.P.
MAP #10235 FILED 4/18/96
SOUTH AVENUE
CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

DATE:10-12-05 | SCALE: 1"=50' | PROJ NO. 95:0440-B | DWN BY: RB | DWN BY:

SHEET No. 31 1

1 OF 1

Survey completed and prepared by Peter R. Hustis, LLS. October 2005.

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FIGURE 3

Date	October 2008
Revised	
File #	ES08110

BEACON TERMINAL

City of Beacon
Dutchess County, New York State

SITE DRAINAGE MAP

LEGEND:

- DRAINAGE DIVIDE
- DIRECTION OF SURFACE WATER FLOW
- BEACON TERMINAL SITE
- 1/2-MILE RADIUS

N

NON-TIDAL

TIDAL

BEACON TERMINAL SITE

SCALE: 1 INCH = 600 FEET

0 300 600 1,200 Feet

Source:
Base Map: ESRI. ArcGIS Online. <<http://arcgisonline.esri.com>>. Accessed June 15, 2007.

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FIGURE 4	
Date	October 2008
Revised	
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Bedrock, Unconsolidated Materials and Soils

Bedrock underlying the Site has been mapped as the Austin Glen Formation, which is composed of graywacke and shale (Fisher et al. 1970). Outcrops of the Austing Glen Formation (primarily shale) are evident on steep slopes of the Site above the northerly bank of Fishkill Creek. On the far bank of the Creek, the Austin Glen contacts and dips southeastward beneath metamorphic rock of uncertain origin composed mainly of hornblende granite and granitic gneiss, a rock type which makes up a substantial portion of the Hudson Highlands south of the Site.

Unconsolidated material overlying bedrock on the Site is mapped as a contact of till (glacial deposits of poorly sorted, variable-textured clay, silt-clay and boulder-clay mixtures) and lacustrine silt and clay (ancient lake bed deposits derived generally from calcareous materials). The latter material is mapped for the westerly area of the Site and extending to the mouth of Fishkill Creek and adjacent Dennings Point (Cadwell 1989). Soils atop the unconsolidated material are mapped as Nassau-Cardigan complex, rolling, very rocky (NwC) by the Soil Survey of Dutchess County (Faber 2002). This complex is composed of approximately 40% Nassau soils, 40% Cardigan soils, and 20% other soils and rock outcrop. Folded shale rock outcrop covers approximately 2 to 10% of the surface. Selected features of the principal soil of the complex include:

- Nassau soils - Shallow (10 to 20 inches), somewhat excessively drained loamy soils formed in till underlain by folded shale bedrock. Permeability is moderate.

- Cardigan soils - Moderately deep (20 to 40 inches), well drained loamy soils formed in till underlain by folded shale bedrock. Permeability is moderate.

A small area of Knickerbocker fine sandy loam, undulating (KrB) has been mapped for the northwesterly corner of the Site by the Soil Survey of Dutchess County (Faber 2002). This soils type is composed of fine sandy loam with undulating 2 to 6 percent slopes. It is very deep, some what excessively drained sandy loam formed in glacial outwash. Permeability is moderately rapid in the surface layer and upper subsoil, and rapid or very rapid in the lower subsoil and substratum.

Because of the extent of grading, soils in most of the easterly two-thirds of the Site are more aptly identified as a complex of Udorthents, smoothed (Ud) and Urban Land with substantial areas of impervious surface. Few areas of the Site exhibit typical soil profiles indicative of their mapped units. In addition, vegetated soil mounds and shallow pits indicative of past soils disturbance are evident in the west - northwesterly area of the Site mapped as Knickerbocker fine sandy loam, undulating (KrB). Soil mounds, graded fill and substantial C&D debris, including metal wastes and large-diameter metal pipes (to approximately 3 feet in diameter) as well as fabric wastes have been dumped in wooded areas, mainly in the westerly one-third of the Site. An oldfield cover type has developed over spread fill in the northwesterly quarter of the Site. The fill is comprised of clayey soils containing brick, assorted stones and small shards of plastic and metal ***(refer to Figure 5, Cover Types Map)***.

BEACON TERMINAL

City of Beacon
Dutchess County, New York State

COVER TYPES MAP

LEGEND:

LAND COVER

- SO SUCCESSIONAL SOUTHERN HARDWOODS
- SH SHRUBLAND
- OF OLD FIELD
- CP CONIFER PLANTATION
- D DEVELOPMENT (RESIDENTIAL - COMMERCIAL)
- DIS DITCH/ARTIFICIAL INTERMITTENT STREAM
- MS MAIN CHANNEL STREAM
- FTM FRESHWATER TIDAL MARSH
- FSA FRESHWATER SUBTIDAL AQUATIC BED
- FIS FRESHWATER INTERTIDAL SHORE
- FIM FRESHWATER INTERTIDAL MUDFLAT
- SS SHRUB SWAMP
- IP IMPOUNDED POND
- EP EXCAVATED POND

RARE SPECIES
Location of NYSDEC-Listed Threatened Davis' Sedge *(Carex davisii)*

PROJECT SITE

1/2-MILE RADIUS

MUNICIPAL BOUNDARIES

Note: Analysis of vegetation types are based on 2004 Ortho Imagery. Current development conditions may be different from those shown.

Base Map: Dutchess County 12-inch Resolution Natural Color Orthoimagery. NYS Office of Cyber Security & Critical Infrastructure Coordination (NYS OCSCIC). NYS Digital Orthoimagery Program (NYSDOP). April 2004. <<www.nysgis.state.ny.us>>. Accessed April 29, 2008.

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FIGURE 5	
Date	December 2008
Revised	
File #	ES08110

N

SCALE: 1 INCH = 600 FEET

0 325 650 1,300 Feet

Site Land Use History

Most Site land use history information was provided by ESI, which it obtained from a review of Site related documents provided by the Beacon Historical Society and from other sources of land use history information.

According to ESI (2007), the Site has had a long history of known industrial use. A site sketch and description obtained from the Beacon Historical Society ***(refer to Figure 3, Site Survey)***, depicts three buildings (identified as buildings B-1 and B-2 by ESI) on the Site. According to ESI, these buildings were constructed in 1878 as the Tioranda Hat Works. Building B-1 is described as an engine room and boiler house, and building B-2 as the main factory, which housed the felting, dyeing, carding and wool sorting operations. Information regarding the manner of material handling, storage and disposal was not readily available at the time of ESI's land use review. However, a review of historic Sanborn maps by ESI indicates that the Site was occupied by the Tioranda Hat Works until at least 1919. Three of the Buildings, B-1, B-2 and B-4 were on the Site during that period of time, with dyeing operations reported to be carried out in parts of Buildings B-2 and B-4 closest to Fishkill Creek. The hat works facilities are depicted on Sanborn maps until at least 1946. By 1962, the present-day complex of buildings on the Site is referred to as "Beacon Terminal." Six (6) of the buildings are shown as being in use by the Atlas Fiber Company, a fiber reclaiming facility, while one (1) building (B-5A and B-5B) is reported to be occupied by Chemical Rubber Products, Inc. Building B-7 is reported to be occupied by BASF Colors & Chemicals. From approximately 1972 to 1995, the buildings were reportedly used for storage by various occupants. The present-day buildings have remained vacant since at least 1995.

Previous Site Investigations

Petroleum products and other chemicals have historically been stored on the Site. Four (4) underground storage tanks (USTs) used for the storage of toluene are likely to have been installed in the early 1950s, when Building B-5A was constructed. Six (6) aboveground storage tanks (ASTs) used for the storage of lubricating oil, hydrochloric and sulfuric acids, and at least ten (10) USTs used for the storage of fuel oil, toluene and other chemicals were documented on the Site in 1993. None of these tanks nor their closure appear to have been properly documented. In addition, storage drums of varying sizes were documented at a number of interior locations.

In 1996, ESI conducted a limited subsurface investigation in the vicinity of the toluene USTs. Ten (10) borings were completed to depths ranging from approximately seven (7) to 11 feet below the surface (ESI 2007). Volatile organic compounds (VOCs) (benzene, toluene, and xylene) were detected at levels which exceed current NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for Unrestricted Use. NYSDEC Spill #9600893 (currently closed) was recorded for the Site at that time.

Additional field investigations and sampling at the Site were conducted by ESI on January 30, February 28 and June 19, of 2008. The field work included soil borings and test pits, installation of new groundwater monitoring wells, and the sampling of groundwater from new and existing

wells, as well as sampling of surface and subsurface soils, soil gas, sediment and surface water. ***Refer to Appendix A, Ecosystem Strategies, Inc.: Summary of Initial Remedial Findings for the Beacon Terminal Site.***

B. Fish and Wildlife Resources

Site Resources

Inspections of the subject property were conducted by ***MDRA*** on May 28, June 3, June 12 and September 5, 2008 for the purpose of identifying site flora and fauna as well as to determine the location and extent of cover types on the subject property. The Site and adjacent environs were also examined for the presence of rare species and significant habitats as recorded or reported by Young and Weldy (2008), Edinger *et al.* (2002), New York State Protected Native Plants, NYSDEC Regulations, Part 193, and the New York Natural Heritage Program Rare Animal Status List (2007).

Site Cover Types

Table 1, Site Cover Types, provides a summary of the cover types identified on the Site. The Codes indicated in ***Table 1*** also apply to ***Figure 5, Cover Types Map***. Figure 5 depicts the location and extent of cover types on and within a 0.5 mile radius of the Site. The names and description of Site ecological communities or cover types are based largely on Ecological Communities of New York State (Edinger *et al.* 2002), a revised and expanded edition of Reschke (1990*).*

TABLE 1
SITE COVER TYPES

SYSTEM / SUB-SYSTEM	COVER TYPE	CODE	DESCRIPTION	REPRESENTATIVE SPECIES
TERRESTRIAL				
Terrestrial / Cultural	Abandoned Commercial Development	D	Abandoned commercial development established on cut and fill soils (udorthents, smoothed substratum); substantial areas of abandoned buildings, paved asphalt; C&D debris, discarded waste and disturbed ground.	Primarily nonnative trees, shrubs and herbs, including black locust, tree-of-heaven, bush and vine honeysuckles, common buckthorn, common mugwort, garlic mustard, greater celandine, common pigweed and dandelion.

TABLE 1
SITE COVER TYPES

SYSTEM / SUB-SYSTEM	COVER TYPE	CODE	DESCRIPTION	REPRESENTATIVE SPECIES
TERRESTRIAL (Continued)				
Terrestrial / Forested Uplands	Successional Southern Hardwoods	SO	Second-growth forested areas with closed tree canopy, sub-canopy of smaller trees, shrubs and herbaceous groundcover.	Black locust, Norway maple, eastern cottonwood, black cherry, hackberry, common buckthorn, bush and vine honeysuckles, multiflora rose, poison ivy, garlic mustard and Virginia creeper.
Terrestrial / Open Uplands	Oldfield	OF	Meadow community of grasses and forbs established on heterogeneous fill.	Primarily grasses including red fescue, blue grass, meadow fescue, orchard, sweet vernal and rye grasses; predominant forbs include field daisy, daisy fleabane, common cinquefoil, common plantain, common mugwort, black medic and white cleavers.
AQUATIC				
Riverine / Riverine Cultural	Ditch / Artificial Intermittent Stream	DIS	Shallow drainage swale of brief hydroperiod.	Plants observed growing in or bordering the ditch include willow, silky dogwood, eastern cottonwood, smartweed, fox sedge, soft rush and limestone meadow sedge.
Riverine / Natural Streams	Main Channel Stream	S	This habitat comprises the open water of Fishkill Creek.	Habitat for macroinvertebrates, fish, amphibians, reptiles and waterfowl.
Estuarine / Estuarine Subtidal	Freshwater Subtidal Aquatic Bed	FSA	Areas of submerged rooted herbaceous species.	Eurasian milfoil, curly pondweed, water chestnut.
Estuarine / Estuarine Intertidal	Freshwater Intertidal Shore	FIS	Areas of trees, shrubs and herbs established in gravelly or rocky substrate at the upper tidal boundary.	Red maple, silver maple, red ash, black willow, sycamore, American elm, arrowhead, purple loosestrife, knotweeds.

Source: Edinger, G. J., *et al.* 2002. Ecological Communities of New York State. New York Department of Environmental Conservation. DRAFT. 136pp.; a revised and expanded edition of Reschke (1990).

The seven cover types/ecological communities identified on the Site ***(refer to Figure 5, Cover Types Map)*** are described as follows:

Terrestrial Cover Types

Terrestrial / Cultural: Abandoned Commercial Development

This is a cultural ecological community or cover type which evolved in areas of waste ground near paved surfaces and buildings. The soils are chronically disturbed udorthents. Dominant plant species are nonnative weedy species adapted to disturbed soils of low nutrient content; e.g., black locust (*Robinia pseudoacacia*), tree-of-heaven (*Ailanthus altissima*), common yarrow (*Artemisia vulgaris*) and garlic mustard (*Alliaria petiolata*). Off-site, areas mapped as "D" in ***Figure 5, Cover Types Map,*** are included in this mapping unit designation and refer to residential properties with buildings and substantial landscaping, including lawns with planted shrubs and trees. Wildlife associated with this community are primarily birds, namely: English sparrow, song sparrow, brown-headed cowbird, northern cardinal, rock dove and barn swallow. Mammals observed or detected in this community include Norway rat, gray squirrel, white-footed mouse, eastern woodchuck, and an unidentified species of bat. Common garter snake was found under a cover object near Building B-2.

Terrestrial / Forested Uplands: Successional Southern Hardwoods

This community occupies the westerly one-third of the Site bordering Madam Brett Park. Dominant trees are black locust (*Robinia pseudo-acacia*), eastern cottonwood (*Populus deltoides*), tree-of-heaven (*Ailanthus altissima*), and Norway maple (*Acer platanoides*). Black cherry (*Prunus serotina*), sweet birch (*Betula lenta*), hackberry (*Celtis occidentalis*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), white ash (*Fraxinus americana*), and sugar maple (*Acer saccharum*) occur sparingly in this community. Along the southerly boundary of the Site bordering Fishkill Creek, dominant trees include silver maple (*Acer saccharinum*), white mulberry (*Morus alba*), black willow (*Salix nigra*) and American elm (*Ulmus americana*). C&D debris, brick and wood waste, discarded metals and fabric, and soil mounds and pits are scattered throughout this community. Rail-line ties of an abandoned spur rail-line are also present in the northwesterly corner of this community.

Despite the diversity of canopy trees throughout this community, the understory is overgrown with common buckthorn (*Rhamnus cathartica*), Japanese honeysuckle (*Lonicera japonica*), and multiflora rose (*Rosa multiflora*). Where openings in the shrub layer occur, poison ivy (*Toxicodendron radicans*), and garlic mustard (*Alliaria petiolata*) occur in large patches. Smaller patches of native herbs such as white snake root (*Ageratina altissima*), avens (*Geum* sp.) and enchanter's nightshade (*Circaea lutetiana*) are also present. Birds commonly heard or observed in this community include American robin, gray catbird, indigo bunting, yellow warbler, northern cardinal, tufted titmouse, house wren, American crow and bluejay. Less common birds included warbling vireo, blue-winged warbler, great-crested flycatcher, wood thrush and red-

winged blackbird. Observed or detected mammals included gray squirrel, eastern chipmunk, white-tailed deer and raccoon. No amphibians or reptiles were observed in this community, although suitable habitat exists for American toad and eastern garter snake.

Terrestrial / Open Uplands: Oldfield

This ecological community is located in the northwesterly area of the Site and is dominated by grasses and forbs (broad-leaved herbs) which have become established since 2005 when a cover of clean fill had been placed over a leveled stockpile of excavated soil previously contaminated by toluene. In 2002, toluene was not detected in the excavated soils prior to their covering with clean fill (ESI 2007). Representative species include rye (*Elymus* sp.), fescue grasses (*Festuca* spp), orchard grass (*Dactylis glomerata*) and sweet vernal grass (*Anthoxanthum odoratum*). Common forbs include field daisy (*Leucanthemum vulgare*), daisy fleabane (*Erigeron anuus*), common cinquefoil (*Potentilla simplex*), common plantain (*Plantago major*), common mugwort (*Artemisia vulgaris*), black medic (*Medicago lupulina*) and white cleavers (*Galium mollugo*). A female white-tailed deer was observed close-at-hand grazing in the oldfield during inspection of this community. Birds heard at the edges of this cover type included those heard or seen in nearby successional southern hardwoods, but also included northern oriole and American redstart. Cabbage white and sulphur butterflies, a pond hawk dragonfly (*Anax junius*) and other flying insects were observed in this community. Also observed was suitable foraging habitat for eastern cottontail, one of which was seen off-site west of the Site.

Aquatic Cover Types

Riverine / Riverine Cultural: Ditch/Artificial Intermittent Stream

This shallow drainage swale (approximately 200 square feet) of brief hydroperiod, which best matches the cultural ecological community type "ditch/artificial intermittent stream" (Edinger et al. 2002), is located along the westerly edge of the Site oldfield. It extends a short distance into the Site from its northwesterly corner, and ends in a shallow depression near the southwesterly boundary of the Site's oldfield, where intermittent surface flows infiltrate. Plants observed growing in or bordering the ditch include willow (*Salix* sp.), silky dogwood, (*Cornus amomum*), eastern cottonwood (*Populus deltoides*), smartweed (*Polygonum* sp.), fox sedge (*Carex vulpinoidea*), soft rush (*Juncus effusus*) and Limestone meadow sedge (*Carex granularis*). The hydroperiod in this cover type is too brief and unreliable to support water dependent wildlife; e.g., breeding amphibians. Because of its small size, this cover type is not mapped in ***Figure 5, Cover Types Map.***

Estuarine / Estuarine Subtidal: Freshwater Subtidal Aquatic Bed

This plant community includes rooted, submerged vascular plants, which are well established in the streambed of Fishkill Creek, covering substantial areas of the stream bottom from the mouth of the Creek to the upstream limit of tidal influence. Three non-native invasive species including water chestnut (*Trapa natans*), Eurasian water milfoil (*Myriophyllum spicatum*) and curly pondweed (*Potamogeton crispus*) dominate the community. Aquatic biota observed in this community include American eel (*Anguilla rostrata*), bass (*Micropterus* sp), northern watersnake (*Natrix sipedon*), scuds (*Gammarus* sp), leeches (Hirudinae) and snails (Physidae).

Estuarine / Estuarine Intertidal: Freshwater Intertidal Shore

This community occupies a narrow transitional area between Fishkill Creek's Freshwater Subtidal Aquatic Bed community and the adjacent Successional Southern Hardwoods community and extends along most of the southerly property boundary at the Creek's upper tidal limit. This community is dominated by silver maple (*Acer saccharinum*), red ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), Sycamore (*Platanus occidentalis*), Eastern cottonwood (*Populus deltoides*) and American elm (*Ulmus americana*). The lower trunks of these trees are obscured by a dense growth of multiflora rose and Japanese honeysuckle. Grape and oriental bittersweet vines also cover part of the trunks and upper branches of these trees. Understory woody plants include ash-leaved maple, red elderberry, silky dogwood and willow saplings. Herbs include arrowhead, purple loosestrife, false nettle, jewelweed and knotweed.

Tracks of raccoon and possibly Norway rat were observed in this community. Spotted sandpiper, rough-winged swallow, green heron and belted kingfisher were observed in flight or perched near the shore or in trees at the shoreline of this community.

Riverine / Natural Stream: Main Channel Stream (Fishkill Creek)

This habitat, which occupies a small portion of the Site (approximately 23,000 square feet) comprises the open water of Fishkill Creek. It provides foraging habitat for predaceous pelagic biota such as smallmouth bass, largemouth bass and striped bass. Belted kingfisher, great blue heron and green heron also forage in the main channel of the Creek. The main channel is an integral part of the upper and lower reaches of the Creek as well as its streambed and banks. Fishkill Creek on and bordering the Site is approximately 110 feet wide, varies in depth from approximately 2- 6 feet and has a firm bottom of boulders and rock rubble with lesser amounts of gravel, sand and silt. Approximately 2,000 feet downstream of the Site, an appreciable thickness of silt and mud has accumulated in and around tidal freshwater marsh and mudflats, which is exposed at low tide.

No stream discharge data are available for Fishkill Creek at the Site. However, from 1945 - 1967, the United States Geological Survey (USGS 2003) measured the Fishkill Creek annual discharge at its Bridge Street monitoring station in the City of Beacon (Station No. 01373500), located approximately 2.5 miles upstream of the Site, at

approximately 325 - 425 cubic feet per second (cfs). In 1955, the USGS measured the maximum monthly discharge of Fishkill Creek in October at the Bridge Street station as 1,075 cfs, when a hurricane occurred in the area. In 2001 and 2002, stream discharge under low flow conditions (base flow) was measured at the Bridge Street station by The Chazen Companies (2003) at 13.3 - 26.7 cfs.

Water quality studies of lower Fishkill Creek (Stevens *et al.* 1994; Schmidt and Kiviat 1986; USGS 1998, 2003; Fishkill Creek Watershed Committee 2005) provide substantial water quality data. While most recorded water quality data pertain to monitoring stations upstream of the Site, one (1) survey station just above the high tide limit at the former Tioranda Bridge near the southeasterly corner of the Site established by Schmidt and Kiviat (1986) and surveyed again from 1988 - 1989 (Stevens *et al.* 1994), provided the following data regarding chemical water quality parameters based on 11 measurements recorded from January 27, 1984 - January 13, 1985:

- pH 7.5 - 8.4
- Alkalinity 66 - 113 mg/l
- Water Temp. 0 - 23.8 C
- Dissolved oxygen 9.2 - 13.7 mg/l
- Chloride 24.2 - 51.9 mg/l

The following water quality data (mean and standard deviation values) were recorded from May 1988 - May 1989 by Stevens *et al.* (1994) at the same sampling station:

- Chloride 27.4 +/- 2.1 mg/l
- Phosphate 0.106 +/- 0.0113 mg/l
- Sulphate 21.3 +/-0.81 mg/l
- Water Temp. 17.0 +/- 0 C
- Conductivity 270 +/- 10 micromhos/cm

Dissolved oxygen, percent saturation of oxygen and pH were not recorded at this station during the 1988 - 1989 sampling period.

The analysis of macrobenthic invertebrates recorded at this location by Schmidt and Kiviat (1986) concluded that the water quality was "slightly impacted" ***(refer to Appendix B, Site Fauna)***.

Site Flora and Fauna

Flora

A total of 117 vascular plant species were identified on the Site in May, June and September, 2008 ***(refer to Appendix C, Site Flora)***. Flowering plants identified include 38 species of trees, shrubs and vines, and 75 species of herbaceous plants. Species of non-flowering plants identified on the Site included three (3) conifers (Eastern red cedar, arborvitae and Japanese yew) and one (1) fern species (hay-scented fern).

Many of the species identified are nonnative invasive species; e.g., black locust (*Robinia pseudoacacia*), tree-of-heaven (*Ailanthus altissima*), common buckthorn (*Rhamnus cathartica*), common mugwort (*Artemisia vulgaris*), garlic mustard (*Alliaria petiolata*) and bird's foot trefoil (*Lotus corniculatus*). Lower Fishkill Creek and bordering tidal and non-tidal wetlands on or adjacent to the Site also supported a substantial cover of non-native Eurasian water milfoil (*Myriophyllum spicatum*), water chestnut (*Trapa natans*), curly pondweed (*Potamogeton crispus*), purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*).

Fauna

Approximately 50 species of wildlife were observed or detected (nests, tracks, droppings, remains or vocalizations/calls) on or in close proximity to the Site, including eight (8) species of mammals, 33 species of birds, including waterfowl; two (2) species of snakes, three (3) species of fish and several taxa of terrestrial and aquatic invertebrates ***(refer to Appendix B, Site Fauna)***. Most of the wildlife observed or detected on the Site are common, development-associated species, frequently found in low-density residential areas; e.g., gray squirrel, raccoon, white-tailed deer, woodchuck, European starling, English sparrow, house wren, Northern cardinal, American robin, brown-headed cowbird, blue jay and American crow. Wildlife observed or detected less commonly, – mainly in wooded areas of the westerly one-third of the Site, included gray catbird, warbling vireo, blue-winged warbler, indigo bunting, great-crested flycatcher, wood thrush, northern oriole and yellow warbler. Spotted sandpiper, belted kingfisher, rough-winged swallow, barn swallow, Turkey vulture (overhead) and northern water snake were observed at Fishkill Creek. Bats were also observed in an area of Building B-2 ***(refer to Site Significant Habitats and Rare Species below)***. Several invertebrate taxa, including clouded sulfur (*Colias* sp.) and cabbage butterflies (*Pieris* sp.), as well as pill bugs (*Armadillidium* sp.), earthworms, and various wasps, bees and grasshoppers were also observed in the westerly areas of the Site during the biota surveys.

Site Significant Habitats and Rare Species

Site Significant Habitats

Fishkill Creek, from its mouth to Tioronda Dam and Dennings Point, is a designated Significant Coastal Fish and Wildlife Habitat (SCFWH) ***(refer to Figure 2, Site & Area Features)***. This habitat is regulated under the New York State Coastal Management Program administered by the NYSDOS. The portion of the Site bordering Fishkill Creek is part of the Mouth of Fishkill Creek Significant Coastal Fish and Wildlife Habitat.

Site Rare Species

A small population of a rare plant species, Davis' sedge (*Carex davisii*; NYSDEC-listed threatened, NHP-listed G4 S2) was found in the westerly area of the Site near the tree line bordering the Site oldfield ***(refer to Figure 5, Cover Types Map)***. Identification of the species was confirmed by Hudsonia, Ltd. on July 23, 2008. No other State-listed or any Federal-listed species of rare plants or animals were identified on or immediately adjacent to the Site ***(refer to Appendix B & C, Site Fauna and Flora)***. On May 25, 2008, a small colony of unidentified bats (at least 25 individuals) were observed clustered in narrow spaces between wooden roof supports of a ground level storage area of Building B-2 ***(refer to Figure 3, Site Survey)***. The bats were observed by means of binoculars and copious droppings were evident below the bat colony. It is likely that the bats observed were little brown bat (*Myotis lucifugus*) or big brown bat (*Eptesicus fuscus*). There is a remote possibility that the bats were the State- and Federally-listed endangered Indiana bat (*Myotis sodalis*), as nursery colonies of this species have been reported in the towns of East Fishkill and LaGrange by the NYSDEC (Al Hicks, NYSDEC ESU personal communication February 21, 2006). However, according to Kurta (2005) Indiana bats (females and juveniles) are restricted "almost totally" to trees during the summer. However, no bats were seen during a subsequent inspection of roost area on September 5, 2008. Because the Site borders Madam Brett Park and the Mouth of Fishkill Creek SCFWH, it is possible that threatened or endangered wildlife species may utilize the Site intermittently. ***Refer to Off-Site Resources*** below for further information about potential rare species in the vicinity of the project site.

The common nighthawk (*Chordeiles minor*), State listed special concern, is known to nest on gravel roof tops and may feed near city lights. The Atlas of Breeding Birds in New York State considers this species to be undergoing significant population declines in the East (Andrle and Carroll 1989). There is some potential for the common nighthawk to breed on building roofs at Beacon Terminal. The bird is best detected in early evening or near dawn by its nasal "peeek" or by the "hoooooov" flight sound made by male birds during the nesting season, usually in June. Evening surveys were not conducted for common nighthawk by ***MDRA***, nor were site roof tops examined for nesting activity.

Observations of Stress

There was no evidence of atypical or aberrant growth, atypical external morphology or behavior, or other observable indications of environmental stress to Site flora and fauna, including observed macrobenthic invertebrates (e.g., scuds [*Gammarus* sp], snails [Physidae] or leeches [Hirudinae]) and other aquatic fauna, (e.g., northern water snake hunting for eels near the northerly bank of Fishkill Creek bordering the Site). An eastern garter snake and a doe white-tailed deer observed at close range also appeared normal in external morphology and movement. Apart from a few elm trees at the northeasterly boundary of the Site observed to be heavily infested with wasp leaf galls and exhibiting evidence of chlorosis along leaf veins, there was no evidence of environmental stress to Site flora; i.e., no evidence of stunted growth, aborted apices, wilt, rot, paucifoliation, widespread chlorosis, etc that could be attributed to Site contaminants. Site cover types and their representative biota, were similar to those observed elsewhere in off-site locations.

Overall, site flora and fauna appeared to be reasonably diverse, yet typical of industrial sites with extensive buildings, pavement, impoverished soils and chronically disturbed vegetation. Most of the Site's herbaceous flora is comprised of nonnative, ruderal weed species typically associated with chronically disturbed cut and fill soils and pavement/building edges; e.g., common mugwort (*Artemisia vulgaris*), common ragweed (*Ambrosia artemisiifolia*) and common dandelion (*Taraxacum officinale*).

Although sediment and soil feeders (certain annelid worms, for example) and their predators appear to be at greatest risk for adverse physiological effects of various contaminants, earthworms (*Lumbricus* sp.) observed in moist soils at the westerly Site boundary exhibited normal external morphology and movement.

While bass (*Micropterus* sp) and carp (*Cyprinus carpio*) were observed in Fishkill Creek from distances of approximately 8-20 feet, a few American eels to approximately 5-inches in length, observed close-at-hand among submerged rocks in Fishkill Creek, exhibited normal external morphology and movement. The eels as well as scuds, leeches and snails (Physidae), also of normal appearance and movement, were observed on or between submerged stones within ten feet of a large drainpipe (concrete pipe approximately 3-feet in diameter) discharging to Fishkill Creek (an estimated discharge rate of 250 ml/minute on June 12, 2008) at the base of Building B-2. The discharge, which appeared to be water, was non-oily, clear, odorless and had no sheen. Filamentous algae and moss were observed growing on the inner bottom surface of the pipe near its lip and on the rocks below the outfall.

According to the NYSDEC Division of Fish, Wildlife and Marine Resources (letter dated June 24, 2008; ***refer to Appendix E, Correspondence***), it has no records of fish kills within one (1) mile of the Beacon Terminal property for the period 2001 - 2008, nor any reports of fish kills in the area for the past 31 years.

Off-Site Resources

Contiguous Off-Site Cover Types

Cover types were mapped within a 0.5-mile radius of the Site (***refer to Figure 5, Cover Types Map***). Cover types bordering the Site include upland hardwoods, shrubland and oldfield, as well as freshwater tidal and subtidal habitats, freshwater wetlands and ponds. Madam Brett Park, which borders the Site to the east and west and the mouth of Fishkill Creek SCFWH at the Site's southerly boundary contain habitats with records of rare flora and fauna. Cover types to the north consist primarily of fragmented upland hardwoods and cultural habitats associated with residential and commercial development.

Mapped cover types (Edinger *et al.* 2002) on and surrounding the Site and their NHP rarity rankings include:

Aquatic/Semiaquatic Communities

• Freshwater Subtidal Aquatic Bed (FSA)	S3
• Freshwater Tidal Marsh (FTM)	S2
• Freshwater Intertidal Mudflat (FIM)	S2
• Freshwater Intertidal Shore (FIS)	S2/S3
• Freshwater Nontidal Shore (FNS)	NR
• Shrub Swamp (SS)	S5
• Excavated Pond (EP)	S5
• Impounded Pond (IP)	S5
• Ditch / Artificial Stream	S5
• Main Water Channel (MS)	NR

Terrestrial Communities

• Successional Southern Hardwoods (SO)	S5
• Successional Shrubland (SH)	S4
• Oldfield (OF)	S4
• Developed (D) (off-site areas consisting of commercial or residential development with lawn and woody landscaping, generally with little natural cover types)	NR

Off-Site Flora and Fauna

An assessment of off-site flora was limited to Madam Brett Park (the Park) and adjacent areas of Fishkill Creek, which border the easterly, southerly and westerly boundaries of the Site. In 1999, ***MDRA*** completed a natural resources survey of the Park for The Scenic Hudson Land Trust, Inc., which owns and maintains the Park. ***Refer to Appendix D, Adjacent Off-Site Flora and Fauna.***

Off-Site Flora

A total of 194 vascular plant species were identified in the Park between March and August of 1999 ***(refer to Appendix D, Adjacent Off-Site Flora and Fauna)***. Flowering plants identified include 68 species of woody plants (trees, shrubs, and vines) and 121 species of herbaceous plants. Species of non-flowering plants identified in the Park include two (2) conifers (eastern red cedar and eastern hemlock), two (2) ferns (woodfern and hay-scented fern), and one (1) species of the Fern Allies group (field horsetail). The number of plants species identified in the Park reflected a high species diversity which is attributed to the spectrum of habitats and community types in and adjacent to the Park, ranging from tidal and non-tidal aquatic habitats and wetlands to various upland habitats. Despite the floristic richness of the Park, more than one-third of the species identified were non-native plants.

Off-Site Fauna

Tidal mudflats and freshwater marsh at the mouth of Fishkill Creek, the protected bay inside Dennings Point on Hudson River, and the location of the Creek and Hudson River along a major bird migration corridor – the Atlantic Flyway, help to support a rich avifauna. The mouth and tidal reach of Fishkill Creek and protected shore areas of Hudson River support numerous species of resident and migratory birds, including waterfowl. Nearly one-hundred species of birds have been recorded by The Atlas of Breeding Birds in New York State for the geographic reporting blocks which encompass the Park (Andrle and Carroll, 1988; New York State Breeding Bird Atlas Data 2000 - 2005). These species include numerous spring migrating warblers; e.g., common yellowthroat, blue-winged warbler, black and white warbler and yellow-rumped warbler; "back yard" birds; e.g., American goldfinch, northern cardinal, American robin, house finch, rock dove, mourning dove, northern mockingbird and gray catbird. Forest interior birds seen or heard in or near the Park include downy woodpecker, northern flicker, wood thrush and scarlet tanager.

Species observed off-site in riparian, open water and marshland habitats include Canada goose, wood duck, black duck, common merganser and mallard; wading birds (great blue heron, and green heron); as well as belted kingfisher, marsh wren (nesting in intertidal marsh) and barn swallow (nesting under the Metro-North rail-line bridges at the mouth of Fishkill Creek).

Off-Site Significant Habitat and Rare Species

Significant Coastal Fish and Wildlife Habitat

The mouth of Fishkill Creek to its upper tidal limit just east of the former Tioranda Bridge at South Street, which borders the easterly boundary of the Site, is designated as a Significant Coastal Fish and Wildlife Habitat by the NYSDOS (1990). As such, the mouth of Fishkill Creek is recognized by the NHP and the NYSDOS as:

- An anadromous fish concentration area (an important spawning area for alewife, blueback herring, white perch, striped bass, tomcod and other anadromous fish). This area is also reported to support a populous resident fish community of largemouth bass, bluegill and brown bullhead.

- A waterfowl concentration area (supporting several species of ducks, geese and wading birds).

- A raptor concentration area (supporting birds of prey, including the aforementioned bald eagle and osprey).

The Habitat also encompasses NYSDEC designated freshwater wetland WT-1 (Class I).

The following rare plant species have been reported for the mouth of Fishkill Creek by the NYSDEC (2008; ***refer to Appendix E, Correspondence***) and the NYSDOS (1990). Their State and NHP ranking, and date last observed are presented in ***Table 2***.

TABLE 2
RARE PLANT SPECIES REPORTED FOR THE MOUTH OF FISHKILL CREEK

SPECIES	STATE RANK	NHP RANK	LAST REPORTED
Delmarva Beggar-ticks (*Bidens bidentoides)*	Rare	S3	2004
Smooth Bur-marigold (*Bidens laevis)*	Threatened	S2	1987
Spongy arrowhead (*Sagittaria montevidensis* var *spongiosa)*	Threatened	S2	1936

Source: NYSDEC (2008; ***refer to Appendix E, Correspondence***) and NYSDOS (1990)

None of the above species were observed at the Site, nor at or near the mouth of Fishkill Creek during ***MDRA's*** field work at Madam Park in 1999. A small population of Delmarva beggar-ticks was observed by ***MDRA*** circa 1998 on the Hudson River shore at the Long Dock Beacon property, located approximately 3,000 feet north of the mouth of Fishkill Creek.

Rare animals also recorded by the NHP (NYSDEC 2008; ***refer to Appendix E, Correspondence***) near the Site (mouth of Fishkill Creek, Dennings Point and nearby areas of Hudson River) include:

- **Bald eagle** *(Haliaeetus leucocephalus)*
  There are records of this State listed threatened species roosting and wintering on Dennings Point since 1996 by the NYSDEC and the Waterman Bird Club. Bald eagles likely hunt or scavenge fish at the mouth of the Creek and in Hudson River, particularly during the winter. The nearest record of nesting bald eagles is near the mouth of Wappinger Creek, located approximately eight (8) miles north of the Site (Breeding Bird Atlas data 2001 - 2005).

- **Least bittern** *(Ixobrychus exilis)*
  This, the States smallest heron, is listed by the NYSDEC as a special concern species and by the NHP as S3. It has been reported to breed in intertidal marsh at the mouth of the Creek (NYSDOS, 1990).

- **Pied-billed grebe** *(Podilymbus podiceps)*
  There is suitable nesting habitat for this NYSDEC listed threatened species in the intertidal marsh near the mouth of Fishkill Creek, where it was reported by the NHP (2008).

- **Osprey** *(Pandion haliaetus)*
  There is a 1985 NHP record of this State listed special concern species utilizing the mouth of Fishkill Creek as a feeding site during migration. An osprey nest platform was constructed on Dennings Point in the mid-1980s to encourage osprey nesting, but the effort has not proven successful to date. Migrating osprey are mainly observed in the spring at the mouth of Fishkill Creek and Dennings Point.

- **Shortnose sturgeon** *(Acipenser brevirostrum)*
  This State and Federal listed endangered species is found in the long tidal portion of Hudson River from New York City to the Federal dam at Troy, New York.

- **Atlantic Sturgeon** *(Acipenser oxyrhincus)*
  Last reported in 1997 in Hudson River between Newburgh and Peekskill, this State protected species is a candidate for Federal listing as threatened.

C. Description of Fish and Wildlife Value

Habitat Value for Fauna

The extent of buildings, paved surface, debris-littered impoverished soils and the limited extent of forage, mast or berry trees and cover, substantially reduce the habitat value of the Site for wildlife. Most species observed on the Site are development-associated species (Miller and Klemens 2004) that do well in developed or disturbed sites; e.g., European starling, American robin, Northern cardinal, American crow, English sparrow, barn swallow, brown-headed cowbird and white-tailed deer. Development sensitive wildlife; e.g., bald eagle, least bittern, pied-billed grebe and osprey are not expected to utilize the Site, nor is there suitable habitat for these species on the Site.

Value of Resources to Humans

The Site is largely private property and its developed, presently weedy and refuse-littered condition offers little resource value to humans. A low to moderate level of fishing, hiking and bird watching appears to be conducted by the public on the elevated walkway within the public access easement across the southerly end of the Site, along the northerly bank of the Creek and at Madam Brett Park upstream and downstream of the Site. Over a period of approximately 19 hours covering four (4) days from May 28 to September 5, 2008, ***MDRA*** observed approximately 40 people engaged in recreational activities along the elevated walkway easement and in nearby areas of Brett Park. In the recent past, ***MDRA*** has also observed several canoeists and kayakers paddling to the foot of small rapids on Fishkill Creek at the former Tioranda Bridge near the northeast corner of the Site, as well as small groups of people bathing in small pools just above the former Bridge. Although the duration and frequency of ***MDRA's*** observations are limited, the elevated walkway easement and the Park bordering the Site appear to provide a modest level of resource value to the public.

One person fishing from the walkway in June 2008 stated to ***MDRA*** that largemouth bass, eels and small striped bass have been caught in the Creek near the Site.

D. Fish and Wildlife Regulatory Criteria

Contaminant Specific Criteria

The following contaminant specific criteria apply to the results of contaminant analyses conducted by ESI on the Site:

6 NYCRR Part 701, Classification of Surface Waters and Groundwaters, specifies the best usage characteristics for each designated Class of waters. For the site, Fishkill Creek is designated as Class C and the best usage of groundwater on the Site is designated Class GA, a potential source of potable groundwater supply. Because of the Class I status of NYSDEC Wetland WT-1 and

the designation of the mouth of Fishkill Creek as a Significant Coastal Fish & Wildlife Habitat, discharge restrictions consistent with the classification of Site groundwater and surface water are applicable.

6 NYCRR Part 703, Surface Water and Groundwater Standards and Groundwater Effluent Limitations sets the water quality standard guidance value or effluent limitations for a large number of microbiological, physical and chemical attributes, including inorganic and organic substances; e.g., heavy metals, volatile and semi-volatile organic compounds.

NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 establishes ambient water quality standards and guidance values and groundwater effluent limitations for use where there are no standards or effluent limitations set forth in 6 NYCRR Part 703. These standards and guidance values are the maximum allowable concentrations for a broad spectrum of microbiological and inorganic and organic substances which are identified by Chemical Abstract Service Registry (CAS) numbers.

Sediment criteria have also been developed by the NYSDEC Division of Fish, Wildlife and Marine Resources in the document, Technical Guidance for Screening Contaminated Sediments (revised to March 1998). This document describes the methodology used for establishing sediment criteria for the purpose of identifying contaminated sediments; i.e., those sediments with contaminant concentrations that exceed the criteria in this document that may potentially cause harmful impacts to aquatic ecosystems.

Although PCBs were not detected in Creek sediment samples nor in groundwater or surface water during sampling and analysis conducted on the Site by ESI (2008), elevated levels of PCBs were recorded in surface soils and test pits at the Site that exceeded guidance levels.

According to the USGS Report of Water Quality in the Hudson Basin for New York and Adjacent States for 1992 - 1995 (1998), PCB levels in Hudson River at Poughkeepsie and in Fishkill Creek at Hopewell Junction exceeded the NYSDEC Wildlife Protection Criterion of 100 ppb. Consequently, the NYSDEC and New York State Department of Health (NYSDOH) health advisory for eating no more than one-half pound of sportfish per week caught in the Hudson River estuary would apply to the consumption of fish caught at the Site (NYSDOH 2007).

Site Specific Criteria

NYSDEC Wetland WT-1(Class I) extends upstream from the mouth of Fishkill Creek and ends near the southwesterly corner of the Site. ***Refer to Figure 2, Site and Area Features***. This wetland and its adjacent area (100-foot upland area bordering the wetland boundary) is subject to regulation under the Freshwater Wetlands Act (ECL Article 24, 6 NYCRR Parts 663, 664). To ***MDRA***'s knowledge, the boundary of NYSDEC Wetland WT-1 in proximity to the Site has not been field delineated.

The tidal marsh at the mouth of Fishkill Creek is essentially freshwater and as such is not subject to regulation under the Tidal Wetlands Act (ECL Article 25, 6 NYCRR Part 661).

Fishkill Creek in the vicinity of the Site is classified Class C by the NYSDEC, whose best use is fishing (ECL, Chapter X, §701.8, Class C, fresh surface waters). Class C waters are also suitable for fish, shellfish, and wildlife propagation and survival. The water quality of Class C waters is suitable for primary and secondary contact recreation, recognizing that other factors may limit such usage. Class C streams are not listed as protected by the NYSDEC under Protection of Waters (ECL Article 15, 6 NYCRR Part 608). However, no activities which would contravene the best use or water quality standards of Class C streams are permitted.

A shallow drainage swale (approximately 200 square feet), which best matches the cultural ecological community type "ditch/artificial intermittent stream" (Edinger *et al*. 2002) is located along the westerly edge of the Site oldfield. It extends a short distance into the Site from its northwesterly corner, and ends in a shallow depression near the southwesterly boundary of the Site's oldfield, where intermittent surface flow infiltrates. The drainage swale is not connected to or tributary to a waters of the United States. Consequently, it is considered to be an isolated waters/wetland, which is not subject to Federal regulation.

The project location is adjacent to the mouth of Fishkill Creek, a NYSDOS designated Significant Coastal Fish and Wildlife Habitat (SCFWH). Projects or activities which may impact the Habitat are reviewed by the NYSDOS for consistency with the habitat protection goals of the New York State Coastal Management Program.

Step II: Contaminant-Specific Impact Assessment

A. Pathway Analysis

An analysis of impacts of Site contaminants on fish and wildlife resources takes into account:

- The contaminants of concern and their concentration/distribution in the media (air, soil, sediment, groundwater and surface water).
- The pathways of potential exposure of contaminants to biota.
- The toxic effects of wildlife exposure to contaminants. **[This last aspect of impact analysis was not required by the NYSDEC as part of ESI's Remedial Investigation Report; nor is it required or discussed in this report.]**

Contaminants of Concern

The summary of initial findings regarding contaminant concentrations recorded in various media across the Site by ESI ***(refer to Appendix A, ESI: Summary of Initial Remedial Findings for the Beacon Terminal Site)*** provides the context for identifying vulnerable biotic receptors and the pathways by which fish and wildlife may be exposed to contaminants.

For the purposes of this report, Site contaminants recorded by ESI (2008), as they pertain to potential exposure to fish and wildlife, have been broken up into four (4) categories:

- Volatile Organic Compounds (VOCs)
- Semi-Volatile Organic Compounds (SVOCs)
- PCBs and Pesticides
- Target Analyte List Metals

The principal findings and an assessment of those findings has been provided below for each group of contaminants.

Volatile Organic Compounds (VOCs)

Findings

Concentrations of toluene and methyl ethyl ketone substantially above NYSDEC guidance levels (700 µg/kg and 120 µg/kg, respectively) were found in subsurface soils beneath Site buildings or generally at depths of (4) feet or greater in soil borings and test pits. Several VOCs were also detected in soil gas samples. No significant concentrations of VOCs were detected in groundwater or surface water samples.

Assessment

Toluene, methyl ethyl ketone and other VOCs detected in Site soils readily volatilize to air and are degraded during atmospheric chemical reactions near the soil surface (US EPA 1985). Bioaccumulation in the food chain is also predicted to be low (ATSDR 1993, US EPA 1994). Because of its rapid volatilization, limited solubility/persistence in surface water, and the sampling locations where detected (mostly under buildings and in soils generally sampled at depths greater than one-foot below the upper limit of the soil aerobic zone), potential exposure of Site biota to areas of elevated VOC's is assessed as very low. Taxa that may be exposed are likely limited to common soil inhabiting invertebrates; e.g., segmented and unsegmented worms and insects. Site flora in or near areas of high concentrations of VOCs appeared to exhibit normal growth and morphology and to be free of stress. Plant species composition in the vicinity of pavement, buildings and chronically disturbed soils was typical of that associated with other industrial sites of the region (***MDRA*** personal observations 1990 - 2008).

Semi-Volatile Organic Compounds (SVOCs)

Findings

Slightly elevated levels of polycyclic aromatic compounds (PAHs) were detected across the Site in soil samples taken at and beneath the surface in test pits and from a soil boring at the western parking area (Boring 2B-05 [4-5]). The concentration of PAHs detected were reported to be consistent with those associated with asphalt paving which occupies

a substantial portion of the easterly two-thirds of the Site. Significantly elevated concentrations of total unknown SVOCs were detected within 0 - 4-inches of the soil surface at soil sampling Site 2HB-06 (near the existing Site transformer close to South Avenue). No significant SVOC concentrations were detected in Site groundwater.

Assessment

The Site location where a significantly elevated concentration of total unknown SVOCs was recorded provides little if any significant wildlife habitat or foraging area. Potential contaminant impacts are considered to be limited to a very small community of soil-inhabiting invertebrates represented by a few taxa adapted to chronically disturbed and likely nutrient-poor soils in close contact to buildings and paved asphalt. Given the limited availability/potential exposure to wildlife of Site sources of SVOCs, particularly PAHs, and the general unsuitability of habitats to support wildlife where these contaminants were found, exposure to, uptake and bioaccumulation of these compounds in the local food web was assessed as very limited.

PCBs and Pesticides

Findings

Elevated concentrations of PCBs at one order of magnitude above the guidance level of 100 µg/kg were recorded in soil samples collected from test pits dug in wooded areas in the southwest corner (three (3) test pits) of the Site and from one (1) test pit further to the northwest. PCB concentrations of 1,600 µg/kg were recorded at 0 - 6-inches below ground surface (bgs) and 3,400 µg/kg at 1-2 feet bgs. These elevated PCBs were found in areas where fabric had been discarded. Low concentrations of PCBs were also detected in surface soils collected throughout the Site. Low level pesticide contamination (DDD, DDE and DDT) was also detected in surface soils mainly near Site buildings.

Assessment

The elevated levels of PCBs recorded are of concern, particularly those recorded within one- foot of the surface of exposed soils in the wooded westerly area of the Site. This area is likely to be used by the greatest number of Site and regional wildlife, though the frequency of such use in this location is unknown. Although the flora observed in this area appeared normal, the capacity for the plant species of this community to accumulate PCBs without showing signs of stress was undetermined. Given the limited area where elevated levels of PCBs were recorded, overall exposure risk to Site biota may be low; i.e, a very small portion of the area-wide populations of wildlife utilizing this limited area of the Site appear to be at risk of exposure to Site contaminants.

Target Analyte List Metals

Findings

Elevated metal contamination was detected at surface soil location 2HB (west of Building B-5B near the loading dock) and in the test pit areas where fabric was observed far western side of the site to the south and east, of the existing parking lot. Low level exceedences of metals concentrations were detected in Site soils, sediment and groundwater, which is indicative of the former industrial nature of the property.

Assessment

As for PCBs, elevated levels of metals recorded within one-foot of the surface of exposed soils in the westerly one-third of the Site are of concern. This area of the Site is likely to be used by the greatest number of regional wildlife, though the frequency and duration of use of this area of the Site by wildlife is unknown. Although the flora observed in this area appeared normal, the extent to which plant species of this community can accumulate metals above State guidance levels without showing signs of stress was undetermined. Because of the limited area of the Site where elevated concentrations of metals were recorded, risk of exposure of area-wide wildlife populations to these and other Site contaminants is assessed as low. Moreover, in the case of Site metal-contaminated streambed sediments, attribution of the analytical results solely to Site activities is confounded by historical upstream sources of heavy metals and other contaminants, which may have been transported to the Site reach of Fishkill Creek during periods of high flow.

Many aquatic animals are reported to be able to excrete a greater proportion of their intake of heavy metals under contaminated conditions and thereby maintain trace metal concentrations in the body at approximately normal levels (Khan et al. 1989). However, others have suggested through modeling calculations that heavy metals could bioaccumulate to levels that exceed regulatory ecological criteria in situations where long-term sediment disturbance took place (Su et al. 2002). Since it is not likely that long-term sediment disturbance in Fishkill Creek would be permitted by regulatory authorities because of the ecological sensitivity of the Creek in the vicinity of the Site, the results of the modeling forecast by Su et al. (2002) do not appear germane to potential exposure of Site aquatic biota.

Potential Movement Pathways of Contaminants of Concern

Potential exposure of wildlife to Site contaminants is greatest in the westerly one-third of the Site where elevated levels of heavy metals and PCBs exceeding guidance levels and low levels of pesticides were detected within one-foot of the soil surface and where the highest plant biomass, plant species richness and most wildlife, -- predominantly birds and several mammals, were observed or detected. Exposure to elevated levels of contaminants were assessed to occur predominantly in two media: (1) soils within the aerobic zone; and (2) shallow streambed

sediment. These media support the lowest trophic (feeding) level at which the contaminants of concern are assimilated by photosynthetic plants (autotrophs) and soil/sediment feeding organisms (saprotrophs) and then passed to higher trophic levels (various taxa of herbivores, omnivores and carnivores). The top trophic level, usually a top carnivore (apex predator) such as an osprey, is at greater risk of contaminant loading because of the increased bioamplification of the contaminants as they move from the lowest to highest trophic level. ***Table 3, Representative Site and Nearby Biota Associated with Soil and Sediment Dependent Trophic Levels*** below, provides examples of biota that may be at greater risk of assimilating contaminants because of their higher position in the trophic structure of the area ecosystems.

TABLE 3
REPRESENTATIVE SITE AND NEARBY BIOTA ASSOCIATED WITH SOIL & SEDIMENT-DEPENDENT TROPHIC LEVELS

MEDIUM	TROPHIC LEVEL				
	AUTOTROPHS	SAPROTROPHS	HETEROTROPHS		
			Herbivores	*Omnivores*	*Carnivores*
SOIL	• Flowering plants • Conifers • Ferns	• Fungi • Bacteria • Millipedes • Isopods • Segmented & unsegmented worms	• Woodchuck • Eastern cottontail • Gray squirrel • English sparrow	• White-footed mouse • American robin • European starling • American crow • Bluejay	• Garter snake • Rough-winged swallow • Barn swallow
SEDIMENT		• Bacteria • Fungi • Various benthic macro-invertebrates		• Carp • Painted turtle • White sucker	• Northern water snake • Common snapping turtle • American eel • Striped bass • Osprey • Bald eagle • Belted kingfisher • Great blue heron • Least bittern • Pied-billed grebe

Soil Medium

Potential exposure of Site contaminants to terrestrial wildlife, particularly to elevated levels of PCBs and heavy metals is greatest for biota living within one-foot of the surface of exposed or vegetated soils, as soil organisms are more prevalent to this depth and these contaminants are known to adsorb strongly to soil particles, particularly to soil organic matter.

Two principal potential movement pathways of Site contaminants to terrestrial wildlife were identified as:

- The Soil → Rooted Plants → Herbivore / Omnivore → Carnivore Pathway
  Example: Clover → Woodchuck/White-footed Mouse → Red-tailed Hawk

- The Soil-feeding Invertebrates → Carnivore Pathway
  Example: Earthworms and Grubs → Short-tailed Shrew → Barred-owl

Earthworms, which may be a principal base of this second pathway have been reported to accumulate heavy metals which can in turn be assimilated and concentrated in shrews and other small fossorial mammals (Edwards and Bohlen 1996).

Aquatic Medium

Assessment of exposure risk of fish and wildlife to levels of contaminants in Fishkill Creek that might be attributable to past industrial activities at the Site is confounded by a history of SPDES non-compliance by several nearby upstream industrial dischargers. A NYSDEC toxics survey conducted in 1983 (Schmidt and Kiviat 1986) listed the following toxic materials recorded in Fishkill Creek at the City of Beacon: cadmium, mercury, selenium, zinc (including one (1) industrial discharger located approximately 2,000 feet upstream), benzene, chlorobenzene and trichloroethylene. The cadmium levels were reported to exceed human safety limits and the concentrations of mercury and selenium were greater than those permitted for protection of aquatic biota (Schmidt and Kiviat 1986). The current status of these dischargers was undetermined.

A long-trending impact of pollutants from various sources in Fishkill Creek near the Site is reflected in the results of benthic macroinvertebrate surveys conducted by Stevens et al. (1994) just upstream of the Site. The analysis conducted at this and another upstream reach of the Creek (sampling stations 7 and 8, respectively) recorded a community assemblage of macroinvertebrate taxa with the highest mean tolerance quotient (a measure of pollution tolerance) of a total of 12 sampling stations established on the Creek and its principal tributaries. That some of these pollutants are toxicants of potential biological concern has been documented through tissue analysis of aquatic biota where elevated levels of PAHs, lead and selenium, including high levels of lead in crayfish were recorded for Creek sampling sites in Beacon (Bode et al. 2001; Fishkill Creek Watershed Committee, 2005).

The effect of cumulative toxicant sources, including those documented at the Site, on fish and wildlife in significant habitats at and near the mouth of Fishkill Creek just below the Site are not well understood. As noted earlier in this report, no records of fish kills have been reported near the Site, nor is ***MDRA*** aware of any reports or studies of morphological or physiological abnormalities in Creek biota that have been attributed to recorded tissue toxicant concentrations (Bode et al. 2001).

While historical runs of rainbow smelt (*Osmerus mordax*) no longer occur at the mouth of Fishkill Creek and the use of the Creek mouth by spawning Hudson River fishes appears to have diminished (Stevens et al. 1994; Limberg and Schmidt 1990), the biodiversity of the icthyofauna *per se* near the mouth of the Creek appears to remain substantially unchanged, – with the exception of a possible increase in common carp (*Cyprinus carpio*).

Sediment and periodically suspended particulate matter were assessed to be the principal source of potential contamination to aquatic biota, particularly elevated levels of PCBs and heavy metals, as these contaminants are insoluble or have limited solubility in water and are more likely to adsorb to sediment particles. Two potential biological transmission pathways of contaminants to aquatic biota were identified as:

- Rooted Aquatic Plants → Herbivores → Carnivores
  Example: Curly pondweed → Physid snails → White sucker → Great Blue Heron

- Sediment / Suspended Particulate Matter Saprotrophs → Carnivores
  Example: Assorted macroinvertebrates (e.g., midge larvae, certain copepods, planarians and various worm taxa) → larval Pumpkinseed → juvenile Largemouth Bass → Belted Kingfisher

B. CRITERIA-SPECIFIC ANALYSIS

A Criteria Specific Analysis, one which uses numerical criteria for contaminants of concern that have been established for specific media or biota; i.e, Step II B of the NYSDEC FWIA (1994), was not required by the NYSDEC as a part of this report.

IV. REFERENCES

Andrle, Robert F. and Janet R. Carroll, eds. 1988. Atlas of breeding birds in New York State. Cornell University Press, Ithaca, NY.

ATSDR. 1993. Agency for Toxic Substances and Disease Registry. Toxicological profile for toluene. US Department of Health and Human Services, Public Health Service. Atlanta, GA.

Bode, R.W., Novak, M.A., Abele, L.E., Heitzman, D.L., and Smith, A.J. 2004. Thirty-year trends in water quality of rivers and streams in New York State, based on macroinvertebrate data. NYSDEC Technical Report. Albany, NY. 384 pp.

Cadwell, D.H. (Ed). 1989. Surficial Geologic Map of New York. New York State Museum and Science Service. Albany, NY.

Chazen Companies. 2003. County-wide Groundwater Monitoring Program, 2002 Annual Report, Dutchess County. The Chazen Companies, Poughkeepsie, NY.

Chu, S., Mellin, C., and X. Xiaobai. 1999. Soil-plant transfer of polychlorinated biphenyls in paddy fields. The Science of the Total Environment Vol. 234: 119 - 126.

Ecosystems Strategies, Inc. 2007. Remedial Investigation Workplan. *Prepared for:* Beacon Terminal Associates, LLP.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY

Edwards, C.A. and P.J.Bohlen. 1996. Biology and ecology of earthworms. Springer Publishing, NY. 426 pp.

Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997. Toxicological benchmarks for screening contaminants of potential concern for effects on terrestrial plants: 1997 Revision. Oak Ridge National Laboratory, Oak Ridge, TN. 128 pp.

Faber, M. 2002. Dutchess County Soil Survey. Dutchess County Soil and Water Conservation District. Millbrook, NY.

Fisher, Donald W., Y.W. Isachsen and L. Rickard. 1971. Geologic map of New York 1970. New York State Museum and Science Service, Map and Chart Series 15, 7 sheets, 1:250,000, 100 ft contour. Albany, NY.

Fishkill Creek Watershed Committee. 2005. Natural resources management plan for the fishkill creek watershed: a natural resources inventory and conservation strategy. (www.fishkillcreekwatershed.org; accessed August, 2008)

Hicks, A., NYSDEC Endangered Species Unit. Februrary 21, 2006. personal communication.

Khan, A.T., Weis, J.S. and L. D'Andrea. 1989. Bioaccumulation of four heavy metals in two populations of grass shrimp, *Palaemonetes pugio*. Bull.Environ.Contam. Toxicol. Vol. 42: 339 - 343.

Kurta, A. 2005. Roosting ecology and behavior of Indiana bats (Myotis sodalis) in summer. Pp 29 - 41 In: The Indiana Bat and Coal Mining: A Technical Interactive Forum. K.C. Vories and A Harrington (Eds). Office of Surface Mining. U.S. Department of the Interior. Alton, IL.

Limberg, K. And R. Schmidt. 1990. Patterns of fish spawning in Hudson River tributaries: response to an urban gradient? Ecology 71(4): 1238 - 1245.

Matthew D. Rudikoff Associates, Inc.1999. Madam Brett Park Natural Resources Inventory. Prepared for the Scenic Hudson Land Trust, Inc. Beacon, NY. 47 pp.

Miller, N.A. and M..W. Klemens. 2002. Eastern Westchester Biotic Corridor. MCA Technical paper No.4, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY. 29 pp.

Murphy, R. J. and D. D. Van Buren. 1998. Images of America - historic Beacon. Arcadia Publishing, Charleston, South Carolina.

New York State Department of Environmental Conservation. 2008. New York State Breeding Bird Atlas Data: 2000 - 2005. http://www.dec.ny.gov/cfmx/extapps/bba/.

New York Natural Heritage Program. 1997. New York Rare Animal Status List. Albany, NY. 30 pp.

New York State Department of Environmental Conservation. 1994. Fish and wildlife impact analysis for inactive hazardous waste sites (FWIA). Division of Fish and Wildlife. Albany, NY.

New York State Department of Health. 2007. Chemicals in sportfish and game: 2008-2009 Health Advisories. www.nyhealth.gov/environmental/outdoors/fish/fish.htm. Accessed October 21, 2008.

New York State Department of State. 1990. Hudson River Significant Tidal Habitats. NYSDOS Division of Coastal Resources and Waterfront Revitalization, and the Nature Conservancy. Albany, New York.184 pp.

Opresko, D.M., Sample, B.E., and G.W. Suter. 1994. Toxicological benchmarks for wildlife. Oak Ridge National Laboratory. Oak Ridge, TN.

Reschke, C. 1990. Ecological Communities of New York State. New York Natural Heritage Program/New York State Department of Environmental Conservation. Albany, NY.

Sample, B.E., D.M. Opresko, and G.W Suter II. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, TN. 227 pp.

Schmidt, R. E. and E. Kiviat. 1986. Environmental quality of the Fishkill Creek drainage, a Hudson River Tributary. Hudsonia Ltd. Annandale, NY.

Stevens, G., Schmidt, R.E., Roeder, D.R., Tashiro, J.S., and E. Kiviat. 1994. Baseline Assessment of Tributaries to the Hudson (BATH): Water quality, fishes, macroinvertebrates and diatoms in Fishkill Creek, Quassic Creek and Moodna Creek. Volumes I and II. Hudsonia, Ltd. Annandale, NY. 97 pp.

Su, S.H., Pearlman, L.C., Rothrock, J.A., Iannuzzi, T.J. and B.L. Finley. 2002. Case study of potential long-term ecological impacts caused by disturbance of contaminated sediments: a case study. Environmental Management. Vol. 29: 234 - 239.

Suter, G. W. II, and C. L. Tsao. 1996. Toxicological benchmarks for screening of potential contaminants of concern for effects on aquatic biota on Oak Ridge Reservation: 1996 Revision. Oak Ridge National Laboratory, Oak Ridge, TN. 104pp

US EPA. 2007. Ecological soil screening levels for polycyclic aromatic hydrocarbons (PAHs) Interim Final OSWER Directive 9285.7-78, Washington, DC.

U.S. Environmental Protection Agency. September 1999. Fact Sheet: Polychlorinated biphenyls (PCBs) update: impact on fish advisories. Office of Pollution Prevention and Toxics. Washington, DC. 7 pp.

U.S. Environmental Protection Agency. 1995. Health and environmental effects profile for methyl ethyl ketone. Office of Solid Waste and Emergency Response, Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment. Cincinnati, OH.

U.S. Environmental Protection Agency. 1994. Chemical summary for methyl ethyl ketone. Office of Pollution Prevention and Toxics. Washington, DC.

U.S. Environmental Protection Agency. 1994. Chemical summary for toluene. Office of Pollution Prevention and Toxics. Washington, DC.

U.S. Geological Survey. 1998. Water Quality in the Hudson River Basin, New York and Adjacent States, 1992 - 1995. U.S. Geological Survey Circular 1165. USGS. Troy, New York.

U.S. Geological Survey. 2003. Real time Data for the Fishkill Creek at Beacon, New York, Station #01373500. Available at: http://nwis.waterdata.usgs.gov/ny/discharge/?site_no=01373500 (Accessed July 18, 2008).

Will, M.E. and G.W. Suter. 1994 (revision). Toxicological benchmarks for screening potential contaminants of concern for effects on terrestrial plants.Oak Ridge National Laboratory. Oak Ridge, TN.

Young, S. and T. Weldy (eds). 2008. New York Natural Heritage Program New York Rare Plant Status Lists. New York Natural Heritage Program/New York State Department of Environmental Conservation. Albany, NY. 71 pp.

Young, S. January 1996. Invasive Alien Plant Species in New York. New York Natural Heritage Program. Latham, NY. 12pp.

FISH AND WILDLIFE IMPACT ANALYSIS FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDICES

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- ☐ **APPENDIX C, SITE FLORA**
- ☐ **APPENDIX D, ADJACENT OFF-SITE FLORA AND FAUNA**
- ☐ **APPENDIX E, CORRESPONDENCE**

MDRA

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FISH AND WILDLIFE IMPACT ANALYSIS FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX A

ECOSYSTEMS STRATEGIES, INC.:
SUMMARY OF INITIAL REMEDIAL FINDINGS FOR THE BEACON TERMINAL SITE

MDRA MATTHEW D. RUDIKOFF ASSOCIATES, INC.

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September 11, 2008

Joseph T. Bridges, Ph.D.
Matthew D. Rudikoff Associates, Inc.
Beacon Building
427 Main Street, Suite 201
Beacon, New York 12508

Re: Summary of Initial Remedial Findings for the Beacon Terminal Site located at
555 South Avenue, City of Beacon, Dutchess County, New York
ESI File: BB04157

Dear Mr. Bridges:

This Summary of Initial Remedial Findings (Summary) has been prepared by Ecosystems Strategies Inc. (ESI) to provide Matthew D. Rudikoff Associates, Inc. with information necessary to complete the Fish and Wildlife Resources Impact Analysis for the Beacon Terminal Site (Site), NYSDEC Brownfields Cleanup Program Site (BCP ID: C314117).

Site Location and History

The Site is an approximately 11-acre parcel located adjacent to the northern edge of Fishkill Creek, in the City of Beacon, Dutchess County, New York. Approximately half the Site is improved with eight vacant industrial buildings (B-1, B-2, B-3, B-4, B-5A, B-5B, B-6, B-7, and B-8) formerly used for various manufacturing and warehousing purposes; the remainder of the property includes paved parking areas and undeveloped grassland and woodlands. The Site has been proposed for re-use as a residential condominium complex at the completion of remedial activities.

Initial Remedial Investigation

Investigation of the Site was conducted between January 30, 2008 and February 28, 2008, following the protocols specified in the New York State Department of Environmental Conservation (NYSDEC) approved Remedial Investigation Workplan. In addition, a second round of groundwater sampling was conducted on June 19, 2008. Fieldwork activities included extension of soil borings and test pits, groundwater well installation, and sampling of surface and subsurface soils, groundwater (both existing and newly installed wells), soil gas, surface water, and sediment.

Results of the fieldwork are discussed below; however, a more thorough and comprehensive discussion will be presented in the Remedial Investigation Report to be completed at the conclusion of all on-site investigative activities.

Guidance Levels

Guidance levels for all compounds in soils are based on NYSDEC Remedial Program, Unrestricted Use soil cleanup objectives (SCOs), as provided in 6 NYCRR Subpart 375, Table 375-6.8(a). Compounds without a listed SCO are compared to the Recommended Soil Cleanup Objectives (RSCOs) presented in NYSDEC Technical and Administrative Guidance Memorandum #4046 (TAGM 4046), including applicable subsequent NYSDEC memoranda.

Guidance levels for all compounds in water are based on NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1).

All data presented in this Summary have been analyzed in accordance with applicable guidance levels. Guidance levels for soil are referenced in units of mg/kg (parts per million [ppm]) or µg/kg (parts per billion [ppb]). Guidance levels for groundwater are referenced in units of µg/L.

Guidance levels have not been developed for compounds in soil gas. Background levels are based on the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil & Vapor Intrusion in the State of New York and subsequent memoranda.

Fieldwork Methodology and Observations

Twenty mechanical borings, eleven surface soil (0-4") samples, sixteen soil gas samples, and twenty-four test pits were extended in areas identified as potentially impacted by previous historical impacts on-site. Three of the mechanical borings were completed as groundwater monitoring wells (three wells existed on-site prior to investigative activates). See Figures 1 through 6, attached. No significant field evidence of contamination was noted, except for a moderate to strong chemical odor at borings 2B-01A, 2B-01B, 2B-01C, 2B-15, 2B-15A, and 2B-15C. A slight chemical odor was noted at boring 2B-11.

Debris consisting of primarily asphalt, concrete, brick, metal, and miscellaneous trash was noted at test pits 2TP-2, 2TP-3, 2TP-5, 2TP-20, and 2TP-21. In addition, degraded fabric was noted at test pits 2TP-14, 2TP-15, 2TP-17, and 2TP-18. Degraded fabric alone was noted at test pits 2TP-11 and 2TP-12. Demolition debris including concrete block, concrete, and asphalt was noted at test pits 2TP-8 and 2TP-22.

Laboratory Results

A summary of the results of the laboratory analyses are presented below. Figures depicting fieldwork activities and Data Summary Tables and are included as attachments to this Summary.

Volatile Organic Compounds

Sixty-eight media samples were submitted for laboratory analysis of volatile organic compounds (VOCs) utilizing USEPA Method 8260 (soil and water) and Method TO-15 (soil gas).

Soil and Sediment

Elevated concentrations (above guidance levels) of toluene (guidance level 700 µg/kg) were detected in subsurface soils beneath buildings B-5A and B-5B at soil borings 2B-15A[4-5'] (100,000 µg/kg), 2B-15[4-5'] (22,000 µg/kg), and 2B-15C[4-5'] (1,600 µg/kg), and northwest of building B-7 at boring 2B-01C[1-3'] (4,600,000 µg/kg). An elevated concentration of methyl ethyl ketone (1,400 µg/kg, guidance level 120 µg/kg) was detected at 2B-15A [4-5']. Slightly elevated concentrations of methlyene chloride and acetone, potential laboratory contaminants, were detected in several samples. Tentatively identified compounds (TICs) were detected at test pit 2TP-11 (15,050 µg/kg, guidance level for total VOCs 10,000 µg/kg). No other significant VOCs were detected in soil borings, surface soils, or test pits at the Site.

VOCs in soils and sediment are summarized in Figure 1, Figure 5, and Tables 1 through 3, attached.

Groundwater and Surface Water

No significant VOCs were detected in groundwater and surface water at the Site. VOCs in water are summarized in Table 4, attached.

Soil Gas

Several VOCs (primarily BTEX compounds) were detected above NYSDOH background concentrations in all soil gas samples. However, the levels detected are not indicative of a significant buildup of VOCs beneath Site buildings. VOCs in soil gas are summarized in Table 5, attached.

Semi-Volatile Organic Compounds

Forty-four media samples were submitted for laboratory analysis of semi-volatile organic compounds (SVOCs) utilizing USEPA Method 8270.

Soil and Sediment

Slightly elevated levels of polycyclic aromatic compounds (PAHs) were detected across the Site in surface soils, test pits, and in boring 2B-05[4-5] (western parking area). Detected concentrations are consistent with impacts associated with asphalt paving, which is present throughout the Site and was observed in subsurface test pit areas. Significantly elevated concentrations of total unknown SVOCs were detected at surface soil sample 2HB-06[0-4"] (3,348,120 µg/kg, guidance level for total SVOCs 500,000 µg/kg).

SVOCs in soils and sediment are summarized in Figure 2, Figure 5, and Tables 6 through 8, attached.

Groundwater

No significant SVOC concentrations were detected in groundwater at the Site. SVOCs in groundwater are summarized in Table 9, attached.

Target Analyte List (TAL) Metals

Fifty media samples were submitted for laboratory analysis of Target Analyte List (TAL) metals utilizing various USEPA Methods.

Soil and Sediment

Elevated concentrations of lead (2,830 mg/kg, guidance level 63 mg/kg), chromium (491 mg/kg, guidance level 30 mg/kg), zinc (854 mg/kg, guidance level 109 mg/kg), and arsenic (19.1 mg/kg, guidance level 13 mg/kg) were detected at surface soil sample 2HB-02[0-4"]. Elevated concentrations of zinc were detected in surface soil samples 2HB-05[0-4"] (1,930 mg/kg) and 2HB-09[0-4"] (819 mg/kg). An elevated level of mercury (1.6 mg/kg, guidance level 0.18 mg/kg) was detected at surface soil sample 2HB-10(0-4"). In addition, low-level exceedences of TAL metals including cadmium, copper, lead, magnesium, nickel, and zinc were detected in surface soil surface samples across the Site.

Elevated levels of metals were detected in near-surface soils in test pits 2TP-11 and 2TP-11B, in the areas where buried fabric was observed (likely to be from former on-site fabric reclamation activities). Peak concentrations included arsenic (13.1 mg/kg, 2TP-11), chromium (788 mg/kg, 2TP-11), copper (4,530 mg/kg, guidance level 50 mg/kg, 2TP-11), lead (788 mg/kg, 2TP-11), mercury (4.0 mg/kg, 2TP-11), nickel (80.6 mg/kg, guidance level 30 mg/kg, 2TP-11B), silver (15 mg/kg, guidance value 2 mg/kg, 2TP-11)and zinc (706 mg/kg, 2TP-11B). Concentrations generally decreased with depth.

Low-level exceedences of TAL metals were detected in all soil borings and sediment, with the exception of 2B-08[5-6']. Peak concentrations (excluding levels discussed above) included arsenic (15.8 mg/kg, 2B-15[4-5']), lead (148 mg/kg, 2B-06[4-5']), nickel (35.4 mg/kg, 2B-15), and zinc (273 mg/kg, 2B-07[3-4']).

Metals in soils and sediment are summarized in Figure 3, Figure 5, and Tables 10 through 12, attached.

Groundwater and Surface Water

Elevated concentrations of total TAL metals were detected in all wells and surface waters, with peak concentrations of arsenic (110 µg/L, guidance level 100 µg/L), chromium (110 µg/L, guidance level 100 µg/L), copper (280 µg/L, guidance level 50 µg/L), and lead (220 µg/L, guidance level 25 µg/L) detected at 2MW-05. Additional analysis was completed for dissolved lead (all wells) and dissolved TAL metals (2MW-05). All dissolved lead values were below the guidance level (25 µg/L). No significant exceedences of dissolved metals were detected at 2MW-5 (elevated total metals at 2MW-5 appear to be due to suspended solids).

Metals in groundwater are summarized in Figure 6, and Table 13, attached.

PCBs and Pesticides

Fifty-four media samples were submitted for laboratory analysis of PCBs and organic pesticides utilizing USEPA Methods 8082 and 8081, respectively.

Soil

Elevated concentrations of PCBs (guidance level 100 µg/kg) were detected in test pit samples 2TP-2 (207 µg/kg), 2TP-11 (7,500 µg/kg), 2TP-11B (1,600 µg/kg), 2TP15 (3,400 µg/kg), and 2TP-15B (1,000 µg/kg); significantly elevated levels were found in areas where fabric was observed (2TP-11 and 2TP-15). In addition, slightly elevated concentrations of PCBs were detected in surface soil sample 2HB-12 (120 µg/kg). PCBs were detected at or below the SCO in samples 2B-07, 2HB-01, 2HB-03, 2HB-04, 2HB-05, 2HB-06, 2HB-08, 2HB-09, 2HB-10, 2HB-13, and 2SED-1.

Low-level pesticide contamination was detected in surface soils and sediment throughout the Site, including peak concentrations of 4,4 DDD (49 µg/kg, guidance level 3.3 µg/kg, 2HB-05), 4,4 DDE (66 µg/kg, guidance level 3.3 µg/kg, 2HB-01), 4,4 DDT (530 µg/kg, guidance level 3.3 µg/kg, 2HB-02), dieldirn (150 µg/kg, guidance level 5.0 µg/kg, 2HB-02), and endrin (28 µg/kg, guidance level 14 µg/kg, 2HB-02 [duplicate sample]).

PCBs and pesticides in soils are summarized in Figure 4, Figure 5, and Tables 14 through 17, attached.

Groundwater and Surface Water

PCBs were not detected in groundwater or surface water at the Site. PCBs in water are summarized in Table 18.

Summary of Findings

Investigative activities conducted through June 2008 have identified several areas of impact at the Site including:

- An area of toluene impacted soils located northwest of building B-7, near the existing wood/brush line. This area was reputed to be the storage location for the former toluene USTs after excavation and prior to removal from the Site. In addition, toluene impacted soils were discovered beneath the northeast corner of Building B-5B, near the former toluene USTs (now excavated and removed from the Site). Although toluene has been discovered in the sub-surface at levels which exceed NYSDEC guidance values, toluene was not detected during the two groundwater sampling events (including one sample from a monitoring well located in building B-5 [2MW-05] and one near 2B-01C [MW-03]).

- Polycyclic Aromatic Hydrocarbons (PAHs) were detected throughout the Site in concentrations that are consistent with impacts associated with asphalt paving. Asphalt paving is present throughout the Site and was observed in subsurface test pit areas. However, a significant concentration of unknown semi-volatile organic compounds (SVOCs) was detected at surface soil location HB-06 (located near the existing on-site transformer).

- Elevated metal contamination was detected at surface soil location 2HB-02 (west of building B-5B, near the loading dock) and in the test pit areas where fabric was observed (far western side of site to the south and east of the existing parking lot). This fabric was likely disposed of during the years that a fabric reclaiming operation existed on-site. Low-level exceedences of metals, detected throughout the Site in soils, sediment, and groundwater, are indicative of the former industrial nature of the Site.

- Significantly elevated concentrations of PCBs were detected in the areas where fabric was observed (TP-11 and TP-15) and low-levels of PCBs were detected in the surface samples and sediment sample collected throughout the Site.

- Low-level pesticide contamination was detected in surface soils located throughout the Site.

Please review this document and call me at (845) 452-1658 should you have any questions or comments.

Sincerely,

ECOSYSTEMS STRATEGIES, INC.

Emery Lawson
Project Manager

EDS:PHC:cpr:ndc

Attachments: Fieldwork Maps
Data Tables

cc: File

N

METRO NORTH

Wooded Area

2B-15	
Methylene Chloride	130
Toluene	22,000

2B-15C	
Methylene Chloride	61
Toluene	1,600

2B-15A	
Methyl Ethyl Keytone	1,400
Toluene	100,000

MW-01

2MW-04

2B-09

2B-11

2B-13

2B-12

2B-15B

2SV-08

2SV-07

B-5A

2B-10

550-GALLON COMMERCIAL BUILDING

ONE STORY BRICK

2MW-05

2B-14

B-5B

2SV-09

2HB-08

2SV-10

B-6

2SV-04

2HB-02

2MW-06

C.H.G.&E. Sub Station

relocated soil

2SV-15

2B-02

2HB-06	
Acetone	140

SOUTH AVENUE

Wooded Area

Sluiceway

Over

Trail

2SED-02

Island

parking area

2B-08

2B-07

2HB-07

2SV-01

2B-01C	
Toluene	4,600,000

2B-01B

2B-01A

MW-03

Abandoned Railroad Tracks

2SV-13

B-3

2SV-05

B-8

2SV-14

2SV-11

B-2

2SV-02

four chemial ASTs

2SV-03

Elevated Walkway

CREEK

2HB-09

Wooded Area

B-7

2SV-12

2HB-03

2SV-06

B-4

2HB-05

2HB-04

MW-02

2B-03

2B-05

Existing Macadam Parking Lot

2B-04

2SST-1

2SV-16

2HB-01

2B-06

City of Beacon 20" Wide Sewer & R.C.W.

2HB-10

2HB-13

2SED-01

Existing Fishermans Trail

Wooded Area

2MW-09

FISHKILL

Wooded Area

Legend:

- monitoring well location
- boring location
- X soil vapor sample location
- surface sample location
- Ø sediment sample location

all results in µg/kg

Figure 1 - Fieldwork Map (VOCs in Soil)

Beacon Terminal Site
555 South Avenue
Beacon, New York

ESI File: BB04157.50

Scale: 1" = 50' (approximately)

August 2008 | Attachment

Ecosystems Strategies, Inc.

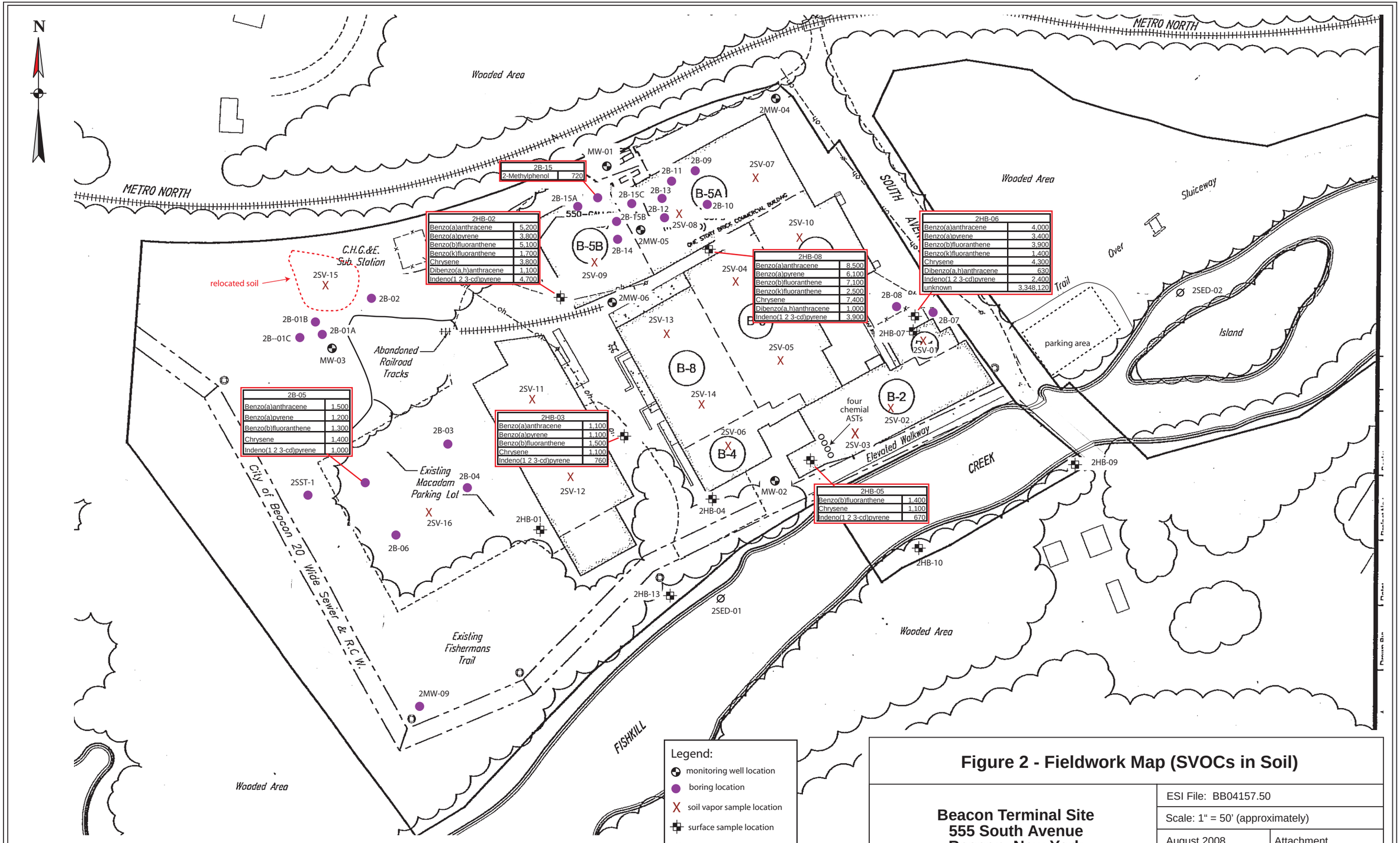


Figure 2 - Fieldwork Map (SVOCs in Soil)

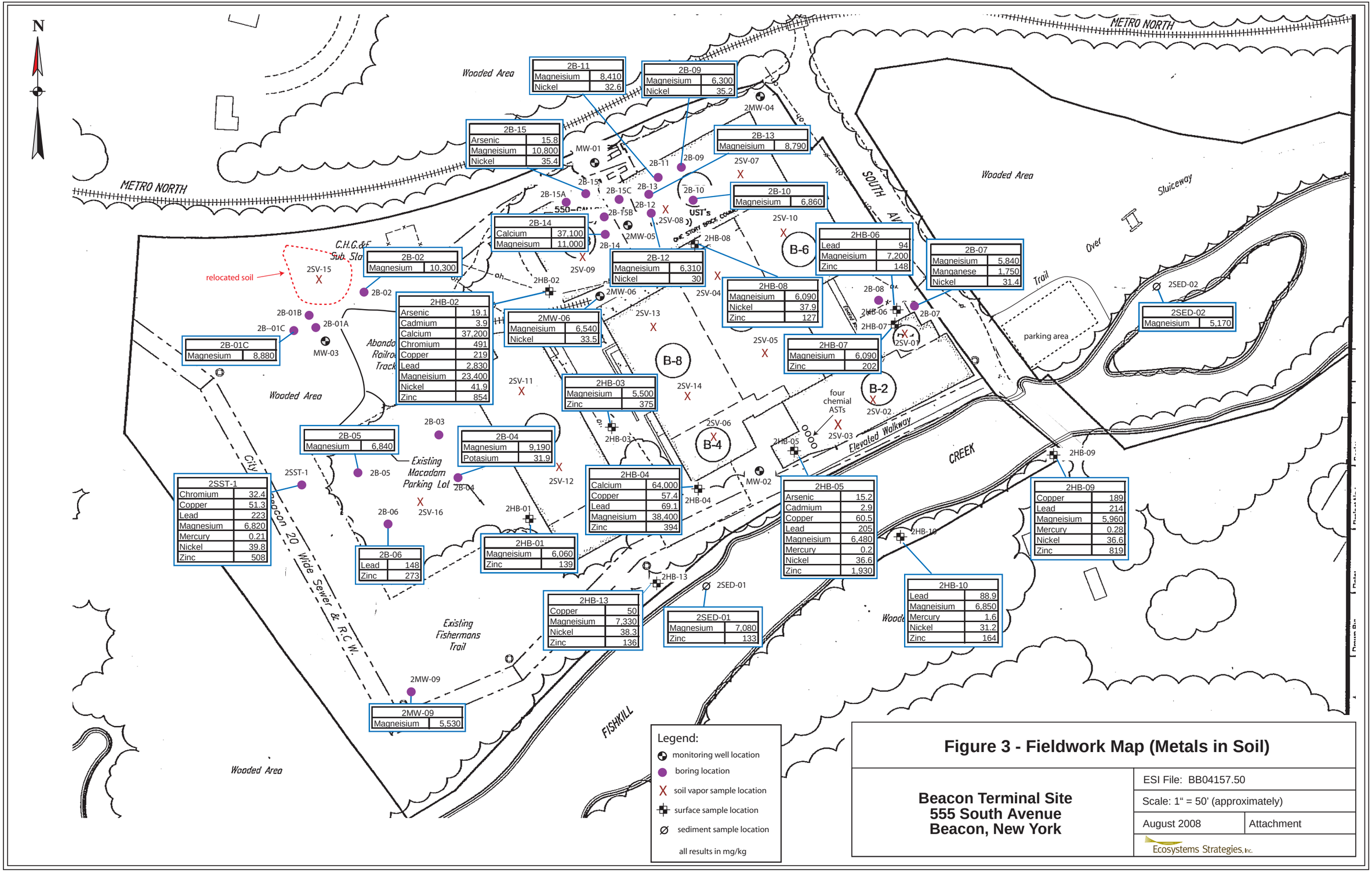
Beacon Terminal Site
555 South Avenue
Beacon, New York

ESI File: BB04157.50

Scale: 1" = 50' (approximately)

August 2008 | Attachment

Ecosystems Strategies, Inc.


N
METRO NORTH
Wooded Area
2B-11
Magneisium 8,410
Nickel 32.6
2B-09
Magneisium 6,300
Nickel 35.2
2MW-04
2B-15
Arsenic 15.8
Magneisium 10,800
Nickel 35.4
MW-01
2B-13
Magneisium 8,790
2SV-07
2B-10
Magneisium 6,860
2SV-10
2B-14
Calcium 37,100
Magneisium 11,000
2MW-05
2SV-08
UST's
ONE STORY BRICK COMM.
2HB-08
B-6
2HB-06
Lead 94
Magneisium 7,200
Zinc 148
2B-07
Magneisium 5,840
Manganese 1,750
Nickel 31.4
2B-02
Magnesium 10,300
2SV-15
relocated soil
2B-12
Magneisium 6,310
Nickel 30
2SV-09
2HB-02
2MW-06
2SV-04
2HB-08
Magneisium 6,090
Nickel 37.9
Zinc 127
2B-08
2HB-07
2SV-01
2SV-05
2HB-07
Magneisium 6,090
Zinc 202
2SED-02
Magneisium 5,170
2B-01B
2B-01A
2B-01C
2B-01C
Magnesium 8,880
MW-03
2HB-02
Arsenic 19.1
Cadmium 3.9
Calcium 37,200
Chromium 491
Copper 219
Lead 2,830
Magneisium 23,400
Nickel 41.9
Zinc 854
2MW-06
Magneisium 6,540
Nickel 33.5
2SV-13
B-8
2SV-11
2HB-03
Magneisium 5,500
Zinc 375
2SV-14
B-2
2SV-02
four chemial ASTs
2SV-03
2SV-06
B-4
2HB-05
2HB-03
2B-03
2B-05
Magnesium 6,840
2B-04
Magnesium 9,190
Potasium 31.9
2SV-12
Existing Macadam Parking Lot
2B-04
2HB-04
Calcium 64,000
Copper 57.4
Lead 69.1
Magneisium 38,400
Zinc 394
MW-02
2HB-05
Arsenic 15.2
Cadmium 2.9
Copper 60.5
Lead 205
Magneisium 6,480
Mercury 0.2
Nickel 36.6
Zinc 1,930
2HB-09
Copper 189
Lead 214
Magneisium 5,960
Mercury 0.28
Nickel 36.6
Zinc 819
2SST-1
Chromium 32.4
Copper 51.3
Lead 223
Magnesium 6,820
Mercury 0.21
Nickel 39.8
Zinc 508
2SST-1
2B-05
2B-06
2SV-16
2B-06
Lead 148
Zinc 273
2HB-01
Magneisium 6,060
Zinc 139
2HB-13
Copper 50
Magneisium 7,330
Nickel 38.3
Zinc 136
2HB-13
2SED-01
2SED-01
Magnesium 7,080
Zinc 133
2HB-10
Lead 88.9
Magneisium 6,850
Mercury 1.6
Nickel 31.2
Zinc 164
2MW-09
2MW-09
Magneisium 5,530
SOUTH AVENUE
Sluiceway
Trail
parking area
Elevated Walkway
CREEK
FISHKILL
City of Beacon 20" Wide Sewer & R.C.W.
Existing Fishermans Trail
Abandoned Railroad Track
C.H.G.&E. Sub. Sta.
Legend:
monitoring well location
boring location
soil vapor sample location
surface sample location
sediment sample location
all results in mg/kg
Figure 3 - Fieldwork Map (Metals in Soil)
Beacon Terminal Site
555 South Avenue
Beacon, New York
ESI File: BB04157.50
Scale: 1“ = 50’ (approximately)
August 2008
Attachment
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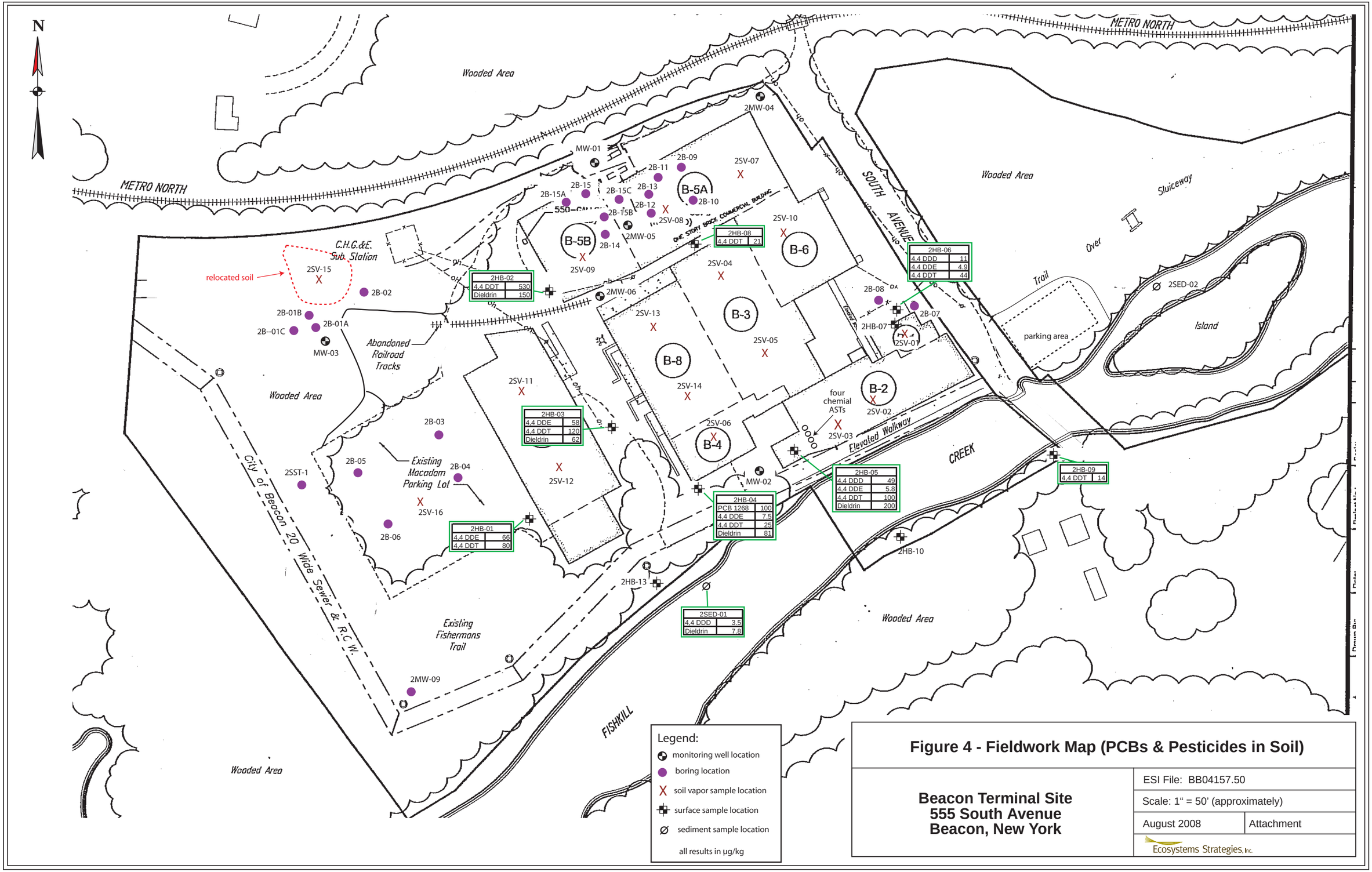

Figure 4 - Fieldwork Map (PCBs & Pesticides in Soil)

Beacon Terminal Site
555 South Avenue
Beacon, New York

ESI File: BB04157.50

Scale: 1" = 50' (approximately)

August 2008 | Attachment

Ecosystems Strategies, Inc.

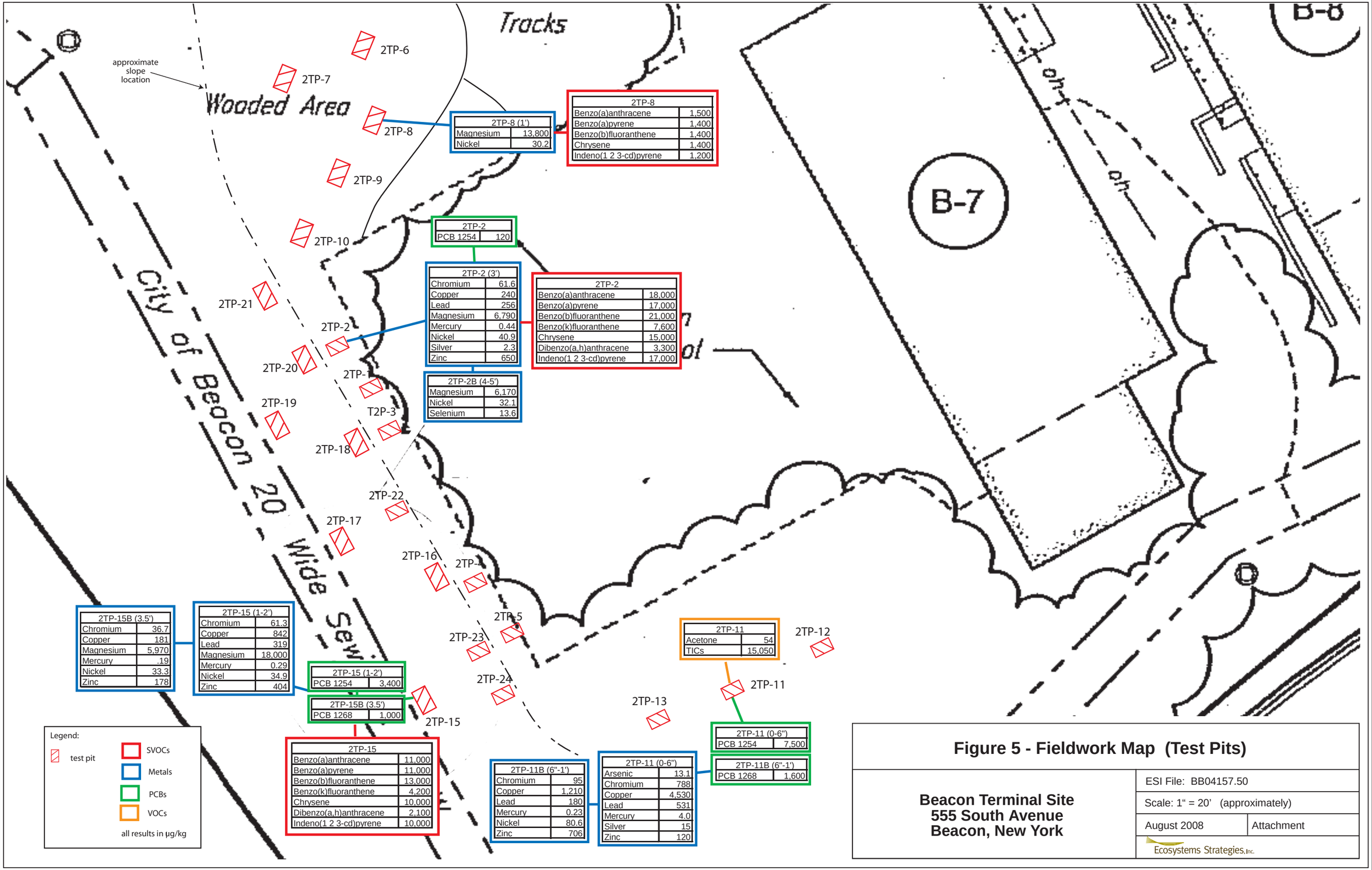

Figure 5 - Fieldwork Map (Test Pits)

Beacon Terminal Site
555 South Avenue
Beacon, New York

ESI File: BB04157.50

Scale: 1" = 20' (approximately)

August 2008 | Attachment

Ecosystems Strategies, Inc.

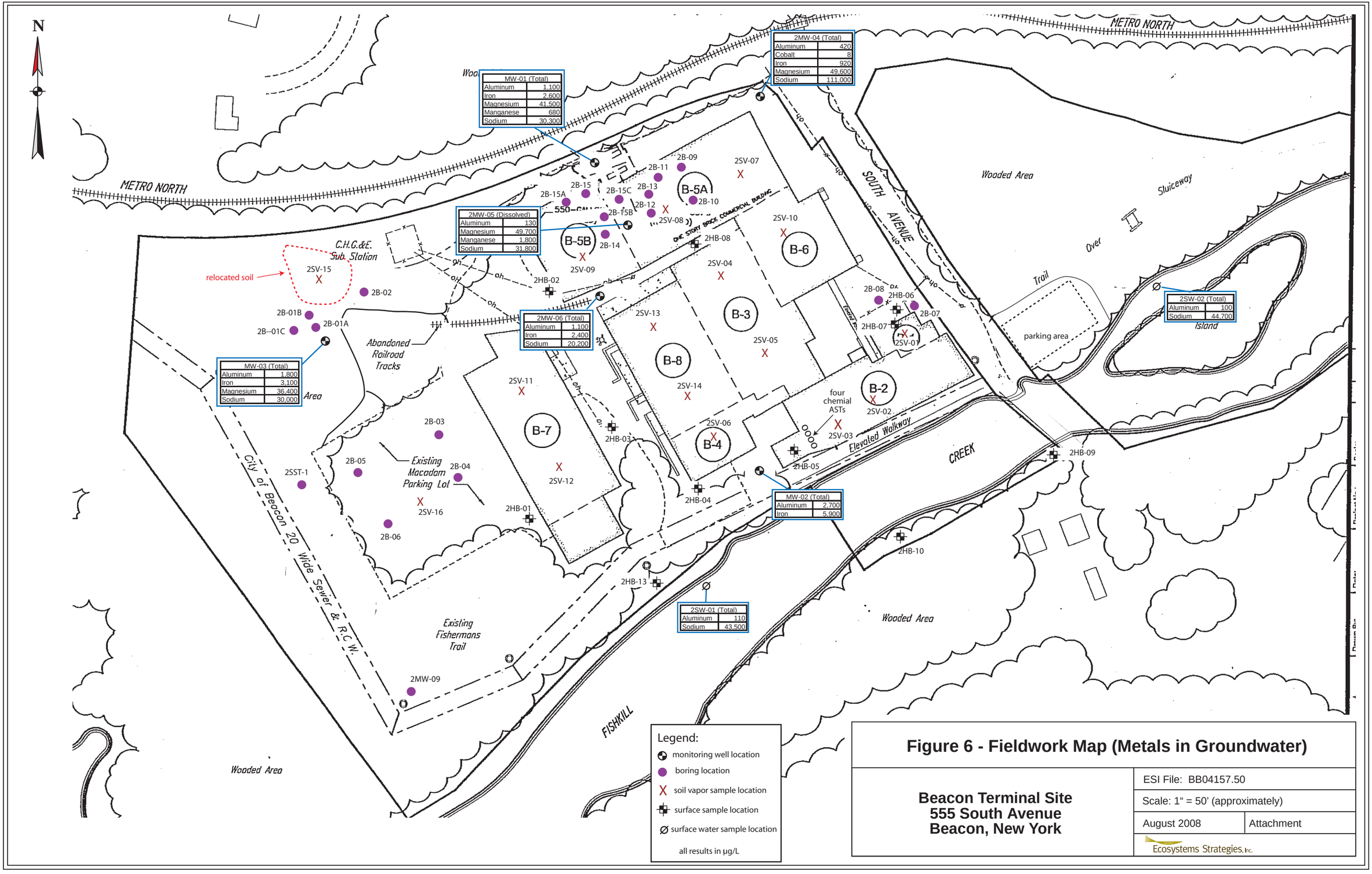

Figure 6 - Fieldwork Map (Metals in Groundwater)

Beacon Terminal Site
555 South Avenue
Beacon, New York

ESI File: BB04157.50

Scale: 1" = 50' (approximately)

August 2008 | Attachment

Ecosystems Strategies, Inc.

Table 1: VOCs in Soil Borings

All results provided in µg/kg (parts per billion). Results in **bold** exceed designated guidance levels.

Compound (USEPA Method 8260)	Guidance Level	Sample Identification																																					
		2B-01C (1-3')		2B-02 (10-12')		2B-04 (5-7')		2B-05 (4-5')		2B-06 (4-5')		2B-07 (3-4')		2B-08 (5-6')		2B-09 (6-7')		2B-10 (9-10')		2B-11*** (5-7')		2B-12 (15-17')		2B-13 (23-25')		2B-14 (22-24')		2B-15 (4-5')		2B-15 A (4-5')		2B-15 C (4-5')		2MW-04 (20-21')		2MW-05 (26-28')		2MW-06 (6-6.5')		2MW-09 (2-3.5')		DUPLICATE (2B-11, 5-7')	
	Date	2/4/2008		2/5/2008		2/4/2008		1/31/2008		2/4/2008		1/31/2008		1/31/2008		2/5/2008		2/5/2008		2/5/2008		2/5/2008		2/5/2008		2/6/2008		2/6/2008		2/6/2008		1/31/2008		2/6/2008		1/31/2008		2/5/2008		2/5/2008	
1,1,1,2-Tetrachloroethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1,1-Trichloroethane	680	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1,2,2-Tetrachloroethane	600*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1,2-Trichloroethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1-Dichloroethane	270	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1-Dichloroethene	330	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,1-Dichloropropene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,3-Trichlorobenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,3-Trichloropropane	340*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,4-Trichlorobenzene	3,400*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2,4-Trimethylbenzene	3,600	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dibromo-3-chloropropane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dibromoethane (EDB)	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichlorobenzene	1,100	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichloroethane	20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichloroethene (total)	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichloropropane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3,5-Trimethylbenzene	8,400	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3-Dichlorobenzene	2,400	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3-Dichloropropane	300*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,4-Dichlorobenzene	1,800	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1-Chlorohexane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,2-Dichloropropane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Chlorotoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Hexanone	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Chlorotoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Isopropyltoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Acetone	50	ND		9.2	J	ND		17	J	28		6.7	J	ND		6.3	J	5.9	J	11	J	3.9	J	7.2	J	6.9	J	ND		ND		ND		7.4	J	6.4	J	ND		3.3	J	8.1	J
Benzene	60	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromobenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromodichloromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromoform	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bromomethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Carbon disulfide	2700*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Carbon tetrachloride	760	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chlorobenzene	1,100	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chloroethane	1,900*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chloroform	370	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Chloromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichloroethylene (cis)	250	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
cis-1,3-Dichloropropene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dibromochloromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dibromomethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dichlorodifluoromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Ethylbenzene	1,000	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Hexachlorobutadiene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Isopropylbenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
m-&p-Xylenes	260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methyl Ethyl Ketone	120	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		**1,400**	J	ND		ND		ND		ND		ND	
methyl isobutyl ketone	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methyl-tert-butyl-ether (MTBE)	930	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Methylene chloride	50	ND		2	J	4.6	J	ND		4.4	J	2.4	J	1.9	J	ND		2.1	J	4.2	J	2	J	1.7	J	ND		**130**	J	ND		**61**	J	1.9	J	ND		ND		4.2	J	1.9	J
Naphthalene	12,000	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
n-Butylbenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
n-Propylbenzene	3,900	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
o-Xylene	260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
sec-Butylbenzene	11,000	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Styrene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
tert-Butylbenzene	5,900	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Tetrachloroethene	1,300	ND		ND		2.6	J	ND		3.7	J	ND		ND		ND		2	J	4.6	J	ND		ND		ND		ND		ND		ND		1.5	J	ND		9		ND	
Toluene	700	**4,600,000**		1.1	J	2.3	J	ND		2.6	J	ND		ND		7.7		1.5	J	2.9	J	1.1	J	2	J	ND		**22,000**		**100,000**		**1,600**		3.4	J	2.1	J	4.2	J	3.8	J	1	J
1,2-Dichloroethylene (trans)	190	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
trans-1,3-Dichloropropene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Trichloroethene	470	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		340	J	ND		ND		ND		ND		ND		ND	
Trichlorofluoromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vinyl chloride	20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
total Xylenes	260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Total TICs	NE	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		5,450	J	24,000	J	400	J	790	J	1,200	J	ND		ND	
Total Unknown Compunds	NE	1,140,000		ND		ND		ND		4.7	J	ND		ND		ND		7.3	J	ND		ND		130	J	ND		17,000	J	6,300	J	12,360	J	ND		ND		110	J	6.4	J	ND	
Total VOCs	**	**5,740,000**		12.3		9.5		17.0		43.4		9.1		1.9		14.0		18.8		22.7		7.0		140.9		6.9		**44,920**		**131,700**		**14,421**		802.7		1,210		114.2		26.7		11.0	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.

* = Guidance level based on NYSDECTAGM 4046.

** = Guidance level not established (TAGM 4046 total individual and sum of VOCs not listed must be less than or equal to 10,000 ppb).

*** Sample with dupilcate analysis

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value

ND = Not Detected TBD = To Be Determined NA = Not Analyzed

Table 2: VOCs in Surface Soil

All results provided in µg/kg (parts per billion). Results in **bold** exceed designated guidance levels.

Compound (USEPA Method 8260)	Guidance Level	Sample Identification																																					
		2HB-01 (0-4")		2HB-02*** (0-4")		2HB-03 (0-4")		2HB-04 (0-4")		2HB-05 (0-4")		2HB-06 (0-4")		2HB-07 (0-4")		2HB-08 (0-4")		2HB-09 (0-4")		2HB-10 (0-4")		2HB-13 (0-4")		2 SED-1		2 SED-2		DUPLICATE (2HB-02, 0-4')											
	Date	2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008											
1,1,1,2-Tetrachloroethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,1,1-Trichloroethane	680	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,1,2,2-Tetrachloroethane	600*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,1,2-Trichloroethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,1-Dichloroethane	270	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,1-Dichloroethene	330	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,1-Dichloropropene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2,3-Trichlorobenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2,3-Trichloropropane	340*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2,4-Trichlorobenzene	3,400*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2,4-Trimethylbenzene	3,600	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dibromo-3-chloropropane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dibromoethane (EDB)	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dichlorobenzene	1,100	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dichloroethane	20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dichloroethene (total)	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dichloropropane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,3,5-Trimethylbenzene	8,400	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,3-Dichlorobenzene	2,400	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,3-Dichloropropane	300*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,4-Dichlorobenzene	1,800	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1-Chlorohexane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
2,2-Dichloropropane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
2-Chlorotoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
2-Hexanone	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
4-Chlorotoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
4-Isopropyltoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Acetone	50	15	J	9.7	J	ND		ND		9.6	J	**140**		11	J	11	J	6	J	8.6	J	ND		ND		5.3	J	12	J								
Benzene	60	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Bromobenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Bromodichloromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Bromoform	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Bromomethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Carbon disulfide	2700*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Carbon tetrachloride	760	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Chlorobenzene	1,100	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Chloroethane	1,900*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Chloroform	370	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Chloromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
1,2-Dichloroethylene (cis)	250	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
cis-1,3-Dichloropropene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Dibromochloromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Dibromomethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Dichlorodifluoromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Ethylbenzene	1,000	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Hexachlorobutadiene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Isopropylbenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
m-&p-Xylenes	260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Methyl Ethyl Ketone	120	ND		ND		ND		ND		ND		8	J	ND		ND		ND		ND		ND		ND		ND		ND									
methyl isobutyl ketone	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Methyl-tert-butyl-ether (MTBE)	930	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Methylene chloride	50	2.6	J	ND		ND		ND		ND		2.9	J	ND		2.3	J	ND		2.1	J	1.9	J	ND		5.4	J	4.8	J								
Naphthalene	12,000	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
n-Butylbenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
n-Propylbenzene	3,900	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
o-Xylene	260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
sec-Butylbenzene	11,000	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Styrene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
tert-Butylbenzene	5,900	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Tetrachloroethene	1,300	3.4	J	ND		1.3	J	ND		ND		ND		ND		ND		2	J	0.93	J	ND		ND		ND		3.9	J								
Toluene	700	3.4	J	ND		ND		ND		ND		2.8	J	ND		ND		0.72	J	0.97	J	ND		ND		0.91	J	ND									
1,2-Dichloroethylene (trans)	190	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
trans-1,3-Dichloropropene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Trichloroethene	470	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Trichlorofluoromethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Vinyl chloride	20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
total Xylenes	260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Total TICs	NE	ND		ND		ND		ND		ND		6.6	J	ND		ND		ND		ND		ND		ND		ND		ND									
Total Unknown Compunds	NE	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND									
Total VOCs	**	24.4		9.7		1.3		ND		9.6		160.3		11		13.3		8.72		12.6		1.9		ND		11.61		20.7									

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.
* = Guidance level based on NYSDEC TAGM 4046.
** = Guidance level not established (TAGM 4046 total individual and sum of VOCs not listed must be less than or equal to 10,000 ppb).
*** Sample with duplicate analysis
J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
ND = Not Detected TBD = To Be Determined NA = Not Analyzed

Table 3: VOCs in Test Pits

All results provided in µg/kg (parts per billion). Results in **bold** exceed designated guidance levels.

(USEPA Method 8260)	Guidance Level	Sample Identification									
	Date	2SST-1 (0'-4")		2TP-2 (3')		2TP-8 (1')		2TP-11 (0-6")		2TP-15 (1-2')	
		1/30/2008		1/30/2008		1/30/2008		1/30/2008		1/30/2008	
1,1,1,2-Tetrachloroethane	**	ND		ND		ND		ND		ND	
1,1,1-Trichloroethane	680	ND		ND		ND		ND		ND	
1,1,2,2-Tetrachloroethane	600*	ND		ND		ND		ND		ND	
1,1,2-Trichloroethane	**	ND		ND		ND		ND		ND	
1,1-Dichloroethane	270	ND		ND		ND		ND		ND	
1,1-Dichloroethene	330	ND		ND		ND		ND		ND	
1,1-Dichloropropene	**	ND		ND		ND		ND		ND	
1,2,3-Trichlorobenzene	**	ND		ND		ND		ND		ND	
1,2,3-Trichloropropane	340*	ND		ND		ND		ND		ND	
1,2,4-Trichlorobenzene	3,400*	ND		ND		ND		ND		ND	
1,2,4-Trimethylbenzene	3,600	ND		ND		ND		ND		ND	
1,2-Dibromo-3-chloropropane	**	ND		ND		ND		ND		ND	
1,2-Dibromoethane (EDB)	**	ND		ND		ND		ND		ND	
1,2-Dichlorobenzene	1,100	ND		ND		ND		ND		ND	
1,2-Dichloroethane	20	ND		ND		ND		ND		ND	
1,2-Dichloroethene (total)	**	ND		ND		ND		ND		ND	
1,2-Dichloropropane	**	ND		ND		ND		ND		ND	
1,3,5-Trimethylbenzene	8,400	ND		ND		ND		ND		ND	
1,3-Dichlorobenzene	2,400	ND		ND		ND		ND		ND	
1,3-Dichloropropane	300*	ND		ND		ND		ND		ND	
1,4-Dichlorobenzene	1,800	ND		ND		ND		ND		ND	
1-Chlorohexane	**	ND		ND		ND		ND		ND	
2,2-Dichloropropane	**	ND		ND		ND		ND		ND	
2-Chlorotoluene	**	ND		ND		ND		ND		ND	
2-Hexanone	**	ND		ND		ND		ND		ND	
4-Chlorotoluene	**	ND		ND		ND		ND		ND	
4-Isopropyltoluene	**	ND		ND		ND		ND		ND	
Acetone	50	4.2	J	4.3	J	4.0	J	**54.0**	J	5.8	J
Benzene	60	ND		ND		ND		ND		ND	
Bromobenzene	**	ND		ND		ND		ND		ND	
Bromodichloromethane	**	ND		ND		ND		ND		ND	
Bromoform	**	ND		ND		ND		ND		ND	
Bromomethane	**	ND		ND		ND		ND		ND	
Carbon disulfide	2700*	ND		ND		ND		ND		ND	
Carbon tetrachloride	760	ND		ND		ND		ND		ND	
Chlorobenzene	1,100	ND		ND		ND		ND		ND	
Chloroethane	1,900*	ND		ND		ND		ND		ND	
Chloroform	370	ND		ND		ND		ND		ND	
Chloromethane	**	ND		ND		ND		ND		ND	
1,2-Dichloroethylene (cis)	250	ND		ND		ND		ND		ND	
cis-1,3-Dichloropropene	**	ND		ND		ND		ND		ND	
Dibromochloromethane	**	ND		ND		ND		ND		ND	
Dibromomethane	**	ND		ND		ND		ND		ND	
Dichlorodifluoromethane	**	ND		ND		ND		ND		ND	
Ethylbenzene	1,000	ND		ND		ND		ND		ND	
Hexachlorobutadiene	**	ND		ND		ND		ND		ND	
Isopropylbenzene	**	ND		ND		ND		ND		ND	
p-&m-Xylenes	260	ND		ND		ND		ND		ND	
Methyl Ethyl Ketone	120	ND		ND		ND		ND		ND	
methyl isobutyl ketone	**	ND		ND		ND		ND		ND	
Methyl-tert-butyl-ether (MTBE)	930	ND		ND		ND		ND		ND	
Methylene chloride	50	3.2	J	4.4	J	3.3	J	16.0	J	4.8	J
Naphthalene	12,000	ND		ND		ND		ND		ND	
n-Butylbenzene	**	ND		ND		ND		ND		ND	
n-Propylbenzene	3,900	ND		ND		ND		ND		ND	
o-Xylene	260	ND		ND		ND		ND		ND	
sec-Butylbenzene	11,000	ND		ND		ND		ND		ND	
Styrene	**	ND		ND		ND		ND		ND	
tert-Butylbenzene	5,900	ND		ND		ND		ND		ND	
Tetrachloroethene	1,300	ND		21.0		4.9	J	42.0	J	15.0	
Toluene	700	ND		ND		ND		ND		1.0	J
1,2-Dichloroethylene (trans)	190	ND		ND		ND		ND		ND	
trans-1,3-Dichloropropene	**	ND		ND		ND		ND		ND	
Trichloroethene	470	ND		ND		ND		ND		ND	
Trichlorofluoromethane	**	ND		ND		ND		ND		ND	
Vinyl chloride	20	ND		ND		ND		ND		ND	
total Xylenes	260	ND		ND		ND		ND		ND	
Total TICs	NE	ND		ND		ND		15,050	J	ND	
Total Unknown Compounds	NE	ND		ND		ND		1,730	J	ND	
Total VOCs	**	7		30		12		**16,892**		27	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.

* = Guidance level based on NYSDEC TAGM 4046.

** = Guidance level not established (TAGM 4046 total individual and sum of VOCs not listed must be less than or equal to 10,000 ppb).

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

ND = Not Detected TBD = To Be Determined

Table 4 : VOCs in Groundwater

All results provided in µg/L. Results in **bold** exceed designated guidance levels.

		Sample Identification																													
(USEPA Method 8260)	Guidance Level	MW-01			MW-02			MW-03			2MW-04#			2MW-05			2MW-06			2SW-1			2SW-2			Duplicate (2MW-04)			TRIP BLANK			TRIP BLANK 2		
	Date	2/28/2008		6/19/2008	2/28/2008		6/19/2008	2/28/2008			2/28/2008		6/19/2008	2/28/2008		6/19/2008	2/28/2008		6/19/2008	2/28/2008			2/28/2008			2/28/2008			2/28/2008			2/28/2008		
1,1,1,2-Tetrachloroethane	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
1,1,1-Trichloroethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,1,2,2-Tetrachloroethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,1,2-Trichloroethane	**1**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,1-Dichloroethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,1-Dichloroethene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,1-Dichloropropene	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
1,2,3-Trichlorobenzene	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
1,2,3-Trichloropropane	**0.04**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2,4-Trichlorobenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2,4-Trimethylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2-Dibromo-3-Chloropropane	**0.04**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2-Dibromoethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2-Dichlorobenzene	**3**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2-Dichloroethane	**0.6**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,2-Dichloroethene, Total	**5***	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
1,2-Dichloropropane	**1**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
1,3,5-Trimethylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,3-Dichlorobenzene	**3**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,3-Dichloropropane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1,4-Dichlorobenzene	**3**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
1-Chlorohexane	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
2,2-Dichloropropane	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
2-Chlorotoluene	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
2-Hexanone	**50**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
4-Chlorotoluene	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
4-Isopropyltoluene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Acetone	**50**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	1.6	J		ND			2.8	J		2.1	J		2.7	J	
Benzene	**0.7**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Bromobenzene	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
Bromodichloromethane	**50**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Bromoform	**50**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Bromomethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Carbon disulfide	**NE**	ND		0.25	J	ND		ND			ND		ND	0.7	J	ND	ND		ND	ND			ND			ND			ND			ND		
Carbon tetrachloride	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Chlorobenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Chloroethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Chloroform	**7**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Chloromethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
cis-1,2-Dichloroethene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
cis-1,3-Dichloropropene	**0.4****	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Dibromochloromethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Dibromomethane	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
Dichlorodifluoromethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Ethylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Hexachlorobutadiene	**0.5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
Isopropylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
m&p-Xylene	**5*****	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Methyl Ethyl Ketone	**50**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			5.7	J		7.4	J	
methyl isobutyl ketone	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Methyl tert-butyl ether	**10**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Methylene Chloride	**5**	ND		ND	ND		0.45	J	ND			ND		ND		ND	ND		0.32	J	0.28	J		ND			0.33	J		0.69	J		1.3	J	
Naphthalene	**10**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
n-Butylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
N-Propylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
o-Xylene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
sec-Butylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Styrene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
tert-Butylbenzene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Tetrachloroethene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Toluene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
trans-1,2-Dichloroethene	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
trans-1,3-Dichloropropene	**0.4****	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Trichloroethene	**5**	0.31	J	ND	ND		ND	0.31	J		ND		ND	ND		ND	0.43	J	ND	ND			ND			ND			ND			0.46	J	
Trichlorofluoromethane	**5**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Vinyl chloride	**2**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Xylenes (total)	**5**	ND		NA	ND		NA	ND			ND		NA	ND		NA	ND		NA	ND			ND			ND			ND			ND		
Total TICs	**NE**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Total Unknown Compounds	**NE**	ND		ND	ND		ND	ND			ND		ND	ND		ND	ND		ND	ND			ND			ND			ND			ND		
Total VOCs	**NE**	0.31		0.25	ND		0.45	0.31			ND		ND	0.7		ND	0.43		0.32	1.88			ND			3.13			8.49			11.86		

Notes:

Guidance levels based on NYSDEC TOGS 1.1.1.

*Applies to the individual isomers cis-1,2-Dichloroethene and trans-1,2-Dichloroethene.

**Applies to the sum of cis- and trans-1,3-dichloropropene.

*** Applies to the individual isomers 1,3-Xylene (m-Xylene) and 1,4-Xylene (p-Xylene).

Sample with duplicate analysis

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

ND = Not Detected NE = Not Established

Table 5: VOCs in Soil Gas

Results provided in µg/m^3. Results in bold exceed NYSDOH Background Levels.

Compound	Background Levels	Sample ID															
		2SV-01	2SV-02	2SV-03	2SV-04	2SV-05	2SV-06	2SV-07	2SV-08	2SV-09	2S5V-10	2SV-11	2SV-12	2SV-13	2SV-14	2SV-15	2SV-16
	Location	B-1	B-2	B-2	B-3	B-3	B-4	B-5A	B-5A	B-5B	B-6	B-7	B-7	B-8	B-8	Soil Relocation	Parking lot
1,1,1-Trichloroethane	<0.25 - 1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**16**	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	0.78 - 4.4	0.84	ND	ND	ND	ND	2.2	1.2	ND	ND	ND	ND	ND	2	ND	ND	ND
1,2-Dibromoethane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorotetrafluoroethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	<0.25 - 1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Butadiene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11
1,3-Dichlorobenzene	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	NA	1.7	ND	0.93	ND	0.79	4.1	ND	0.98	ND	ND	ND	ND	ND	ND	2.5	1.8
2-Chlorotoluene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Chloropropene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Ethyltoluene	NE	0.98	ND	ND	ND	0.88	2.6	1.2	ND	ND	ND	ND	ND	ND	ND	ND	0.88
Acetone	10.0 - 46	ND	**64**	13	ND	**48**	ND	17	ND	26	**290**	ND	ND	**76**	**48**	ND	24
Benzene	1.2-5.7	**6.4**	3	3.5	1.7	3.5	**15**	2.8	3.8	3.5	5.1	2.7	2.9	**11**	**310**	**5.8**	**7.7**
Bromodichloromethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoethene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	NA	1.7	3.4	1.7	11	3.4	14	1.7	11	ND	ND	ND	ND	ND	ND	2.6	2.6
Carbon Tetrachloride	<0.25 -0.68	**3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	<0.25	**1.3**	ND	ND	ND	**1.3**	ND	ND	ND	**1.3**	ND	**1.8**	**1.2**	ND	ND	ND	ND
Chloromethane	<0.25 - 2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NA	2.2	1.2	1.3	0.89	1	5.2	0.76	5.2	0.89	ND	0.65	ND	2.5	ND	93	1.3
Dibromochloromethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	3.1	ND	ND	2.3	ND	2.6	2.1	2.4	2.6	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.43-2.8	**6.1**	**3.2**	**3.9**	1.3	**3.2**	**18**	2.6	2.3	1.6	ND	1.7	2.3	**6.1**	**8.3**	**6.1**	**5.2**
Freon TF	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropyl Alcohol	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10
Methyl Butyl Ketone	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ethyl Ketone	NA	2	2.6	1.9	1.8	3.2	2	2.5	1.4	1.9	ND	1.4	1.3	3.5	ND	ND	3.8
Methyl Isobutyl Ketone	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	<0.25 - 6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	0.38-6.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Heptane	NA	7.8	2.6	4.1	3.2	5.7	18	2.7	5.7	3.2	ND	4.1	2.1	5.3	6.1	13	7.4
n-Hexane	0.63-6.5	**14**	3.4	**6.7**	4.2	5.3	**25**	3	**6.7**	3.9	ND	4.9	2.6	**10**	**11**	6.3	**9.5**
Styrene	<0.25-0.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	<0.25 - 1.2	ND	ND	ND	ND	ND	**5.9**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrahydrofuran	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	4.2-25	**31**	20	20	9.4	24	**83**	23	21	15	21	16	21	**34**	**150**	**41**	**30**
trans-1,2-Dichloroethene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	<0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**86**	ND	ND	ND	ND	ND
Trichlorofluoromethane	NA	1.3	ND	ND	ND	ND	ND	ND	ND	0.96	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (m,p)	0.52-4.7	**20**	**12**	**12**	4.3	**9.6**	**61**	**9.6**	**6.9**	**5.2**	ND	**5.6**	**7.4**	**27**	**52**	**20**	**17**
Xylene (o)	0.39-3.1	**3.3**	2.4	2	1	2.1	**9.6**	2.3	1.6	1.3	ND	1.3	1.8	**6.5**	**11**	**3.9**	2.8
Xylene (total)	NE	23	15	14	5.6	12	69	13	8.7	6.9	ND	6.9	9.6	35	65	25	19

Notes:

ND = Not Detected NE = Not Established

Ecosystems Strategies, Inc.

Table 6: SVOCs in Soil Borings

Results provided in µg/kg (parts per billion). Results shown in **bold** exceed guidance levels.

Compound (USEPA Method 8270)	Guidance Level	Sample Identification																
		2B-01C (1-3')	2B-02 (10-12')	2B-04 (5-7')	2B-05 (4-5')	2B-06 (4-5')	2B-07 (3-4')	2B-08 (5-6')	2B-09 (6-7')	2B-10 (9-10')	2B-11*** (5-7')	2B-12 (15-17')	2B-13 (23-25')	2B-14 (22-24')	2B-15 (4-5')	2MW-06 (6-6.5')	2MW-09 (2-3.5')	DUPLICATE (2B-11, 5-7')
	Date	2/4/2008	2/5/2008	2/4/2008	1/31/2008	2/4/2008	1/31/2008	1/31/2008	2/5/2008	2/5/2008	2/5/2008	2/5/2008	2/5/2008	2/6/2008	2/6/2008	1/31/2008	2/5/2008	2/5/2008
1,2,4-Trichlorobenzene	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1,800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-oxybis[1-chloropropane]	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	400*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	200*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	1,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	800*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	36,400*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**720**	ND	ND	ND
2-Nitroaniline	430*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	330*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3-Dichlorobenzidine	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	500*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	240*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	220*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	900*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	660	ND	ND	ND
4-Nitroaniline	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20,000	ND	ND	ND	430	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110 J	ND
Anthracene	100,000	ND	ND	ND	750	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	120 J	ND
Benzo(a)anthracene	1,000	ND	ND	87 J	**1,500**	ND	74 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	280 J	ND
Benzo(a)pyrene	1,000	ND	ND	66 J	**1,200**	ND	68 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	180 J	ND
Benzo(b)fluoranthene	1,000	ND	ND	79 J	**1,300**	ND	86 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	290 J	ND
Benzo(ghi)perylene	100,000	ND	ND	ND	900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	180 J	ND
Benzo(k)fluoranthene	800	ND	ND	ND	590	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	96 J	ND
Benzyl alcohol	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	**	110 J	ND	760	250 J	ND	94 J	110 J	ND	ND	ND	ND	ND	ND	ND	140 J	ND	64 J
Butyl benzyl phthalate	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	**	ND	ND	ND	160 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	1,000	ND	ND	98 J	**1,400**	ND	92 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	360 J	ND
Dibenzo(a h)anthracene	330	ND	ND	ND	230 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	57 J	ND
Dibenzofuran	6,200*	ND	ND	ND	100 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	7,100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	2,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	8,100*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	120,000*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100,000	ND	ND	160 J	2,800	ND	140 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	500	ND
Fluorene	30,000	ND	ND	ND	290 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1 2 3-cd)pyrene	500	ND	ND	69 J	**1,000**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	210 J	ND
Isophorone	440*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	200*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitroso-di-n-propylamine	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodiphenylamine	**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100,000	ND	ND	160 J	2,400	ND	110 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	450	ND
Phenol	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	100,000	ND	ND	150 J	2,400	62 J	160 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	490	ND
Total TICs	**NE**	59,710 J	54,000 J	63,000 J	40,030 J	55,000 J	70,000 J	37,440 J	52,000 J	65,000 J	46,000 J	52,000 J	52,000 J	270 J	66,000 J	57,000 J	1,160 J	53,000 J
Total Unknown Compunds	**NE**	4,860 J	12,170 J	3,540 J	3,370 J	7,280 J	4,440 J	1,910 J	3,220 J	3,240 J	1,360 J	1,940 J	1,610 J	14,000 J	2,690 J	1,910 J	11,370 J	2,370 J
Total SVOCs	**	64,680	66,170	68,169	61,100	62,342	75,264	39,460	55,220	68,240	47,360	53,940	53,610	14,270	70,070	59,050	15,853	55,434

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8b, except as noted.

* = Guidance level based on NYSDEC TAGM 4046.

** cleanup objective not established (individual SVOCs not listed, and total SVOCs, must be less than or equal to 50,000 ppb and 500,000 ppb, repectively)

*** Sample with duplicate analysis

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

ND = Not Detected

Ecosystems Strategies, Inc.

Table 7: SVOCs in Surface Soils

Results provided in µg/kg (parts per billion). Results shown in **bold** exceed guidance levels.

Compound (USEPA Method 8270)	Guidance Level	Sample Identification																									
		2HB-01 (0-4")		2HB-02*** (0-4")		2HB-03 (0-4")		2HB-04 (0-4")		2HB-05 (0-4")		2HB-06 (0-4")		2HB-07 (0-4")		2HB-08 (0-4")		2HB-09 (0-4")		2HB-10 (0-4")		2HB-13 (0-4")		2 SED-1		DUPLICATE (2HB-02, 0-4")	
	Date	2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008	
1,2,4-Trichlorobenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,2-Dichlorobenzene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,3-Dichlorobenzene	2,400	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
1,4-Dichlorobenzene	1,800	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,2'-oxybis[1-chloropropane]	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,4,5-Trichlorophenol	100*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,4,6-Trichlorophenol	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,4-Dichlorophenol	400*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,4-Dimethylphenol	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,4-Dinitrophenol	200*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,4-Dinitrotoluene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2,6-Dinitrotoluene	1,000*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Chloronaphthalene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Chlorophenol	800*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Methylnaphthalene	36,400*	ND		ND		ND		ND		ND		300	J	ND		370	J	ND		ND		ND		ND		550	
2-Methylphenol	100*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Nitroaniline	430*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
2-Nitrophenol	330*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
3,3-Dichlorobenzidine	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
3-Nitroaniline	500*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4,6-Dinitro-2-methylphenol	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Bromophenyl phenyl ether	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Chloro-3-methylphenol	240*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Chloroaniline	220*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Chlorophenyl phenyl ether	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Methylphenol	900*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
4-Nitroaniline	**	ND		810	J	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		170	J
4-Nitrophenol	100*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Acenaphthene	20,000	ND		ND		ND		ND		ND		450	J	ND		2,500		ND		ND		ND		ND		140	J
Acenaphthylene	100,000	ND		1,700		ND		ND		75	J	880	J	ND		ND		ND		ND		ND		ND		190	J
Anthracene	100,000	120	J	1,300		210	J	ND		180	J	1,900		ND		4,100		61	J	ND		ND		96	J	160	J
Benzo(a)anthracene	1,000	670		**5,200**		**1,100**		110	J	820		**4,000**		ND		**8,500**		310	J	62	J	110	J	320	J	150	J
Benzo(a)pyrene	1,000	620		**3,800**		**1,100**		130	J	860		**3,400**		ND		**6,100**		230	J	ND		90	J	300	J	140	J
Benzo(b)fluoranthene	1,000	740		**5,100**		**1,500**		220	J	**1,400**		**3,900**		ND		**7,100**		310	J	ND		120	J	360	J	240	J
Benzo(ghi)perylene	100,000	390	J	3,500		650		99	J	540		2,100		ND		2,900		150	J	ND		ND		200	J	93	J
Benzo(k)fluoranthene	800	290	J	**1,700**		540	J	ND		480		**1,400**	J	ND		**2,500**		120	J	ND		ND		130	J	77	J
Benzyl alcohol	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bis(2-chloroethoxy)methane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bis(2-chloroethyl)ether	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Bis(2-ethylhexyl)phthalate	**	230	J	1,900		370	J	170	J	320	J	ND		53	J	ND		82	J	95	J	150	J	130	J	1,500	
Butyl benzyl phthalate	**	ND		ND		ND		ND		74	J	ND		ND		ND		ND		ND		ND		ND		ND	
Carbazole	**	ND		ND		110	J	ND		130	J	630	J	ND		1,700	J	ND		ND		ND		ND		ND	
Chrysene	1,000	630		**3,800**		**1,100**		180	J	**1,100**		**4,300**		ND		**7,400**		290	J	ND		100	J	350	J	160	J
Dibenzo(a h)anthracene	330	120	J	**1,100**		160	J	ND		150	J	**630**	J	ND		**1,000**	J	ND		ND		ND		ND		ND	
Dibenzofuran	6,200*	ND		ND		ND		ND		ND		350	J	ND		880	J	ND		ND		ND		ND		ND	
Diethyl phthalate	7,100*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Dimethyl phthalate	2,000*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Di-n-butyl phthalate	8,100*	ND		870		ND		ND		90	J	ND		ND		ND		ND		ND		ND		ND		130	J
Di-n-octyl phthalate	120,000*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Fluoranthene	100,000	1,100		6,700		1,900		280	J	2,000		8,400		ND		18,000		340	J	97	J	180	J	560		260	J
Fluorene	30,000	ND		150	J	ND		ND		ND		520	J	ND		1,700	J	ND		ND		ND		ND		100	J
Hexachlorobenzene	330	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Hexachlorobutadiene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Hexachlorocyclopentadiene	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Hexachloroethane	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Indeno(1 2 3-cd)pyrene	500	480		**4,700**		**760**		100	J	**670**		**2,400**		ND		**3,900**		200	J	ND		80	J	240	J	120	J
Isophorone	440*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Naphthalene	12,000	ND		ND		ND		ND		ND		630	J	ND		710	J	ND		ND		ND		ND		1,200	
Nitrobenzene	200*	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
n-Nitroso-di-n-propylamine	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
n-Nitrosodiphenylamine	**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Pentachlorophenol	800	ND		ND		86	J	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Phenanthrene	100,000	450		1,900		720		140	J	960		7,400		ND		16,000		84	J	ND		100	J	240	J	220	J
Phenol	330	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Pyrene	100,000	920		5,800		1,200		190	J	1,100		6,900		ND		13,000		300	J	85	J	170	J	450	J	140	J
Total TICs	NE	1,990	J	14,500	J	14,130	J	8,020	J	3,470	J	9,080	J	ND	J	10,200	J	3,510	J	500	J	6,230	J	6,090	J	6,320	J
Total Unknown Compunds	NE	67,250	J	112,000	J	76,610	J	72,300	J	70,140	J	3,348,120	J	73,110	J	78,960	J	66,010	J	64,240	J	71,320	J	61,250	J	76,360	J
Total SVOCs	**	76,000		176,530		102,246		81,939		84,559		**3,407,690**		73,163		187,520		71,997		65,079		78,650		70,716		88,420	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8b, except as noted.

* = Guidance level based on NYSDEC TAGM 4046.

** cleanup objective not established (individual SVOCs not listed, and total SVOCs, must be less than or equal to 50,000 ppb and 500,000 ppb, repectively)

*** Sample with duplicate analysis

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

ND = Not Detected

Table 8: SVOCs in Test Pits

Results provided in µg/kg (parts per billion). Results shown in **bold** exceed guidance levels.

Compound (USEPA Method 8270)	Guidance Level	Sample Identification									
		2SST-1(0-4")		2TP-2 (3')		2TP-8 (1')		2TP-11 (0-6")		2TP-15 (1-2')	
	Date	1/30/2008		1/30/2008		1/30/2008		1/30/2008		1/30/2008	
1,2,4-Trichlorobenzene	**	ND		ND		ND		ND		ND	
1,2-Dichlorobenzene	**	ND		ND		ND		ND		ND	
1,3-Dichlorobenzene	2,400	ND		ND		ND		ND		ND	
1,4-Dichlorobenzene	1,800	ND		ND		ND		ND		ND	
2,2'-oxybis[1-chloropropane]	**	ND		ND		ND		ND		ND	
2,4,5-Trichlorophenol	100*	ND		ND		ND		ND		ND	
2,4,6-Trichlorophenol	**	ND		ND		ND		ND		ND	
2,4-Dichlorophenol	400*	ND		ND		ND		ND		ND	
2,4-Dimethylphenol	**	ND		ND		ND		ND		ND	
2,4-Dinitrophenol	200*	ND		ND		ND		ND		ND	
2,4-Dinitrotoluene	**	ND		ND		ND		ND		ND	
2,6-Dinitrotoluene	1,000*	ND		ND		ND		ND		ND	
2-Chloronaphthalene	**	ND		ND		ND		ND		ND	
2-Chlorophenol	800*	ND		ND		ND		ND		ND	
2-Methylnaphthalene	36,400*	ND		ND		110	J	ND		ND	
2-Methylphenol	100*	ND		ND		ND		ND		ND	
2-Nitroaniline	430*	ND		ND		ND		ND		ND	
2-Nitrophenol	330*	ND		ND		ND		ND		ND	
3,3-Dichlorobenzidine	**	ND		ND		ND		ND		ND	
3-Nitroaniline	500*	ND		ND		ND		150	J	ND	
4,6-Dinitro-2-methylphenol	**	ND		ND		ND		ND		ND	
4-Bromophenyl phenyl ether	**	ND		ND		ND		ND		ND	
4-Chloro-3-methylphenol	240*	ND		ND		ND		ND		ND	
4-Chloroaniline	220*	ND		ND		ND		ND		ND	
4-Chlorophenyl phenyl ether	**	ND		ND		ND		ND		ND	
4-Methylphenol	900*	ND		ND		ND		ND		ND	
4-Nitroaniline	**	ND		ND		ND		380	J	ND	
4-Nitrophenol	100*	ND		ND		ND		ND		ND	
Acenaphthene	20,000	ND		ND		90	J	ND		660	J
Acenaphthylene	100,000	160	J	3,100	J	740		110	J	2,000	
Anthracene	100,000	180	J	3,600	J	690		130	J	3,400	
Benzo(a)anthracene	1,000	180	J	**18,000**		**1,500**		250	J	**11,000**	
Benzo(a)pyrene	1,000	140	J	**17,000**		**1,400**		350	J	**11,000**	
Benzo(b)fluoranthene	1,000	250	J	**21,000**		**1,400**		780		**13,000**	
Benzo(ghi)perylene	100,000	360	J	16,000		1,300		420	J	9,400	
Benzo(k)fluoranthene	800	76	J	**7,600**		540		420	J	**4,200**	
Benzyl alcohol	**	ND		ND		ND		ND		ND	
Bis(2-chloroethoxy)methane	**	ND		ND		ND		ND		ND	
Bis(2-chloroethyl)ether	**	ND		ND		ND		ND		ND	
Bis(2-ethylhexyl)phthalate	**	3,500		1,300	J	69	J	800		470	J
Butyl benzyl phthalate	**	ND		ND		ND		ND		ND	
Carbazole	**	ND		1,000	J	89	J	ND		960	J
Chrysene	1,000	190	J	**15,000**		**1,400**		530	J	**10,000**	
Dibenzo(a h)anthracene	330	ND		**3,300**	J	300	J	89	J	**2,100**	
Dibenzofuran	6,200*	ND		ND		ND		ND		ND	
Diethyl phthalate	7,100*	ND		ND		ND		ND		ND	
Dimethyl phthalate	2,000*	ND		ND		ND		ND		ND	
Di-n-butyl phthalate	8,100*	94	J	ND		ND		320	J	ND	
Di-n-octyl phthalate	120,000*	ND		ND		ND		ND		ND	
Fluoranthene	100,000	240	J	31,000		2,200		310	J	16,000	
Fluorene	30,000	ND		ND		230	J	ND		770	J
Hexachlorobenzene	330	ND		ND		ND		ND		ND	
Hexachlorobutadiene	**	ND		ND		ND		ND		ND	
Hexachlorocyclopentadiene	**	ND		ND		ND		ND		ND	
Hexachloroethane	**	ND		ND		ND		ND		ND	
Indeno(1 2 3-cd)pyrene	500	290	J	**17,000**		**1,200**		440	J	**10,000**	
Isophorone	440*	ND		ND		ND		ND		ND	
Naphthalene	12,000	ND		ND		100	J	220	J	290	J
Nitrobenzene	200*	ND		ND		ND		ND		ND	
n-Nitroso-di-n-propylamine	**	ND		ND		ND		ND		ND	
n-Nitrosodiphenylamine	**	ND		ND		ND		110	J	ND	
Pentachlorophenol	800	ND		ND		ND		170	J	ND	
Phenanthrene	100,000	140	J	6,900		1,800		200	J	7,600	
Phenol	330	ND		ND		ND		ND		ND	
Pyrene	100,000	260	J	29,000		2,600		260	J	17,000	
Total TICs	NE	44,350	J	73,900	J	21,040	J	84,600	J	66,200	J
Total Unknown Compunds	NE	15,090	J	58,000	J	4,640	J	61,300	J	21,500	J
Total SVOCs	**	65,500		322,700		43,438		152,339		207,550	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8b, except as noted.

* = Guidance level based on NYSDEC TAGM 4046.

** cleanup objective not established (individual SVOCs not listed, and total SVOCs, must be less than or equal to 50,000 ppb and 500,000 ppb, repecti

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

ND = Not Detected NE = Not Established

Table 9: SVOCs in Groundwater

All results provided in μg/L (parts per billion). Results in **bold** exceed designated guidance levels.

Compound (USEPA Method 8270)	Guidance Level	Sample Identification: MW-01		MW-02		MW-03		2MW-04*		2MW-05		2MW-06		DUPLICATE (2MW-04)	
	Date	2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008	
1,2,4-Trichlorobenzene	5	ND		ND		ND		ND		ND		ND		ND	
1,2-Dichlorobenzene	3	ND		ND		ND		ND		ND		ND		ND	
1,3-Dichlorobenzene	3	ND		ND		ND		ND		ND		ND		ND	
1,4-Dichlorobenzene	3	ND		ND		ND		ND		ND		ND		ND	
2,2-oxybis (1-chloropropane)	5	ND		ND		ND		ND		ND		ND		ND	
2,4,5-Trichlorophenol	NE	ND		ND		ND		ND		ND		ND		ND	
2,4,6-Trichlorophenol	NE	ND		ND		ND		ND		ND		ND		ND	
2,4-Dichlorophenol	5	ND		ND		ND		ND		ND		ND		ND	
2,4-Dimethylphenol	50	ND		ND		ND		ND		ND		ND		ND	
2,4-Dinitrophenol	10	ND		ND		ND		ND		ND		ND		ND	
2,4-Dinitrotoluene	5	ND		ND		ND		ND		ND		ND		ND	
2,6-Dinitrotoluene	5	ND		ND		ND		ND		ND		ND		ND	
2-Chloronaphthalene	10	ND		ND		ND		ND		ND		ND		ND	
2-Chlorophenol	NE	ND		ND		ND		ND		ND		ND		ND	
2-Methylnaphthalene	4.7	ND		ND		ND		ND		ND		ND		ND	
2-Methylphenol	NE	ND		ND		ND		ND		ND		ND		ND	
2-Nitroaniline	5	ND		ND		ND		ND		ND		ND		ND	
2-Nitrophenol	NE	ND		ND		ND		ND		ND		ND		ND	
3,3-Dichlorobenzidine	5	ND		ND		ND		ND		ND		ND		ND	
3-Nitroaniline	5	ND		ND		ND		ND		ND		ND		ND	
4,6-Dinitro-2-methylphenol	NE	ND		ND		ND		ND		ND		ND		ND	
4-Bromophenyl phenyl ether	NE	ND		ND		ND		ND		ND		ND		ND	
4-Chloro-3-methylphenol	NE	ND		ND		ND		ND		ND		ND		ND	
4-Chloroaniline	5	ND		ND		ND		ND		ND		ND		ND	
4-Chlorophenyl phenyl ether	NE	ND		ND		ND		ND		ND		ND		ND	
4-Methylphenol	NE	ND		ND		ND		ND		ND		ND		ND	
4-Nitroaniline	5	ND		ND		ND		ND		ND		ND		ND	
4-Nitrophenol	5	ND		ND		ND		ND		ND		ND		ND	
Acenaphthene	20	ND		ND		ND		ND		ND		ND		ND	
Acenaphthylene	NE	ND		ND		ND		ND		ND		ND		ND	
Anthracene	50	ND		ND		ND		ND		ND		ND		ND	
Benzo(a)anthracene	0.002	ND		ND		ND		ND		ND		ND		ND	
Benzo(a)pyrene	NE	ND		ND		ND		ND		ND		ND		ND	
Benzo(b)fluoranthene	0.002	ND		ND		ND		ND		ND		ND		ND	
Benzo(ghi)perylene	NE	ND		ND		ND		ND		ND		ND		ND	
Benzo(k)fluoranthene	0.002	ND		ND		ND		ND		ND		ND		ND	
Benzyl alcohol	NE	ND		ND		ND		ND		ND		ND		ND	
Bis(2-chloroethoxy)methane	5	ND		ND		ND		ND		ND		ND		ND	
Bis(2-chloroethyl)ether	1	ND		ND		ND		ND		ND		ND		ND	
Bis(2-ethylhexyl)phthalate	5	ND		ND		ND		ND		ND		ND		ND	
Butyl benzyl phthalate	50	ND		ND		ND		ND		ND		ND		ND	
Carbazole	NE	ND		ND		ND		ND		ND		ND		ND	
Chrysene	0.002	ND		ND		ND		ND		ND		ND		ND	
Dibenzo(a h)anthracene	NE	ND		ND		ND		ND		ND		ND		ND	
Dibenzofuran	NE	ND		ND		ND		ND		ND		ND		ND	
Diethyl phthalate	50	ND		ND		ND		ND		ND		ND		ND	
Dimethyl phthalate	50	ND		ND		ND		ND		ND		ND		ND	
Di-n-butyl phthalate	50	ND		ND		ND		ND		ND		ND		ND	
Di-n-octyl phthalate	50	ND		ND		ND		ND		ND		ND		ND	
Fluoranthene	50	ND		ND		ND		ND		ND		ND		ND	
Fluorene	50	ND		ND		ND		ND		ND		ND		ND	
Hexachlorobenzene	0.04	ND		ND		ND		ND		ND		ND		ND	
Hexachlorobutadiene	0.5	ND		ND		ND		ND		ND		ND		ND	
Hexachlorocyclopentadiene	5	ND		ND		ND		ND		ND		ND		ND	
Hexachloroethane	5	ND		ND		ND		ND		ND		ND		ND	
Indeno(1 2 3-cd)pyrene	0.002	ND		ND		ND		ND		ND		ND		ND	
Isophorone	50	ND		ND		ND		ND		ND		ND		ND	
Naphthalene	10	ND		ND		ND		ND		ND		ND		ND	
Nitrobenzene	0.4	ND		ND		ND		ND		ND		ND		ND	
n-Nitroso-di-n-propylamine	NE	ND		ND		ND		ND		ND		ND		ND	
n-Nitrosodimethylamine	NE	ND		ND		ND		ND		ND		ND		ND	
Pentachlorophenol	1	ND		ND		ND		ND		ND		ND		ND	
Phenanthrene	50	ND		ND		ND		ND		ND		ND		ND	
Phenol	5	ND		ND		ND		ND		ND		ND		ND	
Pyrene	50	ND		ND		ND		ND		ND		ND		ND	
Total TICs	NE	21	J	3.1	J	2.7	J	4.9	J	3.7	J	20	J	2.4	J
Total Unknown Compounds	NE	ND		ND		ND		ND		ND		ND		ND	
Total SVOCs	NE	21		3.1		2.7		4.9		3.7		20		2.4	

Notes:

Guidance levels based on NYSDEC TOGS 1.1.1.
* Sample with duplicate analysis
J - Data indicate the presence of a compound that meets the identification criteria. The result is less limit but greater than zero. The concentration given is an approximate value.
ND = Not Detected NE = Not Established NA = Not Analyzed

Table 10: Metals in Soil Borings

Results provided in mg/kg (parts per million). Results shown in **bold** exceed guidance levels.

Metal	Guidance Level	Background Concentrations	Sample Identification																																			
			2B-01C (1-3')		2B-02 (10-12')		2B-04 (5-7')		2B-05 (4-5')		2B-06 (4-5')		2B-07 (3-4')		2B-08 (5-6')		2B-09 (6-7')		2B-10 (9-10')		2B-11 (5-7')		2B-12 (15-17')		2B-13 (23-25')		2B14 (22-24')		2B-15 (4-5')		2MW-06 (6-6.5')		2MW-09 (2-3.5')		DUPLICATE (2B-011, 5-7')	
		Date	2/4/2008		2/5/2008		2/4/2008		1/31/2008		2/4/2008		1/31/2008		1/31/2008		2/5/2008		2/5/2008		2/5/2008		2/5/2008		2/5/2008		2/6/2008		2/6/2008		1/31/2008		2/5/2008		2/5/2008	
Aluminum	**SB***	**33,000**	13,800		16,000		19,300		15,700		16,200		22,700		15,100		15,500		16,700		16,400		15,200		10,600		8,880		18,100		16,200		22,500		15,100	
Antimony	**SB***	**NP**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Arsenic	**13**	**7.4** (HV)	5.7	J	7.8	J	6.4	J	7.6	J	6.3	J	8.0	J	12.7		8.8	J	5.6	J	7.8	J	7.9	J	5.7	J	7.3	J	**15.8**		9.0	J	7.9	J	7.6	J
Barium	**350**	**81.1** (HV)	61.1		86.8		80.7		73.8		172		134		70.9		72.3		57.0		82.2		64.7		35.8		37.9		103.0		76.0		87.5		78.3	
Beryllium	**7.2**	**0.75** (HV)	0.62	J	0.85	J	1.00	J	0.74	J	0.80	J	1.2	J	1.0	J	0.84	J	0.70	J	0.87	J	0.83	J	0.53	J	ND		1.00	J	0.85	J	0.85	J	0.82	J
Cadmium	**2.5**	**0.22** (HV)	1.30	J	1.40	J	1.30	J	ND		1.20	J	ND		ND		ND		1.40	J	ND		ND		1.20	J	ND		1.40	J	ND		ND		ND	
Calcium	**SB***	**130 - 35,000**	33,900		27,400		8,670		6,550		1,620		3,240		2,380		3,390		1,840		25,000		2,840		28,200		**37,100**		23,500		3,290		2,060		11,500	
Chromium	**30**	**20.9** (HV)	18.8		20.8		26.7		20.7		23.8		24.7		22.0		21.0		18.0		27.7		19.8		13.6		11.4		23.9		22.0		23.8		22.3	
Cobalt	**30* or SB**	**2.5 - 60**	11.3		13.2		13.9		12.4		10.4		14.3		9.2		14.7		11.0		14.1		13.9		9.5		9.0		17.6		15.1		12.2		14.7	
Copper	**50**	**23.4** (HV)	31.3		32.3		27.0		31.7		35.0		27.8		42.5		36.6		33.6		33.9		34.0		25.0		21.9		35.3		36.4		32.9		33.0	
Iron	**2,000* or SB**	**2,000 - 550,000**	29,200		32,800		37,700		29,300		25,100		37,400		40,500		36,000		36,200		34,800		33,700		24,900		20,300		36,800		35,500		33,500		32,200	
Lead	**63**	**72.5**** (HV)	13.9		15.0		29.3		38.4		**148**		24.3		14.3		17.6		19.8		15.3		15.6		10.7		8.5		19.0		16.5		29.9		15.1	
Magnesium	**SB***	**100 - 5,000**	**8,880**		**10,300**		**9,190**		**6,840**		4,750		**5,840**		4,470		**6,300**		**6,860**		**8,410**		**6,310**		**8,790**		**11,000**		**10,800**		**6,540**		**5,530**		**7,160**	
Manganese	**1,600**	**50 - 5,000**	662		828		1,080		680		929		**1,750**		1,010		990		1,120		845		772		964		697		964		894		588		817	
Mercury	**0.18**	**0.24** (HV)	0.035	J	0.027	J	0.036	J	0.043	J	0.065		0.059	J	0.120		0.042	J	0.029	J	0.031	J	0.017	J	0.017	J	0.021	J	0.025	J	0.030	J	0.099		0.025	J
Nickel	**30**	**21.0** (HV)	29.5		29.8		**31.9**		26.0		23.3		**31.4**		27.3		**35.2**		28.4		**32.6**		**30.0**		20.0		17.0		**35.4**		**33.5**		26.0		**31.3**	
Potassium	**SB***	**8,500 - 43,000**	1,420		1,950		987		1,010		949		1,590		1,070		1,330		1,200		1,840		1,540		862		951		2,200		1,600		847		1,590	
Selenium	**3.9**	**1** (HV)	1.8	J	ND		2.5	J	1.8	J	2.0	J	2.3	J	2.3	J	ND		2.0	J	ND		ND		ND		ND		ND		ND		ND		ND		ND	
Silver	**2**	**NP**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Sodium	**SB***	**6,000 - 8,000**	85.6	J	101	J	60.9	J	70.1	J	43.9	J	241	J	128	J	77.7	J	45.1	J	111	J	79.6	J	60.1	J	73.5	J	121	J	98.4	J	47.3	J	104	J
Thallium	**SB***	**NP**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vanadium	**150* or SB**	**1 - 300**	18.7		22.7		28.1		24.1		23.6		27.4		24.4		22.4		18.0		23.7		21.6		14.0		12.0		26.4		23.8		30.0		23.2	
Zinc	**109**	**87.1** (HV)	67.3		76.2		99.2		78.4		**273**		94.2		76.5		80.2		78.8		77.0		78.9		58.4		50.2		92.1		84.9		98.1		75.1	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.

HV = Background levels based on NYSDEC data for metals in Lower Hudson Valley soils (90% upper confidence limit).

* = Guidance level based on NYSDEC TAGM 4046.

** Background lead concentrations in urban settings typically range from 200 to 500 ppm.

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value

ND = Not Detected NP = Not Provided SB = Site Background NA = Not Available

Table 11: Metals in Surface Soil

Results provided in mg/kg (parts per million). Results shown in **bold** exceed guidance levels.

Metal	Guidance Level	Background Concentrations	Sample Identification													
			2HB-01 (0-4")	2HB-02*** (0-4")	2HB-03 (0-4")	2HB-04 (0-4")	2HB-05 (0-4")	2HB-06 (0-4")	2HB-07 (0-4")	2HB-08 (0-4")	2HB-09 (0-4")	2HB-10 (0-4")	2HB-13 (0-4")	2 SED-1	2 SED-2	DUPLICATE (2HB-02)
		Date	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008	2/25/2008
Aluminum	**SB***	**33,000**	15,800	11,600	14,600	10,700	12,900	11,200	14,400	19,300	14,300	15,900	18,000	10,300	11,200	11,200
Antimony	**SB***	**NP**	ND	23.9	ND	ND	ND	ND	ND	ND	ND	ND	2.1 J	ND	ND	11 J
Arsenic	**13**	**7.4** (HV)	7.3	**19.1**	6.6 J	6.8	**15.2**	10.7	6.4	9.8	6.6	5.4 J	7.9	2.9 J	6.3	**15**
Barium	**350**	**81.1** (HV)	83.3	257	81.7	77.6	114	65.9	69.7	112	123	99.6	67.4	32.8	71.3	62.3
Beryllium	**7.2**	**0.75** (HV)	0.87 J	ND	0.83 J	0.61 J	0.62 J	0.68 J	0.61 J	1.1 J	0.72 J	0.82 J	0.98 J	ND	0.6 J	ND
Cadmium	**2.5**	**0.22** (HV)	ND	**3.9** J	ND	ND	**2.9** J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	**SB***	**130 - 35,000**	3,050	**37,200**	8,630	**64,000**	5,370	23,300	5,020	2,980	2,590	2,890	4,330	4,450	2,720	9,510
Chromium	**30**	**20.9** (HV)	20.9	**491**	20.4	18.3	27.1	18.3	17.1	27.2	21.9	23	28.1	14.8	14.8	22.4
Cobalt	**30* or SB**	**2.5 - 60**	13.9	11.2	14.3	10.3	17.7	9.3	12.5	16.9	13.9	13.7	18.4	8.2	9.7	10
Copper	**50**	**23.4** (HV)	38.1	**219**	38	**57.4**	**60.5**	38.8	26.9	41.3	**189**	39.1	**50**	45	23.3	**79.9**
Iron	**2,000* or SB**	**2,000 - 550,000**	31,000	27,100	27,500	21,800	45,100	24,700	28,600	39,000	31,200	29,400	38,400	23,700	25,100	27,300
Lead	**63**	**72.5**** (HV)	53.3	**2,830**	51.6	**69.1**	**205**	**94**	24	25.3	**214**	**88.9**	38.3	61.7	33.4	**316**
Magnesium	**SB***	**100 - 5,000**	**6,060**	**23,400**	**5,500**	**38,400**	**6,480**	**7,200**	**6,090**	**6,920**	**5,960**	**6,850**	**7,330**	**7,080**	**5,170**	**9,910**
Manganese	**1,600**	**50 - 5,000**	1,230	702	991	568	1,130	529	1,060	833	709	400	940	363	623	572
Mercury	**0.18**	**0.24** (HV)	0.084	0.098	0.13	0.075	**0.20**	0.078	0.061	0.041 J	**0.28**	**1.6**	0.091	0.051 J	0.096	0.075
Nickel	**30**	**21.0** (HV)	29.7	**41.9**	28.5	22.7	**36.6**	24.6	26.7	**37.9**	**36.6**	**31.2**	**38.3**	24	22.1	28.4
Potassium	**SB***	**8,500 - 43,000**	1,030	1,110	1,300	1,230	1,010	1,040	937	1,710	1,090	1,010	1,460	670	859	839
Selenium	**3.9**	**1** (HV)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	**2**	**NP**	ND	ND	ND	ND	ND	1.2 J	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	**SB***	**6,000 - 8,000**	42.4 J	109 J	36.4 J	112 J	59.3 J	165 J	67.3 J	76.6 J	61.5 J	91.5 J	42.2 J	55.3 J	98.1 J	43.2 J
Thallium	**SB***	**NP**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.2 J	3.2 J	ND	3.1 J
Vanadium	**150* or SB**	**1 - 300**	34.4	28.6	33.7	28.8	44.2	24.6	17.9	31	24.3	23.8	35.8	15	18.3	22.1
Zinc	**109**	**87.1** (HV)	**139**	**854**	**375**	**394**	**1,930**	**148**	**202**	**127**	**819**	**164**	**136**	**133**	76.8	**472**

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.
HV = Background levels based on NYSDEC data for metals in Lower Hudson Valley soils (90% upper confidence limit).
* = Guidance level based on NYSDEC TAGM 4046.
** Background lead concentrations in urban settings typically range from 200 to 500 ppm.
***Sample with dupilcate analysis
J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value
ND = Not Detected NP = Not Provided SB = Site Background NA = Not Available

Table 12: Metals in Test Pits

Results provided in mg/kg (parts per million). Results shown in **bold** exceed guidance levels.

Metal	Guidance Level	Background Concentrations	Sample Identification																	
			2SST-1 (0-4")		2TP-2 (3')		2TP-2B (4-5')		2TP-8 (1')		2TP-11 (0-6")		2TP-11B (6"-1')		2TP-15 (1-2')		2TP-15B (3.5')	
		Date	1/30/2008		1/30/2008		1/30/2008		1/30/2008		1/30/2008		1/30/2008		1/30/2008		1/30/2008	
Aluminum	**SB***	**33,000**	17,700		9,780		16,600		18,000		3,820		14,100		11,700		17,200	
Antimony	**SB***	**NP**	44.3		ND		2.4	J	ND		18.3		ND		8.8	J	ND	
Arsenic	**13**	**7.4** (HV)	10.7		12.7		12.7		6.9	J	**13.1**	J	9.9		9.6	J	6.3	
Barium	**350**	**81.1** (HV)	95.1		164.0		96.6		94.1		249.0		103.0		78.0		92.0	
Beryllium	**7.2**	**0.75** (HV)	0.81	J	ND		0.84	J	0.84	J	ND		0.68	J	ND		0.81	J
Cadmium	**2.5**	**0.22** (HV)	1.7	J	2.0	J	ND		ND		ND		1.2	J	2.0	J	ND	
Calcium	**SB***	**130 - 35,000**	4,360		21,500		3,070		21,400		389		917		28,400		1,220	
Chromium	**30**	**20.9** (HV)	**32.4**		**61.6**		23.4		21.7		**788.0**		**95.0**		**61.3**		**36.7**	
Cobalt	**30* or SB**	**2.5 - 60**	16.0		9.9		15.3		14.2		2.0	J	9.4		9.5		15.0	
Copper	**50**	**23.4** (HV)	**51.3**		**240**		36.8		31.4		**4,530**		**1,210**		**842**		**181**	
Iron	**2,000* or SB**	**2,000 - 550,000**	47,600		31,200		37,900		31,200		11,900		26,500		47,400		34,700	
Lead	**63**	**72.5**** (HV)	**223**		**256**		35.9		28.6		**531**		**180**		**319**		62.8	
Magnesium	**SB***	**100 - 5,000**	**6,820**		**6,790**		**6,170**		**13,800**		496		4,830		**18,000**		**5,970**	
Manganese	**1,600**	**50 - 5,000**	1,530		974		973		850		34.2		256		719		747	
Mercury	**0.18**	**0.24** (HV)	**0.21**		**0.44**		0.06		0.061		**4.0**		**0.23**		**0.29**		**0.19**	
Nickel	**30**	**21.0** (HV)	**39.8**		**40.9**		**32.1**		**30.2**		25.3		**80.6**		**34.9**		**33.3**	
Potassium	**SB***	**8,500 - 43,000**	1,890		1,240		1,540		2,180		278	J	978		1,130		1,370	
Selenium	**3.9**	**1** (HV)	ND		ND		**13.6**		ND		3.0	J	ND		2.4	J	ND	
Silver	**2**	**NP**	ND		**2.3**	J	ND		ND		**15.0**		1.5	J	0.97	J	ND	
Sodium	**SB***	**6,000 - 8,000**	64.2	J	182.0	J	56.4	J	87.9	J	ND		43.6	J	107.0	J	39.4	J
Thallium	**SB***	**NP**	ND		ND		9.5		ND		ND		2.9	J	ND		3.4	J
Vanadium	**150* or SB**	**1 - 300**	36.2		36.8		25.7		32.0		73.2		21.0		34.5		27.1	
Zinc	**109**	**87.1** (HV)	**508**		**650**		102		81.8		**120**		**706**		**404**		**178**	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.
HV = Background levels based on NYSDEC data for metals in Lower Hudson Valley soils (90% upper confidence limit).
* = Guidance level based on NYSDEC TAGM 4046.
** Background lead concentrations in urban settings typically range from 200 to 500 ppm.
J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
ND = Not Detected NP = Not Provided SB = Site Background NA = Not Available

Table 13: Metals in Groundwater

All results provided in ug/L. Results in **bold** exceed designated guidance levels.

		Sample Identification																													
TAL METAL	Guidance Level	MW-01 (Total)		MW-01 (Dissolved)		MW-02 (Total)		MW-02 (Dissolved)		MW-03 (Total)		MW-03 (Dissolved)		2MW-04** (Total)		2MW-04** (Dissolved)		2MW-05 (Total)		2MW-05 (Dissolved)		2MW-06 (Total)		2MW-06 (Dissolved)		2SW-1 (Total)		2SW-1 (Dissolved)		2SW-2 (Total)		2SW-2 (Dissolved)		DUPLICATE (2MW-04)	
	Date	2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008		2/28/2008	
Aluminum	**100**	**1,100**		NA		**2,700**		NA		**1,800**		NA		**420**	J	NA		**132,000**		**130**	J	**1,100**		NA		**110**	J	NA		**100**	J	NA		**940**	
Antimony	**3**	ND		NA		ND		NA		ND		NA		ND		NA		ND		ND		ND		NA		ND		NA		ND		NA		ND	
Arsenic	**25**	6	J	NA		ND		NA		ND		NA		ND		NA		**110**		ND		ND		NA		ND		NA		ND		NA		ND	
Barium	**1,000**	130		NA		36		NA		66		NA		120		NA		860		73		48		NA		14		NA		14		NA		120	
Beryllium	**3**	ND		NA		ND		NA		ND		NA		ND		NA		**8**		ND		ND		NA		ND		NA		ND		NA		ND	
Cadmium	**5**	ND		NA		ND		NA		ND		NA		ND		NA		**11**		ND		ND		NA		ND		NA		ND		NA		ND	
Calcium	**NE**	111,000		NA		42,800		NA		88,200		NA		239,000		NA		303,000		140,000		97,700		NA		36,100		NA		34,600		NA		234,000	
Chromium	**50**	22		NA		14		NA		6	J	NA		11		NA		**280**		ND		35		NA		ND		NA		ND		NA		22	
Cobalt	**5**	3	J	NA		4	J	NA		ND		NA		**8**	J	NA		**220**		ND		3	J	NA		ND		NA		ND		NA		**8**	J
Copper	**200**	14		NA		22		NA		20		NA		9	J	NA		**610**		ND		11		NA		ND		NA		ND		NA		7	J
Iron	**300***	**2,600**		NA		**5,900**		NA		**3,100**		NA		**920**		NA		**305,000**		ND		**2,400**		NA		230		NA		230		NA		**1,900**	
Lead	**25**	**25**		9	J	22		ND		**36**		ND		11		6	J	**220**		ND		**39**		ND		13		ND		15		ND		10	
Magnesium	**35,000**	**41,500**		NA		9,000		NA		**63,400**		NA		**49,600**		NA		**133,000**		**49,700**		25,300		NA		10,900		NA		10,800		NA		**48,500**	
Manganese	**300***	**680**		NA		100		NA		26		NA		150		NA		**22,100**		**1,800**		110		NA		41		NA		40		NA		160	
Mercury	**0.7**	ND		NA		ND		NA		ND		NA		ND		NA		ND		0.37		ND		NA		ND		NA		ND		NA		ND	
Nickel	**100**	18		NA		11		NA		7	J	NA		9	J	NA		**380**		11		23		NA		ND		NA		ND		NA		16	
Potassium	**NE**	2,000		NA		1,700		NA		2,300		NA		1,700		NA		15,400		3,800		2,300		NA		1,200		NA		1,100		NA		1,700	
Selenium	**10**	ND		NA		ND		NA		ND		NA		ND		NA		ND		ND		ND		NA		ND		NA		ND		NA		ND	
Silver	**50**	ND		NA		ND		NA		ND		NA		2	J	NA		ND		ND		ND		NA		ND		NA		ND		NA		2	J
Sodium	**20,000**	**30,300**		NA		4,700		NA		**30,000**		NA		**111,000**		NA		**37,000**		**31,800**		**20,200**		NA		**43,500**		NA		**44,700**		NA		**107,000**	
Thallium	**0.5**	ND		NA		ND		NA		ND		NA		ND		NA		ND		ND		ND		NA		ND		NA		ND		NA		ND	
Vanadium	**14**	2	J	NA		9		NA		4	J	NA		ND		NA		**170**		ND		3	J	NA		ND		NA		1	J	NA		2	J
Zinc	**2,000**	ND		NA		38	J	NA		21	J	NA		19	J	NA		920		ND		14	J	NA		ND		NA		ND		NA		ND	

Notes:

*Guidance level for total of iron and manganese is 500 ug/L.

** Sample with duplicate analysis

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

ND = Not Detected NE = Not Established NA = Not Analyzed

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Table 14: PCBs in Soil Borings

Results provided in µg/kg (parts per billion).

PCB Compound (USEPA Method 8082)	Sample Identification																			
	2B-07 (3-4')		2B-08 (5-6')		2B-09 (6-7')		2B-10 (9-10')		2B-11 (5-7')		2B-12 (15-17')		2B-13 (23-25')		2B14 (22-24')		2B-15 (4-5')		DUPLICATE (2B-11, 5-7')	
Date	1/31/2008		1/31/2008		2/5/2008		2/5/2008		2/5/2008		2/5/2008		2/5/2008		2/6/2008		2/6/2008		2/5/2008	
PCB 1016	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1221	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1232	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1242	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1248	5.6	J	ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1254	3.6	J	ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB, Total	9		ND		ND		ND		ND		ND		ND		ND		ND		ND	

Notes:

Guidance level = 100 ppb, based on BCP unrestricted SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

ND = Not Detected

Table 15: PCBs in Surface Soil

Results provided in µg/kg (parts per billion).

PCB Compound (USEPA Method 8082)	Sample Identification																																	
	2HB-01 (0-4")		2HB-02* (0-4")		2HB-03 (0-4")		2HB-04 (0-4")		2HB-05 (0-4")		2HB-06 (0-4")		2HB-07 (0-4")		2HB-08 (0-4")		2HB-09 (0-4")		2HB-10 (0-4")		2HB-11 (0-4")		2HB-12 (0-4")		2HB-13 (0-4")		2 SED-1		2 SED-2		DUPLICATE (2HB-02)	
Date	2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008	
PCB 1016	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1221	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1232	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1242	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1248	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1254	ND		ND		ND		ND		ND		3.6	J	ND		9.4	J	4.9	J	13	J	3.6	J	100		5.1	J	4.8	J	ND		ND		ND	
PCB 1260	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
PCB-1268	40		ND		16	J	100		35		10	J	ND		ND		9.6	J	12	J	ND		**120**		71		10	J	ND		**150**	J		
PCB, Total	40		ND		16		100		35		14		ND		9		15		25		4		**220**		76		15		ND		**150**			

Notes:

Guidance level = 100 ppb, based on BCP unrestricted SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

* Sample with Duplicate analysis
ND = Not Detected

Table 16: PCBs in Test Pits

Results provided in µg/kg (parts per billion).

PCB Compound (USEPA Method 8082)	Sample Identification															
	2SST-1 (0-4")		2TP-2 (3')		2TP-2B (4-5')		2TP-8 (1')		2TP-11 (0-6")		2TP-11 B (6"-1')		2TP-15 (1-2')		2TP-15B (3.5')	
Date	**1/30/2008**		**1/30/2008**		**1/30/2008**		**1/30/2008**		**1/30/2008**		**1/30/2008**		**1/30/2008**		**1/30/2008**	
PCB 1016	ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1221	ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1232	ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1242	ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1248	ND		ND		ND		ND		ND		ND		ND		ND	
PCB 1254	53		**120**		ND		ND		**7,500**		ND		**3,400**		ND	
PCB 1260	ND		87		ND		ND		ND		ND		ND		ND	
PCB 1268	NA		NA		9	J	NA		NA		**1,600**		NA		**1,000**	
PCB, Total	53		**207**		9		ND		**7,500**		**1,600**		**3,400**		**1,000**	

Notes:

Guidance level = 100 ppb, based on BCP unrestricted SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

ND = Not Detected NA = Not Analyzed

Table 17: Pesticides in Surface Soils

Results provided in μg/kg (parts per billion). Results shown in **bold** exceed guidance levels.

Compound (USEPA Method 8081)	Guidance Level	Sample Identification																													
		2HB-01 (0-4")		2HB-02 (0-4")		2HB-03 (0-4")		2HB-04 (0-4")		2HB-05 (0-4")		2HB-06 (0-4")		2HB-07 (0-4")		2HB-08 (0-4")		2HB-09 (0-4")		2HB-10 (0-4")		2HB-11 (0-4")		2HB-12 (0-4")		2 SED-1		DUPLICATE (2HB-02)	
	Date	2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008		2/25/2008	
4,4'-DDD	**3.3**	ND		ND		ND		ND		**49**		**11**		ND		1.8	J	2.6	J	1.5	J	**15**		**13**		**3.5**	J	ND	
4,4'-DDE	**3.3**	**66**		ND		**58**		**7.5**		**5.8**	J	**4.9**		ND		0.73	J	2.6	J	1.3	J	ND		**11**		1.4	J	ND	
4,4'-DDT	**3.3**	**80**		**530**		**120**		**25**		**100**		**44**		ND		**21**		**14**		1	J	**31**		**26**		2.7	J	**90**	
Aldrin	**5**	ND		ND		ND		4.2		ND		ND		ND		ND		ND		ND		ND		2.4	J	ND		**6.7**	J
alpha-BHC	**20**	0.65	J	ND		3.6	J	ND		ND		2.7		ND		ND		ND		ND		0.97	J	ND		ND		2.4	J
alpha-Chlordane	**94**	7.2		ND		ND		ND		ND		ND		ND		ND		0.82	J	ND		ND		ND		ND		ND	
beta-BHC	**36**	ND		ND		3.6	J	8.2		ND		ND		ND		ND		ND		ND		0.62	J	ND		ND		2.4	J
delta-BHC	**40**	0.14	J	ND		0.92	J	ND		ND		1.2	J	ND		0.26	J	0.35	J	ND		0.5	J	2.1	J	ND		ND	
Dieldrin	**5**	2.9	J	**150**	J	**6.2**	J	**81**		**200**		3.5	J	ND		3.6	J	1.1	J	3.8	J	1.6	J	**8.4**		**7.8**		**51**	
Endosulfan I	**2,400**	ND		ND		ND		ND		ND		4.7		ND		0.42	J	ND		ND		ND		2.1	J	ND		ND	
Endosulfan II	**2,400**	0.34	J	ND		ND		1.3	J	ND		3.9	J	ND		ND		0.39	J	ND		1.1	J	4.4	J	ND		11	J
Endosulfan sulfate	**2,400**	ND		ND		ND		ND		ND		7.4		ND		ND		0.47	J	0.21	J	7.1		4.8	J	ND		ND	
Endrin	**14**	ND		ND		ND		ND		ND		7.2		ND		ND		ND		ND		ND		ND		ND		**28**	
Endrin aldehyde	**NE**	ND		39	J	ND		ND		ND		22		ND		ND		ND		ND		ND		ND		ND		2.5	J
Endrin ketone	**NE**	ND		ND		ND		1.8	J	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
gamma-BHC (Lindane)	**100**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
gamma-Chlordane	**14,000***	7.1		ND		2.2	J	ND		ND		1.6	J	ND		1.5	J	1.2	J	0.17	J	2.6		7.4		2.1	J	ND	
Heptachlor	**42**	1.2	J	25	J	ND		4.9		ND		1.7	J	ND		0.54	J	ND		ND		ND		ND		ND		ND	
Heptachlor Epoxide	**20***	2.7		ND		6.6	J	0.95	J	ND		ND		ND		0.75	J	ND		ND		1.8	J	1.2	J	0.4	J	1.5	J
Methoxychlor	**NE**	ND		ND		260		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Toxaphene	**NE**	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	

Notes:

Guidance levels based on BCP Unrestricted Use SCOs, 6 NYCRR Part 375, Table 375-6.8(b), except as noted.
*Guidance levels based on NYSDEC TAGM 4046.

ND = Not Detected NE = Not Established

Table 18: PCBs in Groundwater

Results provided in µg/kg (parts per billion).

PCB Compound (USEPA Method 8082)	Sample Identification								
	MW-01	MW-02	MW-03	2MW-04*	2MW-05	2MW-06	2SW-1	2SW-2	DUPLICATE (2MW-04)
Date	2/28/2008	2/28/2008	2/28/2008	2/28/2008	2/28/2008	2/28/2008	2/28/2008	2/28/2008	2/28/2008
PCB 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1248	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1254	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCB, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

Guidance level = 0.09 ppb (Total PCB), based on NYSDEC TOGS 1.1.1

* Sample with duplicate analysis

ND = Not Detected

FISH AND WILDLIFE IMPACT ANALYSIS
FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX B

SITE FAUNA

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TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Mammals							
Short-tailed shrew	*Blarina brevicauda*	-	R				
Beaver	*Castor canadensis*	-	I				
Opossum	*Didelphis virginiana*	-	M				
Big brown bat	*Eptesicus fuscus*	-	M				
Woodchuck	*Marmota monax*	+	R				
Striped skunk	*Mephitis mephitis*	-	R				
House mouse	*Mus musculus*	-	R				
Little brown bat	*Myotis lucifugus*	+	R				
White tailed deer	*Odocoileus virginianus*	+	R				
White-footed mouse	*Peromyscus leucopus*	-	R				
Raccoon	*Procyon lotor*	+	R				
Norway rat	*Rattus norvegicus*	+	R				
Gray squirrel	*Sciurus carolinensis*	+	R				
Eastern cottontail	*Sylvilagus floridanus*	+	R				
Eastern chipmunk	*Tamias striatus*	+	R				
Red fox	*Vulpes fulva*	-	I				
Reptiles							
Lizards and Snakes							
Fence lizard	*Sceloporus undulatus*	-	O	+			
Five-lined skink	*Eumeces fasciatus*	-	O	+			
Northern water snake	*Nerodia sipedon*	+	R	+			
Brown snake	*Storeria dekayi*	-	O	+			
Redbelly snake	*Storeria occiptomaculata*	-	O	+			
Common garter snake	*Thamnophis sirtalis*	+	R	+			
Eastern hognose snake	*Heterodon platirhinos*	-	O	+			
Eastern worm snake	*Carphophis amoenus*	-	O	+			
Black racer	*Coluber constrictor*	-	O	+			
Ringneck snake	*Diadophis punctatus*	-	O	+			
Rat snake	*Elaphe alleganiensis*	-	O	+			

TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Milk snake	*Lampropeltis triangulum*	-	O	+			
Copperhead	*Agkistrodon contortrix*	-	O	+			
Timber rattlesnake	*Crotalus horridus*	-	O	+			
Turtles							
Slider turtle	*Trachemys scripta*	-	O	+			
Common snapping turtle	*Chelydra serpentina*	-	O	+			
Common musk turtle	*Sternotherus odoratus*	-	O	+			
Spotted turtle	*Clemmys guttata*	-	O	+			
Wood turtle	*Glyptemys insculpta*	-	O	+			
Eastern box turtle	*Terrapene carolina*	-	O	+			
Common map turtle	*Graptemys geographica*	-	O	+			
Painted turtle	*Chrysemys picta*	-	O	+			
Amphibians							
Frogs and Toads							
American toad	*Bufo americanus*	-	I	+			
Fowler's toad	*Bufo fowleri*	-	I	+			
Gray treefrog	*Hyla versicolor*	-	I	+			
Spring peeper	*Pseudacris crucifer*	-	O	+			
Bullfrog	*Rana catesbeiana*	-	O	+			
Green frog	*Rana clamitans*	-	M	+			
Wood frog	*Rana sylvatica*	-	O	+			
Northern leopard frog	*Rana pipiens*	-	O	+			
Pickerel frog	*Rana palustris*	-	O	+			
Salamanders							
Marbled salamander	*Ambystoma opacum*	-	O	+			
Jefferson salamander complex	*Ambystoma jeffersonianum x laterale*	-	O	+			
Blue-spotted salamander complex	*Ambystoma laterale x jeffersonianum*	-	O	+			
Spotted salamander	*Ambystoma maculatum*	-	O	+			
Red-spotted newt	*Notophthalmus viridescens*	-	O	+			
Northern redback salamander	*Plethodon cinereus*	-	I	+			
Northern slimy salamander	*Plethodon glutinosus*	-	O	+			

TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Four-toed salamander	*Hemidactylium scutatum*	-	O	+			
Northern two-lined salamander	*Eurycea bislineata*	-	O	+			
Birds[4]							
Sharp-shinned hawk	*Accipiter striatus*	-	I		+	-	-
Spotted sandpiper	*Actitis macularia*	+	I		-	+	-
Red-winged blackbird	*Agelaius phoeniceus*	+	M		-	-	+
Wood duck	*Aix sponsa*	-	I		-	-	+
Mallard	*Anas platyrhynchos*	+	I		-	-	+
Ruby-throated hummingbird	*Archilochus colubris*	-	I		-	-	+
Great blue heron	*Ardea herodias*	+	I		-	+	-
Tufted titmouse	*Baeolophus bicolor*	+	M		-	-	+
Cedar waxwing	*Bombycilla cedrorum*	-	I		-	+	-
Canada goose	*Branta canadensis*	-	I		-	-	+
Great horned owl	*Bubo virginianus*	-	I		+	-	-
Red-tailed hawk	*Buteo jamaicensis*	-	I		-	-	+
Green heron	*Butorides virescens*	+	M		+	-	-
Northern cardinal	*Cardinalis cardinalis*	+	R		-	-	+
American goldfinch	*Carduelis tristis*	+	M		-	+	-
House finch	*Carpodacus mexicanus*	-	M		-	-	+
Turkey vulture	*Cathartes aura*	+	I		-	+	-
Veery	*Catharus fuscescens*	+	I		-	+	-
Belted kingfisher	*Ceryle alcyon*	-	I		-	+	-
Chimney swift	*Chaetura pelagica*	-	M		-	-	+
Black-billed cuckoo	*Coccyzus erythropthalmus*	-	O		+	-	-
Northern flicker	*Colaptes auratus*	+	I		-	+	-
Rock pigeon	*Columba livia*	+	M		-	-	+
Eastern wood-pewee	*Contopus virens*	-	O		-	+	-
American crow	*Corvus brachyrhynchos*	+	M		-	-	+
Blue jay	*Cyanocitta cristata*	+	M		-	-	+
Black-throated blue warbler	*Dendroica caerulescens*	-	O		+	-	-
Prairie warbler	*Dendroica discolor*	-	O		-	+	-
Chestnut-sided warbler	*Dendroica pensylvanica*	-	O		+	-	-

TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Yellow warbler	*Dendroica petechia*	+	I		-	-	+
Black-throated green warbler	*Dendroica virens*	-	O		-	+	-
Pileated woodpecker	*Dryocopus pileatus*	-	I		-	-	+
Gray catbird	*Dumetella carolinensis*	+	R		-	-	+
Alder flycatcher	*Empidonax alnorum*	-	O		-	+	-
Common yellowthroat	*Geothlypis trichas*	+	R		-	+	-
Bald eagle	*Haliaeetus leucocephalus*	-	I		+	-	-
Worm-eating warbler	*Helmitheros vermivorus*	-	O		-	+	-
Barn Swallow	*Hirundo rustica*	+	R		-	-	+
Wood thrush	*Hylocichla mustelina*	+	R		-	+	-
Baltimore oriole	*Icterus galbula*	+	M		-	-	+
Eastern screech-owl	*Megascops asio*	-	I		-	+	-
Red-bellied woodpecker	*Melanerpes carolinus*	+	M		-	-	+
Wild turkey	*Meleagris gallopavo*	-	O		-	-	+
Song sparrow	*Melospiza melodia*	+	M		-	+	-
Common merganser	*Mergus merganser*	-	I		-	+	-
Northern mockingbird	*Mimus polyglottos*	+	M		-	-	+
Black-and-white warbler	*Mniotilta varia*	-	O		-	+	-
Brown-headed cowbird	*Molothrus ater*	+	R		-	-	+
Great crested flycatcher	*Myiarchus crinitus*	+	I		-	+	-
Osprey	*Pandion haliaetus*	-	I		-	+	-
House sparrow	*Passer domesticus*	+	R		-	-	+
Savannah sparrow	*Passerculus sandwichensis*	-	O		+	-	-
Indigo bunting	*Passerina cyanea*	+	M		-	+	-
Rose-breasted grosbeak	*Pheucticus ludovicianus*	-	I		+	-	-
Downy woodpecker	*Picoides pubescens*	-	I		-	-	+
Hairy woodpecker	*Picoides villosus*	-	I		-	-	+
Eastern towhee	*Pipilo erythrophthalmus*	-	O		-	+	-
Scarlet tanager	*Piranga olivacea*	-	O		-	+	-
Black-capped chickadee	*Poecile atricapillus*	-	I		-	+	-
Common grackle	*Quiscalus quiscula*	-	R		-	-	+
Eastern phoebe	*Sayornis phoebe*	+	M		-	-	+

TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Ovenbird	*Seiurus aurocapilla*	-	O		-	+	-
Louisiana waterthrush	*Seiurus motacilla*	-	I		-	+	-
American redstart	*Setophaga ruticilla*	+	I		-	+	-
Eastern bluebird	*Sialia sialis*	-	O		-	-	+
White-breasted nuthatch	*Sitta carolinensis*	-	O		-	-	+
Yellow-bellied sapsucker	*Sphyrapicus varius*	-	I		-	-	+
Chipping sparrow	*Spizella passerina*	+	M		-	-	+
Field sparrow	*Spizella pusilla*	-	O		-	+	-
Northern rough-winged swallow	*Stelgidopteryx serripennis*	+	M		+	-	-
Barred owl	*Strix varia*	-	O		-	+	-
Eastern meadowlark	*Sturnella magna*	-	O		+	-	-
European starling	*Sturnus vulgaris*	+	R		+	-	-
Carolina wren	*Thryothorus ludovicianus*	-	I		-	+	-
Brown thrasher	*Toxostoma rufum*	-	O		+	-	-
House wren	*Troglodytes aedon*	+	M		-	-	+
American robin	*Turdus migratorius*	+	R		-	-	+
Eastern kingbird	*Tyrannus tyrannus*	-	I		-	+	-
Blue-winged warbler	*Vermivora pinus*	+	O		-	+	-
Red-eyed vireo	*Vireo olivaceus*	-	I		-	+	-
Canada warbler	*Wilsonia canadensis*	-	O		+	-	-
Hooded warbler	*Wilsonia citrina*	-	O		+	-	-
Mourning dove	*Zenaida macroura*	-	R		-	-	+
Fish[5]							
American eel	*Anguilla rostrata*	+	R	+			
Carp	*Cyprinus carpio*	+	R	-			
Longnose dace	*Semotilus corporalis*	-	R	+			
White sucker	*Catostomus commersoni*	-	R	+			
Rock bass	*Ambloplites rupestris*	-	R	+			
Redbreast sunfish	*Lepomis auritus*	-	R	+			
Pumpkinseed	*Lepomis gibbosus*	-	R	+			
Bluegill	*Lepomis macrochirus*	-	R	+			

TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Smallmouth bass	*Micropterus dolomieui*	-	M	+			
Largemouth bass	*Micropterus salmoides*	+	R	+			
Tessellated darter	*Etheostoma olmstedi*	-	M	+			
Yellow perch	*Perca flavescens*	-	R	+			
Goldfish	*Carassius auratus*	-	R	+			
Striped bass	*Morone saxatilis*	-	M	+			
Aquatic Macroinvertebrates[5]							
Blue crab	*Callinectes sapidus*	+	M	-			
Flatworm	*Dugesia tigrina*	+	R	+			
Snail	*Amnicola limosa*	-	M	+			
Snail	*Fossaria* sp.	-	M	+			
Snail	*Physella* sp.	+	R	+			
Snail	*Gyraulis parvus*	-	M	+			
Amphipod	*Gammarus fasciatus*	+	R	+			
Isopod	*Asellus communis*	-	R	+			
Caddisfly	*Cheumatopsyche* sp.	-	R	+			
Caddisfly	*Hydropsyche* sp.	-	R	+			
Caddisfly	*Hydroptila* sp.	-	R	+			
Caddisfly	*Mystacides* sp.	-	R	+			
Beetle	*Stenelmus* sp.	-	M	+			
Midge	Unidentified Chironomid	-	R	+			

TABLE 1
SITE FAUNA

SPECIES		OBSERVED (+ / -)	POTENTIAL TO UTILIZE SITE[1]	REPORTED[2]	BREEDING STATUS[3] (BIRDS ONLY)		
COMMON NAME	SCIENTIFIC NAME				PO	PR	C
Terrestrial Macroinvertebrates							
Clouded sulfur	*Colias* sp.	+	R				
Cabbage butterflies	*Pieris* sp.	+	R				
Wasps	Order: Hymenoptera	+	R				
Bees	Order: Hymenoptera	+	R				
Earthworms	Class: Oligochaeta	+	R				
Pill bugs	*Armadillium* sp.	+	R				
Grasshoppers	Order: Orthoptera	+	R				

1 **Potential to occur**: **R** = Regularly, **M** = Moderately, **I** = Infrequently, **O** = Only rarely, if at all

2 **Reported***:* Reptile and amphibian records reported by the NYSDEC New York State Amphibian and Reptile Atlas for USGS Quadrangle West Point, NY.

3 **Status:** NYSDEC Breeding Bird Atlas Behavior Codes recorded for birds observed in the Breeding Bird Atlas survey blocks, which include the project site and adjacent areas. **PO** = Possible breeder, **PR** = Probable breeder, **C** = Confirmed breeder

4 **Birds:** Species recorded in NYSDEC Breeding Bird Atlas Block 5859C (2000-2005), which encompasses the project site. Breeding Bird Atlas data for the project site also include the 1 These data are included in Appendix E.

5 **Fish & Aquatic Macroinvertebrates**: Species recorded by Schmidt, R.E. and E. Kiviat. 1986. Environmental Quality of the Fishkill Creek Drainage: A Hudson River Tributary. Hudsonia, Ltd. Annandale, NY. 60pp; and/or, Stevens *et al.* 1994. Fish sampled above Tioranda Bridge, Fishkill Creek.

FISH AND WILDLIFE IMPACT ANALYSIS FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX C

SITE FLORA

MDRA MATTHEW D. RUDIKOFF ASSOCIATES, INC.

PLANNING
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SITE FLORA
Observed Flora on the Project Site

FLOWERING PLANTS

Tree, Shrub, and Vine Species

Ash-leaf maple	*Acer negundo*
Norway maple	*Acer platanoides*
Silver maple	*Acer saccharinum*
Tree-of-heaven	*Ailanthus altissima*
Oriental bittersweet	*Celastrus orbiculata*
Hackberry	*Celtis occidentalis*
Silky dogwood	*Cornus amomum*
White ash	*Fraxinus americana*
Red ash	*Fraxinus pennsylvanica*
Walnut	*Juglans* sp
Japanese honeysuckle	*Lonicera japonica*
Moonseed vine	*Menispermum canadense*
White mulberry	*Morus alba*
Virginia creeper	*Parthenocissus quinquefolia*
Empress tree	*Paulownia tomentosa*
Sycamore	*Plantanus occidentalis*
Water smartweed	*Polygonum amphibium*
Eastern cottonwood	*Populus deltoides*
Big tooth aspen	*Populus grandidentata*
Mazzard cherry	*Prunus avium*
Black cherry	*Prunus serotina*
Pin oak	*Quercus palustris*
Northern red oak	*Quercus rubra*
Black oak	*Quercus velutina*
Smooth buckthorn	*Rhamnus cathartica*
Staghorn sumac	*Rhus typhina*
Black locust	*Robinia pseudo-acacia*

Tree, Shrub, and Vine Species (cont.)

Multiflora rose	*Rosa multiflora*
Wineberry	*Rubus phoenicolasius*
Blackberry	*Rubus* sp.
Black elderberry	*Sambucus canadensis*
Bebb willow	*Salix bebbiana*
Pussywillow	*Salix discolor*
Black willow	*Salix nigra*
American basswood	*Tilia americana*
American elm	*Ulmus americana*
Red elm	*Ulmus rubra*
Grape	*Vitis* sp.

Herbaceous Species

Yarrow	*Achillea millefolium*
Garlic mustard	*Alliaria petiolata*
Onion	*Allium* sp.
Common ragweed	*Ambrosia artemisiifolia*
Sweet vernal grass	*Anthoxanthum odoratum*
Arrow arum	*Peltantra virginica*
Common mugwort	*Artemisia vulgaris*
Common milkweed	*Asclepias syriaca*
Japanese brome grass	*Bromus japonicus*
Crested sedge	*Carex cristatella*
Sedges	*Carex* spp.
Rosy sedge	*Carex rosea*
Fox sedge	*Carex vulpinoidea*
Greater celandine	*Chelidonium majus*
Common pigweed	*Chenopodium album*
Field daisy	*Chrysanthemum leucanthemum*
Chicory	*Cichorium intybus*
Enchanter's nightshade	*Circaea lutetiana*
Common thistle	*Circium vulgare*
Black swallow-wort	*Cynanchum louiseae*
Yellow flat sedge	*Cyperus strigosus*

Herbaceous Species (Cont.)

Orchard grass	*Dactylis glomerata*
Queen Anne's lace	*Daucus carota*
Deptford pink	*Dianthus armeria*
Mock strawberry	*Duchesnea indica*
Lovegrass	*Eragrostis minor*
Daisy fleabane	*Erigeron annuus*
Tall thoroughwort	*Eupatorium altissimum*
Wartweed	*Euphorbia maculata*
White wood aster	*Eurybia divaricata*
Meadow fescue	*Festuca elatior*
Fescue	*Festuca* sp.
Rough bedstraw	*Galium asprellum*
White cleaver	*Galium mollugo*
Beggar lice	*Hackelia virginiana*
King devil	*Hieracium caespitosum*
Japanese hops	*Humulus japonicus*
Path rush	*Juncus tenuis*
Spotted jewelweed	*Impatiens capensis*
Nipplewort	*Lapsana communis*
Wild lettuce	*Latuca* sp.
Bird's foot trefoil	*Lotus corniculatus*
Purple loosetrife	*Lythrum salicaria*
Black medick	*Medicago lupulina*
Sweet yellow clover	*Melilotus officinalis*
Japanese stiltgrass	*Microstigeum vimineum*
Daffodil	*Narcissus* sp.
Common wood sorrel	*Oxalis acetasella*
Sorrel	*Oxalis* sp.
Virginia creeper	*Parthenocissus quinquefolia*
Common reed	*Phragmites australis*
Pokeweed	*Phytolacea americana*

Herbaceous Species (Cont.)

Buckhorn plantain	*Plantago lanceolata*
Common plantain	*Plantago major*
Bluegrass	*Poa* sp
Knotweeds	*Polygonum* spp.
Johnny jumpseed	*Polygonum virginianum*
Sulfer cinquefoil	*Potentilla recta*
Common cinquefoil	*Potentilla simplex*
Heal-all	*Prunella vulgaris*
Field buttercup	*Ranunculus acris*
Black raspberry	*Rubus occidentalis*
Dwarf red blackberry	*Rubus pubescens*
Curly dock	*Rumex crispus*
Foxtail grass	*Setaria* sp.
Canada goldenrod	*Solidago canadensis*
Early goldenrod	*Solidago juncea*
Giant goldenrod	*Solidago gigantea*
Common chickweed	*Stellaria media*
Common dandelion	*Taraxacum officinale*
Poison ivy	*Toxicodendron radicans*
Tall redtop	*Triodia flava*
Common mullein	*Verbascum thapsus*
Purple flowerweed	*Veronica officinalis*
Violet	*Viola* sp.

NON-FLOWERING PLANTS

Conifers

Eastern red cedar	*Juniperus virginiana*
Japanese yew	*Taxus cuspidata*
Arborvitae	*Thuja occidentalis*

Ferns

Hayscented fern	*Dennstaedtia punctilobula*

FISH AND WILDLIFE IMPACT ANALYSIS
FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX D

ADJACENT OFF-SITE FLORA & FAUNA

D1 ADJACENT OFF-SITE FLORA

D2 ADJACENT OFF-SITE FAUNA

D3 NYS DEC BREEDING BIRD ATLAS RECORDS

MDRA

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CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX D

D1 ADJACENT OFF-SITE FLORA

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ADJACENT OFF-SITE FLORA

Plant species provided below were either observed or reported for the Madame Brett Park or within the vicinity of Madame Brett Park, which is located adjacent to the Beacon Terminal project site.

FLOWERING PLANTS

Tree, Shrub, and Vine Species

Ash-leaf maple	*(Acer negundo)*
Norway maple	*(Acer platanoides)*
Sycamore maple	*(Acer pseudoplatanus)*
Red maple	*(Acer rubrum)*
Silver maple	*(Acer saccharinum)*
Sugar maple	*(Acer saccharum)*
Tree-of-heaven	*(Ailanthus altissima)*
Speckled alder	*(Alnus rugosa)*
False indigo	*(Amorpha fruticosa)*
Japanese barberry	*(Berberis thunbergii)*
Gray birch	*(Betula populifolia)*
Hedge bindweed	*(Calystegia sepium)*
Trumpet creeper	*(Campsis radicans)*
Mockernut hickory	*(Carya tomentosa)*
Hornbeam	*(Carpinus caroliniana)*
Oriental bittersweet	*(Celastrus orbiculata)*
Hackberry	*(Celtis occidentalis)*
Silky dogwood	*(Cornus amomum)*
Flowering dogwood	*(Cornus florida)*
Wild yam	*(Dioscorea villosa)*
American beech	*(Fagus grandifolia)*
White ash	*(Fraxinus americana)*
Red ash	*(Fraxinus pennsylvanica)*
Honey locust	*(Gleditsia triacanthos)*
Witch hazel	*(Hamamelis virginiana)*
Walnut	*(Juglans sp)*
Privet	*(Ligustrum sp)*
Spicebush	*(Lindera benzoin)*
Tulip tree	*(Liriodendron tulipfera)*
Bell's honeysuckle	*(Lonicera x bella)*

Tree, Shrub, and Vine Species (cont.)

Japanese honeysuckle	*(Lonicera japonica)*
Fly honeysuckle	*(Lonicera morrowii)*
Tartarian honeysuckly	*(Lonicera tatarica)*
Moonseed	*(Menispermum canadense)*
White mulberry	*(Morus alba)*
Hop hornbeam	*(Ostrya virginiana)*
Boston ivy	*(Parthenocissus tricuspidata)*
Virginia creeper	*(Parthenocissus quinquefolia)*
Sycamore	*(Plantanus occidentalis)*
Eastern cottonwood	*(Populus deltoides)*
Sweet cherry	*(Prunus avium)*
Black cherry	*(Prunus serotina)*
Crabapple	*(Pyrus sp)*
White oak	*(Quercus alba)*
Pin oak	*(Quercus palustris)*
Chestnut oak	*(Quercus prinus)*
Red oak	*(Quercus rubra)*
Black oak	*(Quercus velutina)*
Smooth buckthorn	*(Rhamnus cathartica)*
Staghorn sumac	*(Rhus typhina)*
Currant	*(Ribes sp)*
Black locust	*(Robinia pseudo-acacia)*
Multiflora rose	*(Rosa multiflora)*
Common blackberry	*(Rubus allegheniensis)*
Black raspberry	*(Rubus occidentalis)*
Dewberry	*(Rubus sp)*
Wineberry	*(Rubus phoenicolasius)*
Weeping willow	*(Salix babylonica)*
Black willow	*(Salix nigra)*
Willow	*(Salix sp)*
Red elderberry	*(Sambucus racemosa)*
Sassafras	*(Sassafras albidum)*
Linden	*(Tilia americana)*
American elm	*(Ulmus americana)*
Red elm	*(Ulmus rubra)*
Maple-leaf viburnum	*(Viburnum acerifolium)*
Black-haw	*(Viburnum prunifolium)*
Grape	*(Vitis sp)*

Herbaceous Species

Yarrow	*(Achillea millefolium)*
Sweetflag	*(Acorus calamus)*
White snake root	*(Ageratina altissima)*
Garlic mustard	*(Alliaria petiolata)*
Onion	*(Allium sp)*
Field garlic	*(Allium vineale)*
Water hemp	*(Amaranthus cannabinus)*
Common ragweed	*(Ambrosia artemisiifolia)*
Hog peanut	*(Amphicarpaea bracteata)*
Dogbane	*(Apocynum sp)*
Great burdock	*(Arctium lappa)*
Jack-in-the-pulpit	*(Arisaema triphyllum)*
Common wormwood or Common mugwort	*(Artemisia vulgaris)*
Common milkweed	*(Asclepias syriaca)*
Yellow rocket	*(Barbarea vulgaris)*
Beggar-ticks	*(Bidens frondosa)*
False nettle	*(Boehmeria cylindrica)*
Downy chess	*(Bromus tectorum)*
Pennsylvania bittercress	*(Cardamine pensylvanica)*
Bittercress	*(Cardamine sp)*
Sedges	*(Carex spp)*
Spotted knapweed	*(Centaurea maculosa)*
Greater celandine	*(Chelidonium majus)*
Field daisy	*(Chrysanthemum leucanthemum)*
Chickory	*(Cichorium intybus)*
Enchanter's nightshade	*(Circaea lutetiana)*
Common thistle	*(Circium vulgare)*
Asiatic dayflower	*(Commelina communis)*
Crown vetch	*(Coronilla varia)*
Black swallow-wort	*(Cynanchum louiseae)*
Yellow straw sedge	*(Cyperus strigosus)*
Orchard grass	*(Dactylis glomerata)*
Jimsonweed	*(Datura stramonium)*
Queen Anne's lace	*(Daucus carota)*
Sticky tick-clover	*(Desmodium glutinosum)*
Tick trefoil	*(Desmodium sp)*

Herbaceous Species (cont.)

Deptford pink	*(Dianthus armeria)*
Crabgrass	*(Digitaria sanguinalis)*
Mock strawberry	*(Duchesnea indica)*
Beech drops	*(Epifagus virginiana)*
Feverwort	*(Erechtites hieracifolia)*
Daisy fleabane	*(Erigeron annuus)*
Joe-pye-weed	*(Eupatorium purpureum)*
Wartweed	*(Euphorbia maculata)*
Milk purslane	*(Euphorbia supina)*
Catchweed bedstraw	*(Galium aparine)*
Yellow avens	*(Geum allepicum)*
Gill-over-the-ground	*(Glechoma hederacea)*
Sneezeweed	*(Helenium autumnale)*
Orange daylily	*(Hemerocallis fulva)*
Dame's rocket	*(Hesperis matronalis)*
Hawkweed	*(Hieracium sp)*
Spotted jewelweed	*(Impatiens capensis)*
Yellow iris	*(Iris pseudacorus)*
Soft rush	*(Juncus effusus)*
Rice cutgrass	*(Leersia oryzoides)*
Duckweed	*(Lemna minor)*
Butter n' eggs	*(Linaria vulgaris)*
Cardinal flower	*(Lobelia cardinalis)*
Bird's foot trefoil	*(Lotus corniculatus)*
Marsh purslane	*(Ludwigia palustris)*
Water horehound	*(Lycopus americanus)*
Moneywort	*(Lysimachia nummularia)*
Purple loosetrife	*(Lythrum salicaria)*
Yellow sweet clover	*(Melilotus officinalis)*
Eurasian water milfoil	*(Myriophyllum spicatum)*
Spatterdock	*(Nuphar advena)*
Evening primrose	*(Oenothera biennis)*
Sorrel	*(Oxalis sp)*
Panic grass	*(Panicum sp)*
Arrow arum	*(Peltandra virginica)*
Timothy	*(Phleum pratense)*

Herbaceous Species (cont.)

Common reed	*(Phragmites australis)*
Pokeweed	*(Phytolacca americana)*
Clearweed	*(Pilea pumila)*
Buckhorn plantain	*(Plantago lanceolata)*
Common plantain	*(Plantago major)*
Bluegrass	*(Poa sp)*
Halberd-leaf tearthumb	*(Polygonum arifolium)*
Black bindweed	*(Polygonum convolvulus)*
Japanese knotweed	*(Polygonum cuspidatum)*
Water-pepper	*(Polygonum hydropiper)*
Pennsylvania smartweed	*(Polygonum pennsylvanicum)*
Knotweeds	*(Polygonum spp)*
Jumpseed	*(Polygonum virginianum)*
Pickerel weed	*(Pontederia cordata)*
Purslane	*(Portulacca oleracea)*
Sulfer cinquefoil	*(Potentilla recta)*
Curly pondweed	*(Potomogeton crispus)*
Self-heal	*(Prunella vulgaris)*
Swamp buttercup	*(Ranunculus septentrionalis)*
Curly dock	*(Rumex crispus)*
Bitterdock	*(Rumex obtusifolius)*
Arrowhead	*(Sagittaria latifolia)*
Strap-leaf arrowhead	*(Sagittaria subulata)*
Lizard's tail	*(Saururus cernuus)*
Mountain stonecrop	*(Sedum ternatum)*
Foxtail grasses	*(Setaria spp)*
Bladder campion	*(Silene cucubalus)*
False Solomon's seal	*(Smilacina racemosa = Mainthemum racemosum)*
Horse nettle	*(Solanum carolinense)*
Climbing nightshade	*(Solanum dulcamara)*
Canada goldenrod	*(Solidago canadensis)*
Giant goldenrod	*(Solidago gigantea)*
Wrinkled-leaf goldenrod	*(Solidago rugosa)*
Sow thistle	*(Sonchus arvensis)*
Common chickweed	*(Stellaria media)*
Skunk cabbage	*(Symplocarpus foetidus)*

Herbaceous Species (cont.)

Common dandelion	*(Taraxacum officinale)*
Rue anemone	*(Thalictrum sp)*
Poison ivy	*(Toxicodendron radicans)*
Water chestnut	*(Trapa natans)*
Red clover	*(Trifolium pratense)*
Narrowleaf cattail	*(Typha angustifolia)*
Stinging nettle	*(Urtica dioica)*
Bellwort	*(Uvularia sp)*
Common mullein	*(Verbascum thapsus)*
Blue marsh violet	*(Viola cucullata)*
Early yellow violet	*(Viola rotundifolia)*
Water speedwell	*(Veronica anagallis-aquatica)*

NON-FLOWERING PLANTS

Conifers

Eastern red cedar	*(Juniperus virginiana)*
Eastern hemlock	*(Tsuga canadensis)*

Ferns

Woodfern	*(Dryopteris sp)*
Hayscented fern	*(Dennstaedtia punctilobula)*

Fern Allies

Field horsetail	*(Equisetum arvense)*

FISH AND WILDLIFE IMPACT ANALYSIS
FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX D

D2 ADJACENT OFF-SITE FAUNA

MDRA

MATTHEW D. RUDIKOFF ASSOCIATES, INC.

PLANNING
ENVIRONMENT
DEVELOPMENT

Beacon Building
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ADJACENT OFF-SITE FAUNA

Animal species provided below were either observed (*), reported or have potential to occur in Madame Brett Park or within the vicinity of Madame Brett Park, which is located adjacent to the Beacon Terminal project site.

AMPHIBIANS

*	American toad	*(Bufo americanus)*
	Gray tree frog	*(Hyla versicolor)*
*	Redback salamander	*(Plethodon cinereus)*
*	Green frog	*(Rana clamitans)*
*	Pickerel frog	*(Rana palustris)*

REPTILES

*	Painted turtle	*(Chrysemys picta)*
	Snapping turtle	*(Chelydra serpentina)*
	Spotted turtle	*(Clemmys guttata)*
	Northern water snake	*(Nerodia sipedon)*
	Common garter snake	*(Thamnophis sirtalis)*

BIRDS

Refer to attached Appendix C3, NYSDEC Breeding Bird Atlas List

MAMMALS

*	Short-tailed shrew	*(Blarina brevicauda)*
*	Dog	*(Canis familiaris)*
	Coyote	*(Canis latrans)*
	Opossum	*(Didelphis virginiana)*
*	Cat	*(Felis catus)*
*	Woodchuck	*(Marmota monax)*
*	Striped skunk	*(Mephitis mephitis)*
	House mouse	*(Mus musculus)*
	Little brown myotis	*(Myotis lucifugus)*
*	White-tailed deer	*(Odocoileus virginianus)*
	Muskrat	*(Ondatra zibethicus)*
	White-footed mouse	*(Peromyscus leucopus)*

MAMMALS (Cont.)

*	Raccoon	*(Procyon lotor)*
*	Norway rat	*(Rattus norvegicus)*
*	Eastern mole	*(Scalopus cristata)*
*	Gray squirrel	*(Sciurus carolinensis)*
*	Eastern cottontail	*(Sylvilagus floridanus)*
*	Eastern chipmunk	*(Tamias striatus)*
	Red fox	*(Vulpes vulpes)*

FISH AND WILDLIFE IMPACT ANALYSIS
FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX D

D3 NYS DEC BREEDING BIRD ATLAS RECORDS

MDRA MATTHEW D. RUDIKOFF ASSOCIATES, INC.

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NYS Breeding Bird Atlas

ATLAS 2000

Block 5759D

2000-2005

Navigation Tools	Block 5759D Summary	
Perform Another Search	Total Species:	70
Show All Records	Possible:	10
Sort by Field Card Order	Probable:	25
Sort by Taxonomic Order	Confirmed:	35
View 1985 Data		

List of Species Breeding in Atlas Block 5759D

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Pied-billed Grebe	*Podilymbus podiceps*	FL	6/2/2005	Threatened
Double-crested Cormorant	*Phalacrocorax auritus*	P2	5/30/2002	Protected
Great Blue Heron	*Ardea herodias*	P2	6/10/2002	Protected
Black-crowned Night-Heron	*Nycticorax nycticorax*	FL	8/3/2005	Protected
Turkey Vulture	*Cathartes aura*	P2	5/18/2003	Protected
Canada Goose	*Branta canadensis*	NY	6/25/2003	Game Species
Mute Swan	*Cygnus olor*	NY	6/19/2003	Protected
Wood Duck	*Aix sponsa*	NY	6/19/2003	Game Species
Mallard	*Anas platyrhynchos*	FL	6/10/2002	Game Species

Common Merganser	*Mergus merganser*	P2	5/18/2003	Game Species
Osprey	*Pandion haliaetus*	P2	5/11/2002	Protected-Special Concern
Bald Eagle	*Haliaeetus leucocephalus*	T2	6/17/2002	Threatened
Cooper's Hawk	*Accipiter cooperii*	X1	7/29/2003	Protected-Special Concern
Red-tailed Hawk	*Buteo jamaicensis*	X1	6/28/2002	Protected
Wild Turkey	*Meleagris gallopavo*	P2	6/16/2003	Game Species
Great Black-backed Gull	*Larus marinus*	X1	6/19/2003	Protected
Rock Pigeon	*Columba livia*	P2	5/18/2003	Unprotected
Mourning Dove	*Zenaida macroura*	FL	7/2/2003	Protected
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S2	7/5/2002	Protected
Chimney Swift	*Chaetura pelagica*	ON	7/3/2005	Protected
Belted Kingfisher	*Ceryle alcyon*	S2	7/5/2002	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	FL	6/28/2002	Protected
Yellow-bellied Sapsucker	*Sphyrapicus varius*	X1	4/29/2003	Protected
Downy Woodpecker	*Picoides pubescens*	FL	7/2/2003	Protected
Hairy Woodpecker	*Picoides villosus*	FL	7/2/2003	Protected
Northern Flicker	*Colaptes auratus*	S2	5/10/2002	Protected
Pileated Woodpecker	*Dryocopus pileatus*	S2	6/11/2002	Protected
Eastern Wood-Pewee	*Contopus virens*	X1	6/25/2003	Protected
Eastern Phoebe	*Sayornis phoebe*	P2	5/16/2003	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	T2	6/11/2003	Protected
Eastern Kingbird	*Tyrannus tyrannus*	FY	//2004	Protected
Warbling Vireo	*Vireo gilvus*	D2	7/2/2003	Protected
Red-eyed Vireo	*Vireo olivaceus*	T2	6/28/2002	Protected
Blue Jay	*Cyanocitta cristata*	FY	6/25/2003	Protected
American Crow	*Corvus brachyrhynchos*	FY	5/4/2002	Game Species

Fish Crow	*Corvus ossifragus*	NE	4/13/2002	Protected
Tree Swallow	*Tachycineta bicolor*	NY	//2004	Protected
Barn Swallow	*Hirundo rustica*	N2	5/18/2003	Protected
Black-capped Chickadee	*Poecile atricapillus*	NE	6/8/2003	Protected
Tufted Titmouse	*Baeolophus bicolor*	FL	6/28/2002	Protected
White-breasted Nuthatch	*Sitta carolinensis*	P2	6/24/2002	Protected
Carolina Wren	*Thryothorus ludovicianus*	S2	6/28/2002	Protected
House Wren	*Troglodytes aedon*	ON	6/9/2004	Protected
Veery	*Catharus fuscescens*	FL	7/2/2003	Protected
Hermit Thrush	*Catharus guttatus*	X1	4/8/2003	Protected
Wood Thrush	*Hylocichla mustelina*	S2	5/18/2003	Protected
American Robin	*Turdus migratorius*	NY	6/28/2002	Protected
Gray Catbird	*Dumetella carolinensis*	FY	6/28/2002	Protected
Northern Mockingbird	*Mimus polyglottos*	NY	//2002	Protected
European Starling	*Sturnus vulgaris*	NY	5/30/2002	Unprotected
Cedar Waxwing	*Bombycilla cedrorum*	P2	5/30/2002	Protected
Yellow Warbler	*Dendroica petechia*	NE	5/27/2002	Protected
Chestnut-sided Warbler	*Dendroica pensylvanica*	X1	//2004	Protected
Black-throated Green Warbler	*Dendroica virens*	S2	5/27/2002	Protected
Black-and-white Warbler	*Mniotilta varia*	X1	6/25/2003	Protected
American Redstart	*Setophaga ruticilla*	X1	6/28/2002	Protected
Worm-eating Warbler	*Helmitheros vermivorus*	X1	//2004	Protected
Common Yellowthroat	*Geothlypis trichas*	S2	5/30/2002	Protected
Scarlet Tanager	*Piranga olivacea*	S2	7/2/2003	Protected
Song Sparrow	*Melospiza melodia*	FL	6/11/2003	Protected
Northern Cardinal	*Cardinalis cardinalis*	FL	5/28/2002	Protected
Indigo Bunting	*Passerina cyanea*	ON	6/23/2003	Protected

Red-winged Blackbird	*Agelaius phoeniceus*	FY	//2004	Protected
Common Grackle	*Quiscalus quiscula*	FY	6/28/2002	Protected
Brown-headed Cowbird	*Molothrus ater*	FL	6/28/2002	Protected
Orchard Oriole	*Icterus spurius*	NE	6/28/2002	Protected
Baltimore Oriole	*Icterus galbula*	NE	5/27/2002	Protected
House Finch	*Carpodacus mexicanus*	FL	7/2/2003	Protected
American Goldfinch	*Carduelis tristis*	P2	6/25/2003	Protected
House Sparrow	*Passer domesticus*	NY	5/28/2002	Unprotected

Current Date: 7/1/2008

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NYS Breeding Bird Atlas

ATLAS 2000

Block 5759D

1980-1985

Navigation Tools	Block 5759D Summary	
Perform Another Search	Total Species:	74
Sort by Field Card Order	Possible:	13
Sort by Taxonomic Order	Probable:	23
View 2000 Data	Confirmed:	38

List of Species Breeding in Atlas Block 5759D

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Green Heron	*Butorides virescens*	NY	1983	Protected
Canada Goose	*Branta canadensis*	P2	1983	Game Species
Mute Swan	*Cygnus olor*	NE	1983	Protected
Wood Duck	*Aix sponsa*	FL	1983	Game Species
American Black Duck	*Anas rubripes*	P2	1983	Game Species
Mallard	*Anas platyrhynchos*	FL	1983	Game Species
Broad-winged Hawk	*Buteo platypterus*	P2	1983	Protected
Red-tailed Hawk	*Buteo jamaicensis*	X1	1983	Protected
American Kestrel	*Falco sparverius*	P2	1985	Protected
Ruffed Grouse	*Bonasa umbellus*	X1	1983	Game Species
Killdeer	*Charadrius vociferus*	FL	1983	Protected

Spotted Sandpiper	*Actitis macularia*	X1	1983	Protected
American Woodcock	*Scolopax minor*	S2	1985	Game Species
Rock Pigeon	*Columba livia*	N2	1983	Unprotected
Mourning Dove	*Zenaida macroura*	FL	1983	Protected
Black-billed Cuckoo	*Coccyzus erythropthalmus*	X1	1984	Protected
Great Horned Owl	*Bubo virginianus*	X1	1984	Protected
Common Nighthawk	*Chordeiles minor*	S2	1984	Protected-Special Concern
Chimney Swift	*Chaetura pelagica*	ON	1983	Protected
Belted Kingfisher	*Ceryle alcyon*	FY	1983	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	X1	1983	Protected
Downy Woodpecker	*Picoides pubescens*	FY	1983	Protected
Hairy Woodpecker	*Picoides villosus*	S2	1983	Protected
Northern Flicker	*Colaptes auratus*	ON	1983	Protected
Pileated Woodpecker	*Dryocopus pileatus*	X1	1984	Protected
Eastern Wood-Pewee	*Contopus virens*	S2	1983	Protected
Eastern Phoebe	*Sayornis phoebe*	NE	1984	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	S2	1983	Protected
Eastern Kingbird	*Tyrannus tyrannus*	NY	1983	Protected
Yellow-throated Vireo	*Vireo flavifrons*	X1	1984	Protected
Warbling Vireo	*Vireo gilvus*	FL	1983	Protected
Red-eyed Vireo	*Vireo olivaceus*	P2	1983	Protected
Blue Jay	*Cyanocitta cristata*	B2	1983	Protected
American Crow	*Corvus brachyrhynchos*	FL	1983	Game Species
Fish Crow	*Corvus ossifragus*	D2	1983	Protected
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	X1	1983	Protected
Bank Swallow	*Riparia riparia*	ON	1983	Protected
Barn Swallow	*Hirundo rustica*	UN	1985	Protected
Black-capped Chickadee	*Poecile atricapillus*	FY	1983	Protected
Tufted Titmouse	*Baeolophus bicolor*	FY	1983	Protected

White-breasted Nuthatch	*Sitta carolinensis*	FY	1983	Protected
Carolina Wren	*Thryothorus ludovicianus*	FL	1983	Protected
House Wren	*Troglodytes aedon*	FY	1983	Protected
Veery	*Catharus fuscescens*	S2	1983	Protected
Wood Thrush	*Hylocichla mustelina*	S2	1983	Protected
American Robin	*Turdus migratorius*	NY	1983	Protected
Gray Catbird	*Dumetella carolinensis*	FL	1983	Protected
Northern Mockingbird	*Mimus polyglottos*	S2	1983	Protected
European Starling	*Sturnus vulgaris*	NY	1983	Unprotected
Cedar Waxwing	*Bombycilla cedrorum*	X1	1983	Protected
Blue-winged Warbler	*Vermivora pinus*	FY	1983	Protected
Yellow Warbler	*Dendroica petechia*	NE	1984	Protected
Chestnut-sided Warbler	*Dendroica pensylvanica*	X1	1984	Protected
Black-and-white Warbler	*Mniotilta varia*	X1	1984	Protected
American Redstart	*Setophaga ruticilla*	S2	1983	Protected
Worm-eating Warbler	*Helmitheros vermivorus*	S2	1984	Protected
Ovenbird	*Seiurus aurocapilla*	X1	1983	Protected
Louisiana Waterthrush	*Seiurus motacilla*	FL	1983	Protected
Common Yellowthroat	*Geothlypis trichas*	FY	1983	Protected
Scarlet Tanager	*Piranga olivacea*	S2	1983	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	S2	1983	Protected
Chipping Sparrow	*Spizella passerina*	S2	1983	Protected
Field Sparrow	*Spizella pusilla*	FL	1985	Protected
Song Sparrow	*Melospiza melodia*	FY	1983	Protected
Northern Cardinal	*Cardinalis cardinalis*	NY	1983	Protected
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	FY	1983	Protected
Indigo Bunting	*Passerina cyanea*	T2	1983	Protected
Red-winged Blackbird	*Agelaius phoeniceus*	NE	1983	Protected
Common Grackle	*Quiscalus quiscula*	FY	1983	Protected

Brown-headed Cowbird	*Molothrus ater*	FL	1983	Protected
Baltimore Oriole	*Icterus galbula*	NY	1983	Protected
House Finch	*Carpodacus mexicanus*	NY	1983	Protected
American Goldfinch	*Carduelis tristis*	D2	1983	Protected
House Sparrow	*Passer domesticus*	FL	1983	Unprotected

Current Date: 7/1/2008

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NYS Breeding Bird Atlas

ATLAS 2000

Block 5859C

2000-2005

Navigation Tools	Block 5859C Summary	
Perform Another Search	Total Species:	82
Show All Records	Possible:	13
Sort by Field Card Order	Probable:	34
Sort by Taxonomic Order	Confirmed:	35
View 1985 Data		

List of Species Breeding in Atlas Block 5859C

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Great Blue Heron	*Ardea herodias*	P2	7/10/2002	Protected
Turkey Vulture	*Cathartes aura*	P2	6/18/2002	Protected
Canada Goose	*Branta canadensis*	NE	4/15/2003	Game Species
Wood Duck	*Aix sponsa*	FL	//2004	Game Species
Mallard	*Anas platyrhynchos*	NY	5/18/2003	Game Species
Common Merganser	*Mergus merganser*	P2	5/10/2003	Game Species
Osprey	*Pandion haliaetus*	P2	5/25/2002	Protected-Special Concern

Bald Eagle	*Haliaeetus leucocephalus*	X1	//2004	Threatened
Sharp-shinned Hawk	*Accipiter striatus*	X1	6/25/2002	Protected-Special Concern
Red-tailed Hawk	*Buteo jamaicensis*	FL	5/26/2003	Protected
Wild Turkey	*Meleagris gallopavo*	FL	6/13/2002	Game Species
Spotted Sandpiper	*Actitis macularia*	P2	5/11/2003	Protected
Rock Pigeon	*Columba livia*	ON	7/10/2002	Unprotected
Mourning Dove	*Zenaida macroura*	FL	6/20/2003	Protected
Black-billed Cuckoo	*Coccyzus erythropthalmus*	X1	5/3/2005	Protected
Eastern Screech-Owl	*Megascops asio*	N2	3/29/2000	Protected
Great Horned Owl	*Bubo virginianus*	X1	5/3/2003	Protected
Barred Owl	*Strix varia*	T2	5/3/2003	Protected
Chimney Swift	*Chaetura pelagica*	ON	7/2/2003	Protected
Ruby-throated Hummingbird	*Archilochus colubris*	FL	//2004	Protected
Belted Kingfisher	*Ceryle alcyon*	P2	6/18/2002	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	FL	7/6/2002	Protected
Yellow-bellied Sapsucker	*Sphyrapicus varius*	FL	6/12/2003	Protected
Downy Woodpecker	*Picoides pubescens*	FY	6/14/2002	Protected
Hairy Woodpecker	*Picoides villosus*	FY	5/29/2003	Protected
Northern Flicker	*Colaptes auratus*	N2	5/11/2002	Protected
Pileated Woodpecker	*Dryocopus pileatus*	ON	6/16/2002	Protected
Eastern Wood-Pewee	*Contopus virens*	S2	6/6/2003	Protected
Alder Flycatcher	*Empidonax alnorum*	P2	6/6/2003	Protected
Eastern Phoebe	*Sayornis phoebe*	NE	5/18/2003	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	S2	5/18/2003	Protected
Eastern Kingbird	*Tyrannus tyrannus*	P2	6/18/2002	Protected
Red-eyed Vireo	*Vireo olivaceus*	D2	6/6/2003	Protected
Blue Jay	*Cyanocitta cristata*	FY	7/10/2002	Protected
American Crow	*Corvus brachyrhynchos*	FY	7/2/2003	Game Species

Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	X1	5/19/2003	Protected
Barn Swallow	*Hirundo rustica*	ON	5/11/2002	Protected
Black-capped Chickadee	*Poecile atricapillus*	D2	7/2/2003	Protected
Tufted Titmouse	*Baeolophus bicolor*	FY	7/2/2002	Protected
White-breasted Nuthatch	*Sitta carolinensis*	FY	6/13/2003	Protected
Carolina Wren	*Thryothorus ludovicianus*	P2	//2004	Protected
House Wren	*Troglodytes aedon*	NY	6/16/2003	Protected
Eastern Bluebird	*Sialia sialis*	FL	7/13/2002	Protected
Veery	*Catharus fuscescens*	S2	6/2/2002	Protected
Wood Thrush	*Hylocichla mustelina*	S2	5/17/2003	Protected
American Robin	*Turdus migratorius*	FL	6/29/2002	Protected
Gray Catbird	*Dumetella carolinensis*	NE	6/4/2002	Protected
Northern Mockingbird	*Mimus polyglottos*	FL	5/23/2003	Protected
Brown Thrasher	*Toxostoma rufum*	X1	//2004	Protected
European Starling	*Sturnus vulgaris*	FL	5/24/2002	Unprotected
Cedar Waxwing	*Bombycilla cedrorum*	D2	5/24/2002	Protected
Blue-winged Warbler	*Vermivora pinus*	S2	6/2/2003	Protected
Yellow Warbler	*Dendroica petechia*	NE	6/18/2002	Protected
Chestnut-sided Warbler	*Dendroica pensylvanica*	X1	5/11/2003	Protected
Black-throated Blue Warbler	*Dendroica caerulescens*	X1	5/9/2003	Protected
Black-throated Green Warbler	*Dendroica virens*	S2	6/2/2003	Protected
Prairie Warbler	*Dendroica discolor*	P2	6/6/2003	Protected
Black-and-white Warbler	*Mniotilta varia*	T2	6/6/2003	Protected
American Redstart	*Setophaga ruticilla*	D2	6/2/2003	Protected
Worm-eating Warbler	*Helmitheros vermivorus*	P2	6/10/2003	Protected
Ovenbird	*Seiurus aurocapilla*	T2	6/1/2003	Protected
Louisiana Waterthrush	*Seiurus motacilla*	T2	6/6/2003	Protected

Common Yellowthroat	*Geothlypis trichas*	S2	6/17/2002	Protected
Hooded Warbler	*Wilsonia citrina*	X1	6/10/2003	Protected
Canada Warbler	*Wilsonia canadensis*	X1	5/18/2003	Protected
Scarlet Tanager	*Piranga olivacea*	P2	5/18/2003	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	P2	//2004	Protected
Chipping Sparrow	*Spizella passerina*	FL	6/27/2003	Protected
Field Sparrow	*Spizella pusilla*	P2	5/28/2003	Protected
Savannah Sparrow	*Passerculus sandwichensis*	X1	5/9/2003	Protected
Song Sparrow	*Melospiza melodia*	N2	4/21/2002	Protected
Northern Cardinal	*Cardinalis cardinalis*	FY	6/20/2003	Protected
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	X1	5/4/2003	Protected
Indigo Bunting	*Passerina cyanea*	D2	7/10/2002	Protected
Red-winged Blackbird	*Agelaius phoeniceus*	FY	6/17/2002	Protected
Eastern Meadowlark	*Sturnella magna*	X1	5/21/2003	Protected
Common Grackle	*Quiscalus quiscula*	FY	6/29/2002	Protected
Brown-headed Cowbird	*Molothrus ater*	FY	6/19/2003	Protected
Baltimore Oriole	*Icterus galbula*	ON	6/19/2003	Protected
House Finch	*Carpodacus mexicanus*	FL	7/3/2002	Protected
American Goldfinch	*Carduelis tristis*	P2	8/5/2003	Protected
House Sparrow	*Passer domesticus*	FL	6/18/2002	Unprotected

Current Date: 7/1/2008

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NYS Breeding Bird Atlas

ATLAS 2000

Block 5859C

1980-1985

Navigation Tools	Block 5859C Summary	
Perform Another Search	Total Species:	93
Sort by Field Card Order	Possible:	15
Sort by Taxonomic Order	Probable:	21
View 2000 Data	Confirmed:	57

List of Species Breeding in Atlas Block 5859C

Common Name	Scientific Name	Behavior Code	Date	NY Legal Status
Least Bittern	*Ixobrychus exilis*	T2	1983	Threatened
Great Blue Heron	*Ardea herodias*	X1	1983	Protected
Green Heron	*Butorides virescens*	T2	1983	Protected
Turkey Vulture	*Cathartes aura*	X1	1983	Protected
Canada Goose	*Branta canadensis*	FL	1983	Game Species
Mute Swan	*Cygnus olor*	X1	1983	Protected
Wood Duck	*Aix sponsa*	FL	1983	Game Species
Mallard	*Anas platyrhynchos*	FL	1983	Game Species
Broad-winged Hawk	*Buteo platypterus*	D2	1983	Protected
Red-tailed Hawk	*Buteo jamaicensis*	T2	1983	Protected
American Kestrel	*Falco sparverius*	X1	1983	Protected

Ring-necked Pheasant	*Phasianus colchicus*	FL	1983	Game Species
Ruffed Grouse	*Bonasa umbellus*	DD	1983	Game Species
Wild Turkey	*Meleagris gallopavo*	X1	1983	Game Species
Killdeer	*Charadrius vociferus*	X1	1983	Protected
Spotted Sandpiper	*Actitis macularia*	FL	1983	Protected
Rock Pigeon	*Columba livia*	NE	1983	Unprotected
Mourning Dove	*Zenaida macroura*	FL	1983	Protected
Eastern Screech-Owl	*Megascops asio*	FL	1984	Protected
Great Horned Owl	*Bubo virginianus*	X1	1983	Protected
Barred Owl	*Strix varia*	X1	1983	Protected
Chimney Swift	*Chaetura pelagica*	ON	1983	Protected
Ruby-throated Hummingbird	*Archilochus colubris*	X1	1983	Protected
Belted Kingfisher	*Ceryle alcyon*	FY	1983	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	S2	1983	Protected
Downy Woodpecker	*Picoides pubescens*	NY	1983	Protected
Hairy Woodpecker	*Picoides villosus*	FY	1983	Protected
Northern Flicker	*Colaptes auratus*	NY	1983	Protected
Pileated Woodpecker	*Dryocopus pileatus*	T2	1983	Protected
Eastern Wood-Pewee	*Contopus virens*	FL	1983	Protected
Acadian Flycatcher	*Empidonax virescens*	T2	1983	Protected
Willow Flycatcher	*Empidonax traillii*	T2	1983	Protected
Least Flycatcher	*Empidonax minimus*	X1	1983	Protected
Eastern Phoebe	*Sayornis phoebe*	NY	1983	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	T2	1983	Protected
Eastern Kingbird	*Tyrannus tyrannus*	NY	1983	Protected
White-eyed Vireo	*Vireo griseus*	FY	1983	Protected
Yellow-throated Vireo	*Vireo flavifrons*	T2	1983	Protected
Blue-headed Vireo	*Vireo solitarius*	T2	1983	Protected
Warbling Vireo	*Vireo gilvus*	T2	1983	Protected
Red-eyed Vireo	*Vireo olivaceus*	FY	1983	Protected
Blue Jay	*Cyanocitta cristata*	FL	1983	Protected

American Crow	*Corvus brachyrhynchos*	T2	1983	Game Species
Tree Swallow	*Tachycineta bicolor*	FY	1983	Protected
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	P2	1983	Protected
Bank Swallow	*Riparia riparia*	X1	1983	Protected
Barn Swallow	*Hirundo rustica*	NY	1983	Protected
Black-capped Chickadee	*Poecile atricapillus*	FY	1983	Protected
Tufted Titmouse	*Baeolophus bicolor*	FY	1983	Protected
White-breasted Nuthatch	*Sitta carolinensis*	FY	1983	Protected
Brown Creeper	*Certhia americana*	P2	1983	Protected
Carolina Wren	*Thryothorus ludovicianus*	X1	1983	Protected
House Wren	*Troglodytes aedon*	FY	1983	Protected
Marsh Wren	*Cistothorus palustris*	FL	1983	Protected
Blue-gray Gnatcatcher	*Polioptila caerulea*	X1	1982	Protected
Veery	*Catharus fuscescens*	T2	1983	Protected
Wood Thrush	*Hylocichla mustelina*	NE	1983	Protected
American Robin	*Turdus migratorius*	NY	1983	Protected
Gray Catbird	*Dumetella carolinensis*	FY	1983	Protected
Northern Mockingbird	*Mimus polyglottos*	NE	1983	Protected
Brown Thrasher	*Toxostoma rufum*	NE	1983	Protected
European Starling	*Sturnus vulgaris*	NY	1983	Unprotected
Cedar Waxwing	*Bombycilla cedrorum*	P2	1983	Protected
Blue-winged Warbler	*Vermivora pinus*	FY	1983	Protected
Golden-winged Warbler	*Vermivora chrysoptera*	S2	1983	Protected-Special Concern
Lawrence's Warbler	*Vermivora chrysoptera x V. pinus*	X1	1983	Protected
Yellow Warbler	*Dendroica petechia*	NY	1983	Protected
Prairie Warbler	*Dendroica discolor*	FY	1983	Protected
Black-and-white Warbler	*Mniotilta varia*	FY	1983	Protected
American Redstart	*Setophaga ruticilla*	FY	1983	Protected
Worm-eating Warbler	*Helmitheros vermivorus*	FY	1983	Protected
Ovenbird	*Seiurus aurocapilla*	FY	1983	Protected

Louisiana Waterthrush	*Seiurus motacilla*	FY	1983	Protected
Common Yellowthroat	*Geothlypis trichas*	FY	1983	Protected
Hooded Warbler	*Wilsonia citrina*	X1	1983	Protected
Scarlet Tanager	*Piranga olivacea*	FY	1983	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	FY	1983	Protected
Chipping Sparrow	*Spizella passerina*	FY	1983	Protected
Field Sparrow	*Spizella pusilla*	FY	1983	Protected
Song Sparrow	*Melospiza melodia*	FY	1983	Protected
Swamp Sparrow	*Melospiza georgiana*	T2	1983	Protected
Northern Cardinal	*Cardinalis cardinalis*	FY	1983	Protected
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	FY	1983	Protected
Indigo Bunting	*Passerina cyanea*	FY	1983	Protected
Bobolink	*Dolichonyx oryzivorus*	FL	1983	Protected
Red-winged Blackbird	*Agelaius phoeniceus*	NY	1983	Protected
Common Grackle	*Quiscalus quiscula*	NY	1983	Protected
Brown-headed Cowbird	*Molothrus ater*	FL	1983	Protected
Baltimore Oriole	*Icterus galbula*	NY	1983	Protected
Purple Finch	*Carpodacus purpureus*	T2	1983	Protected
House Finch	*Carpodacus mexicanus*	NE	1983	Protected
American Goldfinch	*Carduelis tristis*	D2	1983	Protected
House Sparrow	*Passer domesticus*	FY	1983	Unprotected

Current Date: 7/1/2008

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Bird Atlas Breeding Codes

The New York State Breeding Bird Atlas uses three categories to record breeding behavior: Possible (PO), Probable (PR), and Confirmed (CO). Within each of these categories are Breeding Codes that describe the breeding behavior. These codes are listed in order of increasing certainty.

Possible Breeding (PO)	
X	Species observed in possible nesting habitat, but no other indication of breeding noted; singing male(s) present (or breeding calls heard) in breeding season.
Probable Breeding (PR)	
S	Singing male present (or breeding calls heard).
P	Pair observed in suitable habitat in breeding season.
T	Bird (or pair) apparently holding territory. In addition to territorial singing, chasing of other individuals of same species often marks a territory.
D	Courtship and display, agitated behavior or anxiety calls from adults suggesting probable presence nearby of a nest or young; well-developed brood-patch or cloacal protuberance on trapped adult. Includes copulation.
N	Visiting probable nest site. Nest building by wrens and woodpeckers. Wrens may build many nests. Woodpeckers, although they usually drill only one nest cavity, also drill holes just for roosting.
B	Nest building or excavation of a nest hole.
Confirmed Breeding (CO)	
DD	Distraction display or injury-feigning. Agitated behavior and/or anxiety calls areProbable-D.
UN	Used nest found. Caution: These must be carefully identified if they are to be counted as evidence. Some nests (e.g. Baltimore Oriole) are persistent and very characteristic. Most are difficult to identify correctly.
FE	Female with egg in the oviduct (by bird bander).
FL	Recently fledged young (including downy young of precocious species - waterfowl, shorebirds). This code should be used with caution for species such as blackbirds and swallows, which may move some distance soon after fledging. Recently fledged passerines are still dependent on their parents and are fed by them.
ON	Adult(s) entering or leaving nest site in circumstances indicating occupied nest.

	NOT generally used for open nesting birds. It should be used for hole nesters only when a bird enters a hole and remains inside, makes a change-over at a hole, or leaves a hole after having been inside for some time. If you simply see a bird fly into or out of a bush or tree, and do not find a nest, the correct code would be Probable-N.
FS	Adult carrying fecal sac.
FY	Adult(s) with food for young. Some birds (gulls, terns, and raptors) continue to feed their young long after they are fledged, and even after they have moved considerable distances. Also, some birds (e.g. terns) may carry food over long distances to their young in a neighboring block. Be especially careful on the edge of a block. Care should be taken to avoid confusion with courtship feeding (Probable-D).
NE	Identifiable nest and eggs, bird setting on nest or egg, identifiable eggshells found beneath nest, or identifiable dead nestling(s). If you find a cowbird egg in a nest, it is NE for Cowbird, and NE for the identified nest's owner.
NY	Nest with young. If you find a young cowbird with other young, it is NY for cowbird and NY for identified nest owner.

FISH AND WILDLIFE IMPACT ANALYSIS
FOR INACTIVE HAZARDOUS WASTE SITES

BEACON TERMINAL

CITY OF BEACON
DUTCHESS COUNTY, NEW YORK

APPENDIX E

CORRESPONDENCE

NYS DEC Natural Heritage Program letter to *MDRA*, Inc., dated July 22, 2008; and

NYS DEC Division of Fish, Wildlife & Marine Resources, Region3 letter to *MDRA*, Inc., dated June 24, 2008.

MDRA

MATTHEW D. RUDIKOFF ASSOCIATES, INC.

PLANNING
ENVIRONMENT
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New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

July 22, 2008

Alissa Jade O'Connell
Matthew D Rudikoff Associates, Inc
Beacon Bldg., 427 Main St, Suite 201
Beacon, NY 12508

Dear Ms. O'Connell:

In response to your recent request, we have reviewed the New York Natural Heritage Program databases with respect to an Environmental Assessment for the proposed Beacon Terminal, File ES 08 110, site as indicated on the map you provided, including a 10-Mile Radius, located in the City of Beacon, Dutchess County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and should not be released to the public without permission from the New York Natural Heritage Program.

This project location is adjacent to a designated Significant Coastal Fish and Wildlife Habitat. This habitat is part of New York State's Coastal Management Program (CMP), which is administered by the NYS Department of State (DOS). Projects which may impact the habitat are reviewed by DOS for consistency with the CMP. For more information regarding this designated habitat and applicable consistency review requirements, please contact:

Jeff Zappieri or Vance Barr - (518) 474-6000
NYS Department of State
Division of Coastal Resources and Waterfront Revitalization
41 State Street, Albany, NY 12231

The presence of rare species may result in your project requiring additional permits, permit conditions, or review. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should NOT be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

Tara Seoane

Tara Seoane
Information Services
NY Natural Heritage Program

cc:

Reg. 3, Fisheries Mgr.
Peter Nye, Endangered Species Unit, Albany

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor, Albany, NY
12233-4757
(518) 402-8935

~This report contains **SENSITIVE** information that should not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~Location maps for certain species and communities may not be provided 1) if the species is vulnerable to disturbance, 2) if the location and/or extent is not precisely known, 3) if the location and/or extent is too large to display, and/or 4) if the animal is listed as Endangered or Threatened by New York State.

Natural Heritage Report on Rare Species and Ecological Communities

BIRDS

Haliaeetus leucocephalus

Office Use

Bald Eagle — Nonbreeding

NY Legal Status: Threatened
NYS Rank: S2S3B,S2N - Imperiled
10503

Federal Listing: Threatened
Global Rank: G5 - Demonstrably secure
ESU

Last Report: **
EO Rank: **
USFWS

County: Dutchess
S

Town: City Of Beacon, Fishkill

Location: At, or in the vicinity of, the project site.

Directions: **

General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located, or the NYS DEC Endangered Species Unit at 518-402-8859.

Podilymbus podiceps

Office Use

Pied-billed Grebe — Breeding

NY Legal Status: Threatened
NYS Rank: S3B,S1N - Vulnerable
12494

Federal Listing:
Global Rank: G5 - Demonstrably secure
ESU

Last Report: **
EO Rank: **

County: Dutchess

Town: City Of Beacon, Fishkill

Location: At, or in the vicinity of, the project site.

Directions: **

General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located, or the NYS DEC Endangered Species Unit at 518-402-8859.

COMMUNITIES

Appalachian oak-hickory forest

This occurrence of Appalachian Oak-Hickory Forest is considered significant from a statewide perspective by the NY Natural Heritage Program. It is either an occurrence of a community type that is rare in the state or a high quality example of a more common community type. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value. Office Use

NY Legal Status: Unlisted
NYS Rank: S4
9210
Federal Listing:
Global Rank: G4G5
Last Report: 2000-08-28
EO Rank:
County: Putnam, Dutchess
Town: City Of Beacon, Fishkill, Philipstown
Location: Breakneck Scofield Fishkill Ridge
Directions: The community runs along the mid-slopes, upperslopes, and ridges of the mountain complex east of Route 9D, south of I-84, and west of Route 9. From the junction of Route I-84 and Route 9D in Beacon (exit 11 off I-84), travel south then east on Route 9D approximately 2.5 miles where Route 9D becomes Howland Avenue and turns sharply to the south. At this point, head north (right turn) on Howland and drive 0.5 mi (including a jog to the right then a jog to the left) to Mountain Lane.

General Quality and Habitat: A very large maturing forest with a diversity of species, topographic positions, and physiognomies and a part of a mosaic of several significant forest and summit communities. A large oak-dominated community that occupies mid to upper slopes and ridgetops along an extensive northeast trending mountain range east of the Hudson River. The forest grades into "oak-maple-tulip tree forest" on the lower slopes. Embedded within the forest are numerous small patches of red cedar rocky summit on exposed shoulder and summit outcrops. The community grades into chestnut oak forest on west-facing ridgetops and on small, indistinct, embedded patches on dry exposed sites. The latter are included within the community boundary. The ridge and its forests are primarily intact with medium-aged to maturing forests. There are some woods roads, primarily leading to the communication towers on Scofield Ridge within the community.

Brackish intertidal mudflats

This occurrence of Brackish Intertidal Mudflats is considered significant from a statewide perspective by the NY Natural Heritage Program. It is either an occurrence of a community type that is rare in the state or a high quality example of a more common community type. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value. Office Use

NY Legal Status: Unlisted
NYS Rank: S1S2
9390
Federal Listing:
Global Rank: G3G4
Last Report: 2002-06-20
EO Rank:
County: Dutchess
Town: City Of Beacon, Fishkill
Location: Fishkill Creek Mouth
Directions: From Route 9D in Beacon where 9D crosses the Fishkill River, take the road following the river along the western shore (with railroad tracks between the road and the river) south for 0.8 miles. Turn left under a railroad bridge and park in the lot on the left (Madam Brett Park). Follow the trail along the river to the railroad tracks (with views of the marsh along the way), and continue south to the marsh.

General Quality and Habitat: The mudflats are very small, in stable, but moderate condition within a large and relatively good landscape. A small bay area at the mouth of Fishkill Creek, but to the east of the railroad line running along the eastern shore of the Hudson River. Fishkill Creek splits and the marsh occupies the majority of the area between the two branches plus regions along the north and south shores of the creek. Second growth forest and railroad tracks abut the marsh on the upland portions; brackish intertidal mudflats abut and interdigitate with the marsh around much of the tidal perimeter. The bay just west of the railroad tracks is nearly completely inundated with Trapa natans.

Brackish tidal marsh

This occurrence of Brackish Tidal Marsh is considered significant from a statewide perspective by the NY Natural Heritage Program. It is either an occurrence of a community type that is rare in the state or a high quality example of a more common community type. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value.

Office Use

NY Legal Status: Unlisted
NYS Rank: S3S4
7611
Federal Listing:
Global Rank: G4
Last Report: 2002-06-20
EO Rank:
County: Dutchess
Town: Fishkill, City Of Beacon
Location: Fishkill Creek Mouth
Directions: From Route 9D in Beacon where Route 9D crosses Fishkill Creek, take the road following the river along the western shore (Tioronda Avenue) south for 0.8 miles. Turn left under a railroad bridge and park in the lot on the left (Madam Brett Park). Follow the trail along the river to the railroad tracks (with views of the marsh along the way) and continue south to the marsh.

General Quality and Habitat: The marsh is small, in good condition in relatively good landscape position for the region. A small bay area at the mouth of Fishkill Creek, but to the east of the railroad line running along the eastern shore of the Hudson River. Fishkill Creek splits and the marsh occupies the majority of the area between the two branches plus regions along the north and south shores of the creek. Second growth forest and railroad tracks abut the marsh on the upland portions; brackish intertidal mudflats abut and interdigitate with the marsh around much of the tidal perimeter. The bay just west of the railroad tracks is nearly completely inundated with Trapa natans.

Oak-tulip tree forest

This occurrence of Oak-Tulip Tree Forest is considered significant from a statewide perspective by the NY Natural Heritage Program. It is either an occurrence of a community type that is rare in the state or a high quality example of a more common community type. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value.

Office Use

NY Legal Status: Unlisted
NYS Rank: S2S3
4933
Federal Listing:
Global Rank: G4
Last Report: 2000-07-12
EO Rank:
County: Putnam, Dutchess
Town: City Of Beacon, Fishkill, Philipstown
Location: Breakneck Scofield Fishkill Ridge
Directions: The forest community generally surrounds the ridge below 800 feet, except where it extends to higher elevations as it follows intermittent stream drainages upslope. From exit 12 of I-84 (4 mi west of the Newburg Bridge over the Hudson River), travel south on Route 52 0.2 mi. Turn southwest (left) on Old Glenham Road. Drive approximately 1 mi then turn south (right turn) on maple, 0.25 mi and turn southwest (right turn) on Washington Avenue, then over the Fishkill Creek, over the railroad tracks.

General Quality and Habitat: This is a large and intact occurrence of this generally fragmented community located in an extensive forested landscape with natural gradients and processes intact. It is estimated that half of the occurrence is "A" grade and half is "B" grade. An extensive example of this mesic forest community which skirts the low slopes of almost the entire ridge and extends up into stream drainages to higher elevations. This forest intergrades with an extensive Appalachian oak-hickory forest and chestnut oak forest patches at higher elevations in a broad transitional zone. Small patches of hemlock-northern hardwood forest occur in the deep ravines and in broader, north-facing ravines at the same elevations. The lowlands dominated by this community show signs of land-use history and associated disturbances including logging roads, access roads, stone walls and the associated cut stumps and exotic species populations. The ridge and its forests are primarily intact with medium-aged to maturing forests.

FISH

Acipenser brevirostrum

Shortnose Sturgeon

Office Use

NY Legal Status:	Endangered	**NYS Rank:**	S1 - Critically imperiled	1091
Federal Listing:	Endangered	**Global Rank:**	G3 - Vulnerable	HRF BOF
Last Report:	**	**EO Rank:**	**	USFWS

County: Columbia, Putnam, Rensselaer, Rockland, Orange, New York, Dutchess, Greene, Westchester,
Town: Mount Pleasant, Saugerties, Bethlehem, City Of Rensselaer, City Of New York, Fishkill, City Of New York,
Location: At, or in the vicinity of, the project site.
Directions: **
General Quality and Habitat: Shortnose sturgeon are found in the long tidal portion of Hudson River. The river constitutes the lower part of a 315 mile stream system. It is fed upstream by two large main channel streams, which provide 80% of the freshwater input, and numerous other For more information, including management considerations, please contact the NYS DEC Hudson River Fisheries Unit at 845-256-3071.

Acipenser oxyrinchus

Atlantic Sturgeon

Office Use

NY Legal Status:	Protected	**NYS Rank:**	S1 - Critically imperiled	11464
Federal Listing:	Candidate	**Global Rank:**	G3 - Vulnerable	HRF
Last Report:	1997	**EO Rank:**	Excellent or Good	USFWS

County: Rockland, Dutchess, Putnam, Westchester, Orange
Town: New Windsor, Newburgh, Stony Point, City Of Beacon, Cornwall, Highlands, Cortlandt, City Of Newburgh,
Location: Lower Hudson River
Directions: The fish were observed in the lower Hudson River between Newburgh and Peekskill.
General Quality and Habitat: The rank is based on the draft element global ranking form of 1994. The fish were observed in a river.

OTHER

Waterfowl Winter Concentration Area

Office Use

NY Legal Status:	Unlisted	**NYS Rank:**	S3S4 - Vulnerable	920
Federal Listing:		**Global Rank:**	GNR - Not ranked	
Last Report:	1985	**EO Rank:**	Extant	
County:	Dutchess			S

Town: Fishkill, City Of Beacon
Location: Fishkill Creek Mouth
Directions: East side of Hudson River at mouth of Fishkill Creek from dam to the west shore of Denning Point.
General Quality and Habitat: Warm-water stream, mudflats, emergent marsh, 80 acre hay and wooded sand peninsula.

Anadromous Fish Concentration Area

Office Use

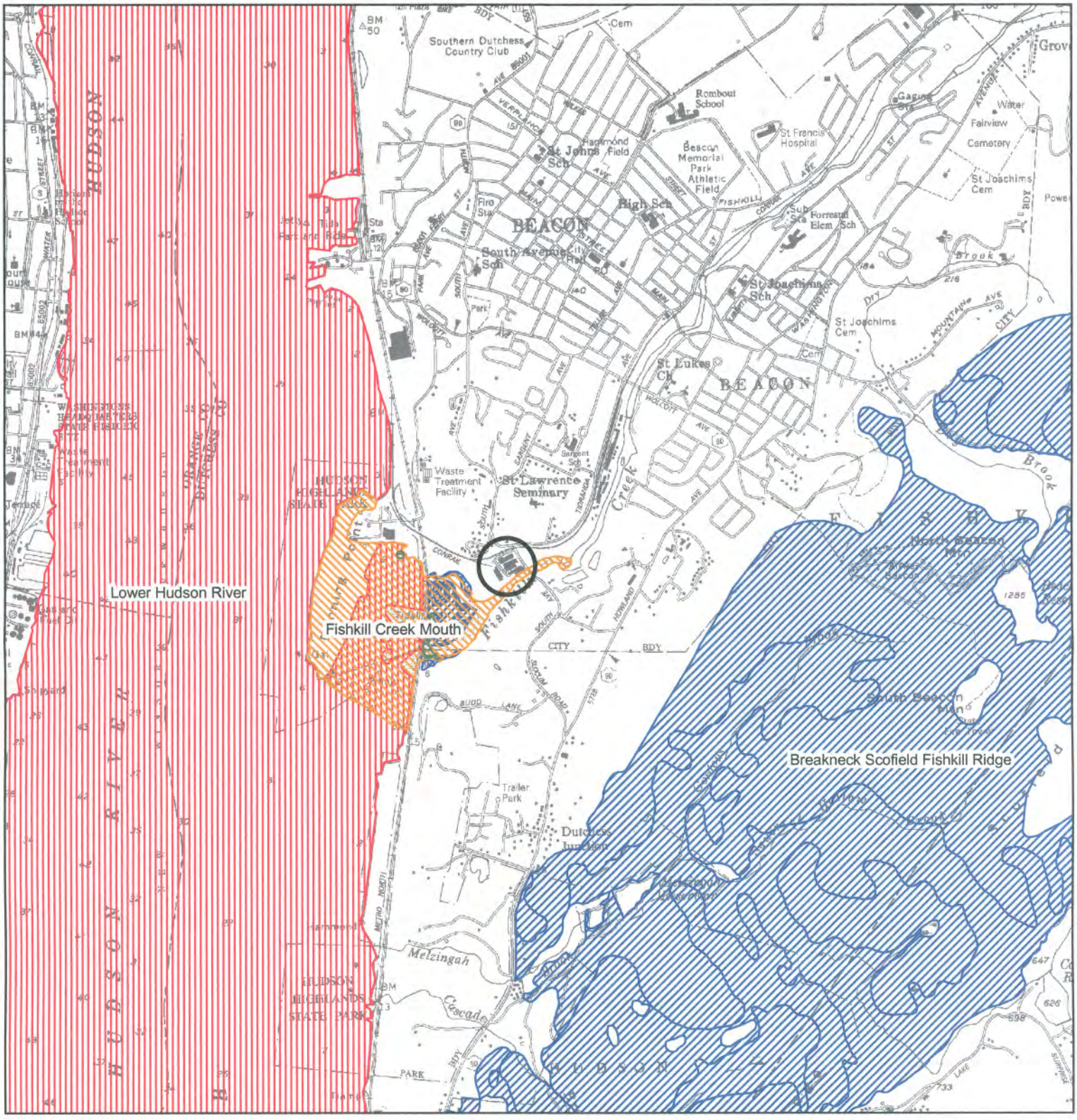
NY Legal Status:	Unlisted	**NYS Rank:**	S3 - Vulnerable	7940
Federal Listing:		**Global Rank:**	GNR - Not ranked	
Last Report:	1986	**EO Rank:**	Extant	
County:	Dutchess			S

Town: Fishkill, City Of Beacon
Location: Fishkill Creek Mouth
Directions: Fishkill Creek, tributary on the east side of Hudson River in Beacon, from the mouth of the river to the first dam upstream.
General Quality and Habitat: Pristine site. Extensive areas of mudflats, emergent marsh, subtidal beds of aquatic vegetation.

VASCULAR PLANTS

Natural Heritage Map of Rare Species and Ecological Communities

Prepared July 21, 2008 by the NY Natural Heritage Program, NYS DEC Albany, NY



Legend

- Project Site

NY Natural Heritage Program Database Records*

- Animal Assemblage
- Animal
- Plant
- Community

1:30,000

0 0.15 0.3 0.6 0.9 1.2 Miles

*The locations that are displayed are considered sensitive and should not be released to the public without permission. We do not provide map locations for all records. Please see report for details.

N W E S

Bidens bidentoides

Office Use 496

Delmarva Beggar-ticks

NY Legal Status: Rare
NYS Rank: S3 - Vulnerable
Federal Listing:
Global Rank: G3G4 - Vulnerable
Last Report: 2004-su
EO Rank: Fair
County: Dutchess
Town: City Of Beacon
Location: Fishkill Creek Mouth
Directions: The marsh is at the mouth of Fishkill Creek, approximately 1 mile southwest of Beacon. The plant was at the north edge of the marsh west of the railroad tracks just south of an abandoned factory. The plants are growing on a man-made rocky shore. 2004: The plants were found in the southern half of the wetland.

General Quality and Habitat: 12 plants were seen. The habitat is good to fair. A freshwater/brackish marsh that is small and fractured with lots of loosestrife and Trapa. Associated species: Bidens connata and Bidens cernua. 2004: A narrow tidal marsh dominated by black willow, sneezeweed, narrow-leaved cattail, and water hemp.

Bidens laevis

Office Use 5291

Smooth Bur-marigold

NY Legal Status: Threatened
NYS Rank: S2 - Imperiled
Federal Listing:
Global Rank: G5 - Demonstrably secure
Last Report: 1987-09-10
EO Rank: Good or Fair
County: Dutchess S
Town: City Of Beacon, Fishkill
Location: Fishkill Creek Mouth
Directions: On south side of Fishkill Creek immediately east of railroad tracks. Growing at upper edge of brackish tidal marsh.

General Quality and Habitat: Fair occurrence in good quality marsh. A large creek mouth impounded by railroad. Fringes of tall marsh. Upper edge of brackish tidal marsh. Associated species: Impatiens and Polygonum sp.

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12 Records Processed

More detailed information about many of the rare and listed animals and plants in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, from NYSDEC at http://www.dec.ny.gov/animals/7494.html (for animals), and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

More detailed information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org. For descriptions of all community types, go to http://www.dec.ny.gov/animals/29384.html and click on DRAFT--Ecological Communities of New York State.

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 625 Broadway, 5th Floor, Albany, NY 12233-4757 phone: (518) 402-8935

NATURAL HERITAGE PROGRAM: The NY Natural Heritage Program is a partnership between the NYS Department of Environmental Conservation (NYS DEC) and The Nature Conservancy. Our mission is to enable and enhance conservation of rare animals, rare plants, and significant communities. We accomplish this mission by combining thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resource planning, protection, and management.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should **not** be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

EO RANK: A letter code for the quality of the occurrence of the rare species or significant natural community, based on population size or area, condition, and landscape context.

A-E = Extant: A=Excellent, B=Good, C=Fair, D=Poor, E=Extant but with insufficient data to assign a rank of A-D.
F = Failed to find. Did not locate species during a limited search, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
U = Extant/Historical status uncertain.
Blank = Not assigned.

LAST REPORT: The date that the rare species or significant natural community was last observed at this location, as documented in the Natural Heritage databases. The format is most often YYYY-MM-DD.

NY LEGAL STATUS – Animals:

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E - Endangered Species: any species which meet one of the following criteria:
- Any native species in imminent danger of extirpation or extinction in New York.
- Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T - Threatened Species: any species which meet one of the following criteria:
- Any native species likely to become an endangered species within the foreseeable future in NY.
- Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC - Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P - Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U - Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G - Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NY LEGAL STATUS – Plants:

The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

E - Endangered Species: listed species are those with:
- 5 or fewer extant sites, or
- fewer than 1,000 individuals, or
- restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
- species listed as endangered by U.S. Dept. of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T - Threatened: listed species are those with:
- 6 to fewer than 20 extant sites, or
- 1,000 to fewer than 3,000 individuals, or
- restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
- listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R - Rare: listed species have:
- 20 to 35 extant sites, or
- 3,000 to 5,000 individuals statewide.

V - Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.

U - Unprotected; no state status.

FEDERAL STATUS (PLANTS and ANIMALS): The categories of federal status are defined by the United States Department of the Interior as part of the 1974 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50, no. 188, pp. 39526 - 39527. The codes below without parentheses are those used in the Federal Register. The codes below in parentheses are created by Heritage to deal with species which have different listings in different parts of their range, and/or different listings for different subspecies or varieties.

(blank) = No Federal Endangered Species Act status.
LE = Formally listed as endangered.
LT = Formally listed as threatened.
C = Candidate for listing.
LE,LT = Formally listed as endangered in part of its range, and as threatened in the other part; or, one or more subspecies or varieties is listed as endangered, and the others are listed as threatened.
LT,PDL = Populations of the species in New York are formally listed as threatened, and proposed for delisting.

GLOBAL AND STATE RANKS (animals, plants, ecological communities and others): Each element has a global and state rank as determined by the NY Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world. ? = Indicates a question exists about the rank. Range ranks, e.g. S1S2, indicate not enough information is available to distinguish between two ranks.

GLOBAL RANK:

G1 - Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.

G2 - Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.

G3 – Vulnerable: Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.

G4 - Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 - Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH - Historically known, with the expectation that it might be rediscovered.

GX - Species believed to be extinct.

NYS RANK:

S1 - Critically imperiled: Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 – Imperiled: Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 - Vulnerable: Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 - Apparently secure in New York State.

S5 - Demonstrably secure in New York State.

SH - Historically known from New York State, but not seen in the past 15 years.

SX - Apparently extirpated from New York State.

SxB and SxN, where Sx is one of the codes above, are used for migratory animals, and refer to the rarity within New York State of the breeding (B)populations and the non-breeding populations (N), respectively, of the species.

TAXON (T) RANK: The T-ranks (T1 - T5) are defined the same way as the Global ranks (G1 - G5), but the T-rank refers only to the rarity of the subspecific taxon.

T1 through T5 - See Global Rank definitions above.

Q - Indicates a question exists whether or not the taxon is a good taxonomic entity.

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

HISTORICAL RECORDS

The following plants and animals were documented in the vicinity of the project site at one time, but have not been documented there since 1979 or earlier.
There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown and therefore location maps are generally not provided.
If appropriate habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there.

Natural Heritage Report on Rare Species and Ecological Communities

VASCULAR PLANTS

Sagittaria montevidensis var. spongiosa

Office Use 8072

Spongy Arrowhead

NY Legal Status: Threatened
NYS Rank: S2 - Imperiled
Federal Listing:
Global Rank: G5T4 - Apparently secure
Last Report: 1936-08-23
EO Rank: Historical, no recent information
County: Dutchess
Town: City Of Beacon, Fishkill
Location: Fishkill Creek Mouth
Directions: The mouth of Fishkill Creek. Tidal mud flats.
General Quality and Habitat: Freshwater tidal mudflats.

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1 Records Processed

More detailed information about many of the rare and listed animals and plants in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.acris.nynhp.org, from NatureServe Explorer at http://www.natureserve.org/explorer, from NYSDEC at http://www.dec.ny.gov/animals/7494.html (for animals), and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources, Region 3
21 South Putt Corners Road, New Paltz, New York 12561-1620
Phone: (845) 256-3094 • **FAX:** (845) 255-4659
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

June 24, 2008

Alissa Jade O'Connell
Matthew D. Rudikoff Associates, Inc.
Beacon Building
427 Main Street, Suite 201
Beacon, NY 12508

Dear Ms. O'Connell:

In response to your request for fish kill information, for the area within one mile of the Beacon Terminal property, I consulted our files and found no record of any fish kills in this area from 2001 - 2008. Furthermore, I do not recall any fish kills in this the 31 years I have worked here in New Paltz.

Please contact me if you require additional information.

Sincerely,

Ronald Pierce

Ronald Pierce
Senior Aquatic Biologist
845-256-3068

RP:rp