FINAL REPORT

Wetlands / Floodplain Assessment
Onondaga Lake
Geddes and Syracuse, New York

Honeywell

March 2010

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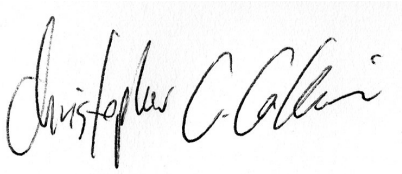
Prepared for:

Honeywell



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1. INTRODUCTION

1.1. PROJECT SCOPE AND OBJECTIVES

This report presents the methods and findings of a wetlands and floodplain assessment performed for select areas associated with Onondaga Lake. The objective of this assessment was to gather data to characterize regulated wetlands and the floodplain adjacent to Onondaga Lake that could potentially be impacted by remedial activities for the lake. The data and information contained herein were evaluated and incorporated, where appropriate, into the *Onondaga Lake Remedial Design Elements for Habitat Restoration* (Habitat Plan). A draft of the Habitat Plan was submitted to the New York State Department of Environmental Conservation (NYSDEC) in December 2009.

The work performed for this assessment was conducted in accordance with the NYSDEC – approved *Revised Final Work Plan, Wetlands/Floodplain Assessment, Onondaga Lake* (Parsons and O'Brien & Gere 2004; Work Plan).

This report is a revision of the draft reports submitted to NYSDEC in October 2004 and June 2009 (O'Brien & Gere and Parsons 2004, 2009) and incorporates responses to NYSDEC's comments of July 17, 2008, November 21, 2009, and an email dated March 8, 2010. **Appendix A** contains a copy of NYSDEC's comment letters. **Appendix A** also contains copies of the letters from NYSDEC approving the wetland boundaries depicted in this report, as discussed further in Section 3.2.2.

This assessment supports the U.S. Environmental Protection Agency (USEPA) *Policy on Floodplains and Wetland Assessments for CERCLA Actions* (USEPA 1985) which identifies the following elements for a floodplain/wetland assessment:

<u>*Wetlands*</u>

1. delineation of impacted wetlands
2. assessment of wetlands functions and values
3. characterization of site flora and fauna
4. discussion of the impacts of the selected remedial alternative as compared to the other options
5. effects of contaminants on wetlands resources
6. measures to minimize potential adverse impacts that cannot be avoided
7. replacement for wetlands losses (mitigation)
8. post-mitigation monitoring plan.

<u>*Floodplain*</u>

1. delineation of the 100-year and 500-year floodplains in the project area
2. description of the proposed action
3. effects of the proposed action on the floodplain
4. description of the other remedial alternatives considered and their effects on the floodplain
5. measures to mitigate potential harm to the floodplain if there is no practicable alternative to locating in or affecting the floodplain, including impacts to the proposed remedial action from flooding events during and after implementation of the remedy.

This report addresses items 1 through 3 under Wetlands and item 1 under Floodplain, as listed above. The remaining Wetlands (4 to 8) and Floodplain (2 to 5) items are described below, to the extent possible, based on current knowledge and available literature. Additional evaluation of these remaining items will be performed during the Remedial Design for the respective areas of Onondaga Lake. Presented below is an overview of issues to be addressed as part of the Remedial Design.

The selected remedy may cause temporary physical disturbances to the lake and surrounding environment (*e.g.*, wetlands and floodplain). Therefore, measures to minimize potential adverse impacts that cannot be avoided will be evaluated as part of, and incorporated into, the Remedial Design. Common practices include field demarcation of wetlands/floodplain areas and implementation of soil/sediment erosion and/or re-suspension control measures (*e.g.*, installation of silt fencing, hay bales, hay/straw mulch, jute matting) to minimize impacts from construction activities.

Chemical constituents have been identified in various media (*e.g.*, surface soil, sediment, surface water, and biota) in portions of the project study area detailed in Section 2. The effects of the chemicals on wetland resources are currently being assessed as part of various site investigative activities associated with Onondaga Lake and the lake sub-sites. Specifically, NYS-regulated wetlands SYW-19 and SYW-12 are being investigated as part of the *Remedial Investigation, Wastebed B/Harbor Brook Site, Geddes and Syracuse, New York Revised Report* (O'Brien & Gere 2007a) and associated feasibility studies. Portions of NYS-regulated

wetland SYW-10 are being investigated as part of the *New York States Revision of the Geddes Brook/Ninemile Creek Remedial Investigation Report* (NYSDEC/TAMS 2003) and associated studies. The portion of SYW-10 north of I-690 has been investigated and is being remediated consistent with the Record of Decision for Operable Unit 2 of the Geddes Brook/Ninemile Creek Site (NYSDEC and USEPA 2009). Portions of NYS-regulated wetland SYW-6 are currently being evaluated as part of ongoing investigations of the Ninemile Creek Dredge Spoils Area Site.

Honeywell is committed to the replacement of wetland losses caused by remedial activities and establishment of post-mitigation monitoring plans, as appropriate. As mentioned above, site-specific details concerning these items will be incorporated in the Remedial Design.

1.2. REPORT ORGANIZATION

This assessment report is organized into the following sections:

1. Introduction
2. Project Study Area
3. Assessment Methods
4. Assessment Results
5. Summary.

A reference section is included along with tables, figures, appendices and exhibits that support the report text.

2. PROJECT STUDY AREA

The project study area consists of the entire lake shoreline. Areas that could potentially be impacted by lake remedial activities (*e.g.*, dredging and capping) were targeted for evaluation. Areas investigated in this report include federal- and NYS-regulated wetlands, wetlands identified in other reports, suspected wetlands identified from a boat reconnaissance (BRs), and associated floodplain areas adjoining Onondaga Lake. **Figure 1** depicts the areas evaluated as part of this assessment and the NYS-regulated wetlands located in the vicinity of the Lake. The figure also shows sediment management unit (SMU) polygon designations as defined in the Onondaga Lake Feasibility Study, and those polygons targeted for this assessment. **Figure 2** depicts the 100- and 500-year flood boundaries associated with Onondaga Lake. **Figure 3** depicts National Wetland Inventory (NWI) habitats associated with Onondaga Lake (USFWS 1978).

Portions of the following areas were evaluated as part of this assessment: New York State (NYS)-regulated wetlands SYW-19, SYW-12, SYW-10, and SYW-6, BRs 1 through 7, Wastebeds 1 through 8 Site, Wastebed 13, and the lake floodplain. **Table 1** presents a summary of the evaluated areas. Most of NYS-regulated wetland SYW-6 is not included as part of this assessment because large-scale remediation is not anticipated within SMU 5. However, BR7 (the lakeshore area along Polygon S111 located adjacent to SYW-6 and adjacent to SMU 5) was assessed. Photographs of the areas included in the study appear in **Appendix B**. **Figures 4** through **15** provide higher resolution maps of the lakeshore areas, beginning with SMU 1 and progressing clockwise along the entire lake shoreline to SMU 7.

An overview of the project areas targeted for evaluation and the associated lake SMUs is presented below. Findings of the respective evaluations are presented in Section 4 of this report.

2.1. NEW YORK STATE-REGULATED WETLANDS

Portions of the following NYS-regulated wetlands are within the project study area and shown on **Figure 1**:

- SYW-19: situated east and west of Harbor Brook (between Onondaga Lake and the railroad tracks) adjacent to SMUs 1 and 7
- SYW-12: situated north and south of Ley Creek adjacent to SMU 6
- SYW-10: situated between Onondaga Lake and Route 690 and bordering Ninemile Creek adjacent to SMU 4
- SYW-6: located south of Long Branch Road starting at the lake outlet and extending south along the lake shore adjacent to SMU 5.

2.2. BOAT RECONNAISSANCE AREAS

The following BRs were assessed for this project:

- BR1: situated in the I-690 and Wastebeds 1 through 8 Site drainage swale near the boat access area (adjacent to northern end of SMU 2, **Figure 5**)
- BR2: consists of the eastern Lakeshore Area portion of the Wastebeds 1 through 8 Site in the southern half of SMU 3 (**Figure 6**)
- BR3: consists of an area located along the southern shoreline of Lakeview Point on the Wastebeds 1 through 8 Site (adjacent to SMU 3, **Figure 6**)
- BR4: consists of the narrow strip of shoreline adjacent to where SMU 4 and SMU 5 meet (**Figures 7** and **8**)
- BR5: situated on the northern shore of the lake (adjacent to SMU 5) east of Bloody Brook (**Figure 11**)
- BR6: located adjacent to SMU 6 between Onondaga Creek and the Metro outfall (**Figures 14** and **15**)
- BR7: consists of the narrow strip of shoreline at the northwest corner of the lake adjacent to SMU 5 (**Figure 9**).

2.3. WASTEBEDS 1 THROUGH 8 SITE

The Lakeshore portion of the Wastebeds 1 through 8 Site was evaluated for this study. This area includes BR2 and BR3, described above (**Figure 6**). This area was also assessed as part of ongoing remedial investigative activities performed for the Wastebeds 1 through 8 Site, as discussed in Section 4.5.

2.4. WASTEBED 13

Wastebed 13 is located southwest of SYW-18 and southeast of the intersection of Ninemile Creek and the CSX rail line along Airport Road (**Figure 16**). A portion of the wastebed has been selected as the

location of the sediment containment area (SCA) for storage of dredge spoils from Onondaga Lake.

Areas between Onondaga Lake and Wastebed 13 that may be impacted via transfer of dredged material will be evaluated in accordance with the methods outlined in this report following the finalization of the transfer route. Dredged sediments from Onondaga Lake will be pumped through a pipeline to the SCA for dewatering. The route of the slurry pipeline will generally parallel the western shore of the lake and Ninemile Creek in a southwest direction to the SCA. As part of the SCA project, a wetland identification and delineation was performed to evaluate potential crossings of wetlands by the proposed pipeline construction. The draft delineation report will be submitted for NYSDEC review in the near future.

Additional areas between Onondaga Lake and Wastebed 13 that may be impacted by remedial operations (*e.g.*, handling and/or sediment processing facilities, cap material staging areas, and water treatment facilities either near the lake or on or near Wastebed 13) will be evaluated in accordance with the methods outlined in this report as part of remedial design efforts.

2.5. LAKE FLOODPLAIN

The 100- and 500-year flood boundaries for Onondaga Lake, as demarcated by the Federal Emergency Management Agency's (FEMA) *Flood Insurance Study* (FEMA 1981), are shown on **Figure 2**. FEMA computed the 100- and 500-year flood boundaries as topographic elevations of 372 and 373 feet above mean sea level (amsl), respectively. FEMA has adopted the 100-year flood boundary as a base flood for purposes of floodplain management measures. The 500-year flood boundary is used to indicate additional areas of flood risk in a community. The lake floodplain is discussed further in Section 4.8.

3. ASSESSMENT METHODS

The scope of work for this assessment, as described in the Work Plan, includes two main tasks: document review and site investigation. Details concerning the methods of completion of these tasks are presented in this section.

3.1. DOCUMENT REVIEW

Background documents reviewed for this assessment consist of soil survey information, maps of the study area and vicinity, and other pertinent sources, such as historical site investigation reports. A brief description of the reviewed documents is presented below. Information contained in these resources that is pertinent to this assessment has been incorporated into the discussion of the specific assessment areas presented in Section 4.

3.1.1. Available Reference Literature

The following available reference literature was reviewed for this study:

- *New York State Freshwater Wetlands Map for the Syracuse West Quadrangle* (NYSDEC 1986). The NYSDEC developed wetland maps pursuant to Article 24 of the New York State Environmental Conservation Law. The maps present the approximate boundaries of freshwater wetlands regulated by the NYSDEC. In most instances, the mapped boundaries are based on aerial photograph and soil survey interpretation and, therefore, require site-specific field verification. Mapped NYSDEC wetlands in the study area are depicted on **Figure 1**.
- *National Wetland Inventory Map* for Syracuse West Quadrangle (USFWS 1978). The U.S. Fish and Wildlife Service (USFWS), through its NWI Project, has produced a series of maps to identify wetlands that provide significant waterfowl habitat in the U.S. Although these maps are helpful in the preliminary identification of wetlands, they do not represent federally regulated wetlands. Mapped NWI habitats in the Onondaga Lake area are depicted on **Figure 3**.
- *Onondaga County Wetlands Inventory 1976 – 1978* (Rhodes and Alexander 1980). Information from this document regarding wetlands SYW-10, SYW-12, and SYW-6, is included in this report under the respective wetland area discussions.
- *Soil Survey of Onondaga County, New York* from U.S. Soil Conservation Service (USSCS 1977). The soil survey provided information regarding the mapped soil series of the study area. The soil survey information was compared with the list of New York State hydric soils (NRCS 2008) to assess whether the mapped soil series are characterized as hydric or potentially containing hydric inclusions. The mapped soil series present in the project study area consist of primarily Made land - chemical waste (*Ma*), Urban land (*Ub*), Edwards muck (*Ed*), Saprists and Fluvaquents (*SA*), and cut and fill land (C.F.L.). These soils are discussed in the applicable assessment area discussions.

3.1.2. Historical Site-Specific Investigation Reports

The following historical investigation reports were reviewed for this study:

- Wetland Delineation and Floodplain Assessment, Wastebeds 1 through 8 Site, Geddes, New York Final Report (O'Brien & Gere 2009)
- Remedial Investigation, Wastebed B/Harbor Brook Site, Geddes and Syracuse, New York Revised Report (O'Brien & Gere 2007a)
- Geddes Brook/Ninemile Creek Feasibility Study Revised Report, Appendix F, Wetland Delineation Report: Lower Reach of Ninemile Creek and Geddes Brook at the West Flume (Parsons 2005)
- Jurisdictional Wetland Delineation Report, Harbor Brook Site, Geddes, New York (O'Brien & Gere 2003)
- New York States Revision of the Geddes Brook/Ninemile Creek Remedial Investigation Report (NYSDEC/TAMS 2003)
- Trail Section 3C of the Onondaga Lake Trail & Habitat Project (Parsons 2003)
- Onondaga Lake Baseline Ecological Risk Assessment (NYSDEC/TAMS 2002a)
- Wetland Delineation Report for the Onondaga Lake West Shore Trail (Barton & Loguidice 2001).

Wetland delineations have been performed for SYW-10 along the lower reaches of Ninemile Creek as reported in the revised *Geddes Brook/Ninemile Creek Feasibility Study Revised Report* (Parsons 2005), and for SYW-19 as reported in *Jurisdictional Wetland Delineation Report, Harbor Brook Site, Geddes, New York* (O'Brien & Gere 2003). Wetland delineations were performed for select areas of SYW-6 as reported in *Wetland Delineation Report for the Onondaga Lake West Shore Trail* (Barton & Loguidice 2001) as part of a report describing the wetland resources associated with the Onondaga Lake West Shore Trail improvement project. In addition, a function and value assessment was performed for SYW-12 as part of the *Trail Section 3C of Onondaga Lake Trail & Habitat Project* (Parsons 2003). Data and information obtained from these studies were utilized for this project.

Information obtained from review of the historical investigation reports is incorporated into the applicable sections, below, for each of the wetland areas assessed.

3.2. SITE INVESTIGATION

The site investigation portion of the assessment is comprised of three tasks: wetlands boundary delineation, wetland function and value assessment, and characterization of site flora and fauna (ecological survey). As part of the site investigations, O'Brien & Gere biologists conducted field reconnaissance at SYW-19, SYW-12, SYW-10, SYW-6, Wastebed 13, and other areas along the Onondaga Lake shoreline that could potentially be impacted by the lake remedial activities. To assist in the identification and selection of shoreline areas to be included in the site investigation, a boat reconnaissance of the Onondaga Lake shoreline was performed. The boat reconnaissance and methods employed for the site investigations are discussed in this section. A representative of TAMS Consultants, Inc. (TAMS), NYSDEC's sub-contractor, accompanied the field biologists during a majority of the field efforts. Additionally, a NYSDEC wetland biologist has visited many of the assessed areas, also discussed herein.

3.2.1. Boat Reconnaissance

A boat reconnaissance was performed along the entire Onondaga Lake shoreline (adjacent to SMUs 1-7) to evaluate the presence of other potential wetland areas that could be included as part of this study. Representatives from O'Brien & Gere, Parsons, and TAMS toured the lake by boat on September 8, 2004. Subsequent field reconnaissance was performed on-shore at areas identified as potential wetlands adjacent to areas proposed for remediation in SMUs 2, 3, 4, 5, and 6. The methods of investigation are described below. Wetlands identified outside the project study areas were not investigated, but the predominant characteristics of the wetlands observed were documented.

Based on the findings of the boat and field reconnaissance, seven areas were identified for further assessment (BRs 1 to 7). If any of these areas were determined to be wetlands, a wetland function and value assessment and an ecological survey were conducted.

3.2.2. Wetland Boundary Delineation

Historical Lakeshore Changes

Historically, Onondaga Lake was a natural marl lake containing sediments composed primarily of calcium carbonate that precipitated from the water (Rowell 1996). The lake was mesotrophic with fresh to slightly saline water. Inland salt marshes and freshwater wetlands surrounded much of the shoreline. Salt springs extended from the village of Liverpool, around the southern end of the lake, to the outlet of Ninemile Creek (Wurth 1932). Associated vegetative species were similar to those found in salt regions all over the world (Wurth 1932). Since settlement and industrial development, the lake and lakeshore have undergone substantial changes. Outlet dredging along with draining of the wetlands at the southern end of the lake in 1822 and construction of the New York State Barge Canal in 1915 resulted in a decrease in lake level and loss of wetland habitats. Construction of the Syracuse Northern Railroad in 1840 changed the shoreline elevation and substrate (through discharge of materials from construction activities) also resulting in loss of wetland habitats. These changes contributed to urban development and the associated additional loss of wetlands and other habitats.

In addition to the human-induced alterations to the lakeshore described above, documented Solvay waste and sludge disposal activities since the early 1900s have also influenced the soils, vegetation, and hydrology of much of the study area. Wastebeds 1 through 8 were constructed over an area known as Geddes Marsh, part of which was reclaimed from

the lake when the lake level was lowered early in the 1800s (BBL 1989). Wastebeds 1 through 6 were in use as early as 1916, and were utilized, along with Wastebeds 7 and 8, until 1943 (O'Brien & Gere 2007a) and Wastebed B was active from approximately 1898 through the early 1960's (BBL 1989). Waste disposal activities along the lake shoreline buried much of the original wetland habitat (NYSDEC/TAMS 2002b). Based on the timeline of human-induced lakeshore alterations and Solvay waste/sludge disposal activities, potential impacts to previously undisturbed lake-associated wetlands are uncertain.

Delineation Methods

Wetland delineations were conducted in accordance with the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (USACE 1987). This method utilizes a three-parameter approach and calls for the presence of hydrophytic vegetation, hydric soils, and wetland hydrology for an area to be considered a jurisdictional wetland. Therefore, information gathered at the wetlands visited for this scope of work was comprised of information and data concerning the soils/substrate, vegetative community, and local hydrology. The NYSDEC also defines and regulates wetland habitats and has published the *Freshwater Wetlands Delineation Manual* (NYSDEC 1995) for use while conducting delineations in New York State. Although the USACE method was utilized for this project, information concerning the presence of NYS-regulated wetlands is included herein for informational purposes, when applicable.

Sample plots were established within potential wetland areas to determine the presence or absence of indicators of wetland soils, wetland hydrology, and hydrophytes. Data on soils, hydrology, and vegetation were collected primarily along the wetland/upland edge; however, similar data were also collected from the interior of the wetland.

Vegetation was examined generally in 30-ft radius plots for tree, sapling, and shrub layers and 5-ft radius plots for the herbaceous layer. The vegetation in potential wetland areas was assessed for the presence of hydrophytes (species adapted to grow in water). Observed vegetation was compared to the *National List of Plant Species that Occur in Wetlands: Northeast (Region 1)* (Reed 1988). Key observations were the presence of more than 50 percent of hydrophytes within the plot area focusing on dominant plant species for four categories: trees (3-inch diameter at breast height), saplings and shrubs (less than 3 inches in diameter and greater than 3.2 feet tall), herbs, and woody vines.

Potential wetland areas were examined for field indicators of wetland hydrology. The hydrology of the study areas is predominantly influenced by rainfall, runoff, and Onondaga Lake. Criteria specified in USACE (1987) and used to indicate wetland hydrology consisted of ground surface inundation or evidence of inundation, saturated soils within 12 inches of the ground surface, standing water in advanced boreholes, and drainage patterns. If these indicators were present in the wetland sample plots, the hydrology criterion for wetlands was met in accordance with USACE (1987).

Soils were assessed by manual advancement of a borehole with a hand-held Dutch auger to a maximum depth of 18 inches (or refusal). Field observations made and recorded described soil color, texture, and structure. Hydrologic characteristics were also assessed through observation of boreholes.

As described above, due to the lakeshore's long history of human-induced alterations, the presence of pre-existing conditions could preclude the development and presence of the physical indicators typical of wetlands. Therefore, professional judgment was utilized with regard to the applicability of the hydric soil indicators listed in USACE (1987) when areas of marginal substrate (areas dominated by Solvay waste and apparent fill) were encountered. Under these circumstances, procedures for "atypical situations" (as defined in USACE (1987)) were applied if deemed appropriate. In some instances, field delineators relied upon professional judgment to make a reasonable assessment of areas dominated by a substrate comprised of Solvay waste. These areas included the SYW-19 area and the Wastebed 1 through 8 Site Lakeshore Area. In these areas, clear evidence of both wetland hydrology and vegetation was required for an area to be considered a wetland (*e.g.*, saturation within 12 inches of the ground surface and a vigorous, if not exclusive, hydrophyte community). This method was agreed to by representatives from NYSDEC, USFWS, and EarthTech during field efforts associated with the delineation of the Wastebed 1 through 8 Site Lakeshore Area.

Wetland boundaries were determined based on area characteristics meeting the requirements of hydric soils, wetland hydrology, and hydrophytes. The delineated boundaries were marked sequentially with coded surveyor's ribbon tied to the existing vegetation. The boundary coordinates were recorded using a hand-held global positioning system (GPS) receiver (Garmin – eTrex Vista, Trimble XH, and/or Trimble XT) and transferred to the study area maps presented with this report.

Appendix C presents the wetland delineation data forms that were completed for this project. These data forms document the observed vegetation, hydrology, and soils for each of the sample plots evaluated for the wetlands delineated as part of this study.

Wetlands SYW-10 and SYW-19 were delineated in previous studies. Wetland delineation data forms for SYW-10 were completed by Terrestrial Environmental Specialists, Inc (TES) in the fall of 2003 and are provided in the revised *Geddes Brook/Ninemile Creek Feasibility Study Revised Report* (Parsons 2005). The wetland boundaries and function and value assessment information presented herein was confirmed by TES in November 2008. Wetland delineation data forms for SYW-19 completed in the summer of 2000 and summer of 2003 by O'Brien & Gere are provided in the *Jurisdictional Wetland Delineation Report, Harbor Brook Site, Geddes, New York* (O'Brien & Gere 2003).

Boundary Approval

Wetland boundaries depicted in the draft version of this report were approved by the NYSDEC in their letter dated February 28, 2008. A copy of this letter is presented in **Appendix A**. Specifically, the approved wetland boundaries include:

- portions of the SYW-19 area in the vicinity of Harbor Brook (OBG WL1 through WL7, **Figures 4** and **15**)
- a portion of the SYW-12 area south of Ley Creek and south and west of the railroad tracks (**Figure 14**)
- portions of the SYW-10 area north and south of Ninemile Creek (**Figure 7**)
- BR4-the small lakeshore section where SMUs 4 and 5 meet (**Figure 7**)
- BR7-shoreline area of SYW-6 adjacent to Polygon S111 (**Figure 9**).

The NYSDEC previously accepted the delineated wetland boundaries of the SYW-19 Area (Harbor Brook Site) in their letter of July 17, 2006 (see **Appendix A**). Based on NYSDEC comments on the draft of this report, additional delineation efforts have occurred in the SYW-12 area, the Wastebeds 1 through 8 Site area, and at Wastebed 13. These efforts are described in Section 4. A NYSDEC representative was present during most of these activities. Therefore, it is our understanding that these new delineation boundaries have at least NYSDEC's verbal acceptance and written acceptance will be received following the NYSDEC's review of this revised report.

3.2.3. Wetland Function and Value Assessment

Data gathered during document review, wetland boundary delineation, and ecological survey (described below) were used to assess the functions and values of the delineated wetland complexes of the study area. **Table 1** lists the wetlands assessed which include the lakeshore portions of the following NYS-regulated wetlands: SYW-19 (2 areas), SYW-12 (2 areas), and SYW-10 (2 areas). Function and value assessments were also completed for wetlands at the Wastebeds 1 through 8 Site (2 areas), and those wetlands identified during the boat reconnaissance of the lakeshore (BR4 and BR7 (part of SYW-6)). In accordance with the method (described below), the area potentially impacted by the proposed action (*i.e.*, lake remedy) was included in the assessment. Therefore, the limits of the site areas evaluated for the function and value assessment are depicted on the respective figures.

This study evaluated the thirteen functions and values as specified in *The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach* (USACE 1999). The workbook identifies the following eight functions and five values of wetlands:

Functions

- Groundwater Recharge/Discharge
- Flood Flow Alterations (Storage and Desynchronization)
- Fish and Shellfish Habitat
- Sediment/Toxicant/Pathogen Retention
- Nutrient Removal/Retention/Transformation
- Production Export (Nutrient)
- Sediment/Shoreline Stabilization
- Wildlife Habitat

Values

- Recreation (Consumptive and Non-Consumptive)
- Educational/Scientific Value
- Uniqueness/Heritage
- Visual Quality/Aesthetics
- Threatened or Endangered Species Habitat

Field observations were recorded on Wetland Function-Value Evaluation Forms adopted from USACE (1999). The completed forms for each of the assessed areas appear in **Appendix D**. Considerations and qualifiers utilized in the application of the specific functions and values, as presented in the USACE (1999), are also in **Appendix D**. Site-specific application of considerations and qualifiers was based on best professional judgment. In some instances, as deemed necessary by the field assessors, additional comments or explanations are provided on a separate comment table attached to the Wetland Function-Value Evaluation Form.

If it was determined in the field that more than one hydrologically or geographically distinct wetland cell was present as part of an assessed wetland complex, then each cell was subjected to a distinct function and value evaluation. Based on these criteria, two evaluation forms were completed for SYW-10, SYW-12, SYW-19, and the Wastebeds 1 through 8 Site.

3.2.4. Ecological Survey

An ecological survey, the third task performed as part of the site investigations, was conducted to characterize the flora and fauna observed in the area of the assessed lakeshore wetlands. These surveys were conducted within the wetland and adjacent upland habitats. Surveys documented visual observations of flora (predominant vegetative species) and fauna (*e.g.*, mammal, bird, amphibian, reptilian, and fish inhabitants). Indicators of wildlife presence were also recorded (*e.g.*, nests, tracks, burrows, and scat). Aquatic habitats, when present, were inspected for parameters such as water clarity, color, depth, and classification. Field observations were recorded on Ecological Survey Forms and appear in **Appendix E**.

Table 2 provides common and scientific names, stratum, and wetland indicator status of vegetation discussed in the remainder of this report. **Table 3** presents a list of potential breeding bird species recorded from the lake area as part of the NYS Breeding Bird Atlas (BBA) Project. The lake area is comprised of Blocks 3976B, 3977C, and 3977D in the BBA (**Figure 17**). **Table 4** presents a list of amphibian and reptile species recorded for the lake area, defined as the Syracuse West quadrangle (**Figure 18**), as part of the NYS Amphibian & Reptile Atlas Project.

Information presented in previous site investigation reports (*e.g.*, ecological risk assessments) was referenced prior to the survey, as appropriate. Lists of species (common and scientific name) that potentially occur within one-quarter mile of the wetland habitats are provided in **Exhibit 1**. The tables of **Exhibit 1** were extracted from the *Onondaga Lake Baseline Ecological Risk Assessment* (NYSDEC/TAMS 2002a), identified as part of the document review.

4. ASSESSMENT RESULTS

This section presents the assessment results for the wetland and floodplain areas evaluated in this study. For each area, wetland delineation results are provided, followed by wetland function and value assessment results and ecological survey results, as applicable. On the respective **Figures 4** through **16**, red lines depict the delineated wetland boundaries and green shading indicates the area included in the function and value assessment and ecological surveys.

4.1. WETLAND SYW-19

4.1.1. Delineation of Impacted Wetlands

Based on a review of the 1986 NYSDEC wetland map for the Syracuse West Quadrangle (Onondaga County Map 9 of 21), NYSDEC wetland SYW-19 is a freshwater palustrine wetland. It is located along the shores of Onondaga Lake and Harbor Brook and on the elevated portions of Wastebed B (**Figure 1**).

The NYSDEC classifies each wetland shown on its wetland map according to the classification system set forth in *Freshwater Wetlands Maps and Classification,* 6 NYCRR 664 (New York Code of Rules and Regulations (NYCRR) 1980). Four separate classes are established that rank wetlands according to their ability to perform wetland functions and provide wetland benefits. Class I wetlands have the highest rank, descending through Classes II, III and IV.

The listing of the NYSDEC wetlands classification for Onondaga County Wetlands indicates that SYW-19 is a Class II wetland. It is likely that SYW-19 is considered a Class II wetland by the NYSDEC due to its close proximity to Onondaga Lake. Based on the NYSDEC wetland classification requirements (6 NYCRR 664), wetlands that are associated with permanent open water outside the wetland are considered to be Class II wetlands. It should be noted that there are seventeen different Class II NYSDEC wetland characteristics. Since the information collected by the NYSDEC for mapping and classification purposes was unavailable for review, the reasons for the classification of SYW-19 as a Class II NYSDEC wetland are unknown.

Based on the USFWS NWI, the area of SYW-19 near the mouth of Harbor Brook is depicted as PEM1Cs habitat (**Figure 3**). This indicates it is a palustrine system dominated by emergent vegetation with some broad-leaved deciduous vegetation, some seasonal flooding, and spoils materials in the substrate. Lacustrine habitat, associated with Onondaga Lake, is also indicated on the NWI mapping adjacent to SYW-19.

The *Onondaga County Wetlands Inventory 1976-1978* (Rhodes and Alexander 1980) was reviewed for information pertaining to wetlands in the study area. This document did not include information concerning SYW-19.

A jurisdictional wetland delineation of the SYW-19 area was conducted in the summers of 2000 and 2003 as part of the ongoing *Wastebed B/Harbor Brook Site Remedial Investigation Revised Report* (O'Brien & Gere 2007a). The delineation was performed utilizing the methods presented in wetland delineation manuals authored by USACE (1987) and NYSDEC (1995). Wetland delineation findings are reported in *Jurisdictional Wetland Delineation Report, Harbor Brook Site, Geddes, New York* (O'Brien & Gere 2003), and summarized below.

Soils mapped for these wetlands are labeled as *Ma* soils. *Ma* soils consist predominantly of bed areas of chemical waste, and may or may not be covered with vegetation (USSCS 1977). The waste material that makes up this soil is a slurry waste by-product from soda ash production. The waste slurry was pumped into diked beds where it was allowed to settle. The wastebed areas were gradually built up. Once the pre-determined height of the wastebed was reached and filling operations ceased, vegetation was established, primarily by volunteer growth. The drainage characteristics of *Ma* soils range from somewhat poorly drained to poorly drained on the wastebed areas located near lake level (USSCS 1977).

The SYW-19 area consists of seven delineated wetland areas (WL1, WL2, WL3, WL4, WL5, WL6, and WL7) as depicted on **Figures 4** and **15**. WL1 through WL4 are located along the Onondaga Lake shoreline. WL1 and WL2 are located near the mouth of Harbor Brook and WL3 and WL4 are located near the mouth of the Lower East Flume. WL5 and WL7 are located in the western portion of Wastebed B in the Dredge Spoil Area and within and along the Upper East Flume, respectively. WL6 is within a portion of the Route 690 drainage ditch. As

previously noted, NYSDEC wetland SYW-19 is located along the shores of Onondaga Lake and Harbor Brook and on the elevated portions of Wastebed B based on review of the 1986 NYSDEC wetlands map for the Syracuse West Quadrangle. Contrary to the wetlands mapping, the delineated wetlands associated with SYW-19 are predominantly located along the lakeshore and do not occur on the elevated portions of the wastebed.

The soils observed in WL1 through WL4 were predominantly a mixture of weathered Solvay waste material with varying proportions of brown silty loam and organic (decomposed plant matter) material. In some instances, the presence of Solvay waste precluded the finding of positive indicators of hydric soils. Therefore, the delineation efforts for portions of WL1 through WL4 focused on the prevalence of positive indicators of hydrophytic vegetation and wetland hydrology. Descriptions of the seven delineated wetlands, as presented in O'Brien & Gere (2003), are included below.

Wetland 1 (WL1)
Wetland 1 extends along the southern shoreline of Onondaga Lake near the eastern end of Wastebed B and borders the eastern bank of Harbor Brook (see **Figures 4** and **15**). WL1 comprises approximately 7.14 acres. Onondaga Lake forms the northern border of this wetland. An abrupt rise in topography (*i.e.* berm and railroad bed) defines the southern and eastern borders of the wetland. WL1 is vegetated primarily with a monoculture stand of common reed. Wetland soils were indicated via the presence of low matrix chroma and high organic content of the soil strata. Wetland hydrology was indicated by the presence of saturated soils in the upper 12 inches of the ground surface.

Wetland 2 (WL2)
Wetland 2 is on the western side of Harbor Brook, opposite WL1, as shown on **Figures 4** and **15**. WL2 comprises approximately 2.76 acres with Onondaga Lake forming the northern border of this wetland. A gentle rise in topography toward Wastebed B defines the western and southern borders of the wetland. Similar to WL1, the dominant vegetation present at WL2 is common reed; however, portions of WL2 also contain grape vine, common buckthorn, box-elder, black willow, and eastern cottonwood. Low matrix chroma and organic streaking indicated wetland soils and significant amounts of Solvay waste were observed in the soil strata. Wetland hydrology was indicated by the presence of saturated soils in the upper 12 inches of the ground surface.

Wetland 3 (WL3)
Wetland 3 is located just north of Wastebed B on the southern shore of Onondaga Lake, as shown on **Figure 4**. WL3 comprises approximately 1.67 acres. Onondaga Lake forms the northern border of this wetland and the Lower East Flume forms the western border. The former bulkhead that was constructed to retain the material deposited into Wastebed B primarily defines the southern border of WL3. WL3 is vegetated primarily with common reed. Other vegetative species observed were purple loosestrife, common buckthorn, and box-elder. Significant amounts of Solvay waste were observed within the soil strata. Wetland hydrology was indicated by the presence of saturated soils within 12 inches of the ground surface.

Wetland 4 (WL4)
Wetland 4 is located within a depression that is bounded to the west and south by the Lower East Flume and to the north and east by Onondaga Lake, as shown on **Figure 4**. WL4 comprises approximately 0.49 acres. The dominant vegetative species observed were similar to those of wetlands WL1, 2, and 3 and include, but were not limited to, common reed, purple loosestrife, common buckthorn, and box-elder. Significant amounts of Solvay waste were observed within the soil strata. Wetland hydrology was indicated by saturation within 12 inches of the ground surface.

Wetland 5 (WL5)
Wetland 5 is located within Dredge Spoil Area #1, a depressional area located at the western end of Wastebed B (**Figure 4**). An abrupt rise in topography surrounds and defines much of the border of the wetland. WL5 comprises about 0.26 acres, and is vegetated primarily with common reed and 1 inch to 10 inch diameter eastern cottonwood trees. Wetland soils were indicated by low matrix chroma and mottling. Wetland hydrology was indicated via the presence of saturated soils within 12 inches of the ground surface.

Wetland 6 (WL6)
Wetland 6 is associated with the Route 690 drainage ditch that is located along the northern side of the Route 690 westbound lane and southern side of Wastebed B (**Figures 4** and **15**). The ditch drains runoff from Route 690 and the wastebed eastward into Harbor Brook. WL6 exists near the

eastern end of the drainage ditch, just west of Harbor Brook, and comprises approximately 0.35 acres. An abrupt rise in topography (*i.e.,* the embankment of Route 690 and the berm of the wastebed) defines the southern and northern borders of the wetland.

WL6 is vegetated primarily with common reed. Wetland soils were indicated by low matrix chroma with slight mottling. Wetland hydrology was indicated via the presence of inundation and saturated soils within 12 inches of the ground surface. This area appears to receive runoff from the Route 690 embankment and some discharge from the drainage ditch during high flow conditions such as after a significant precipitation event. Portions of this wetland are periodically disturbed by the New York State Department of Transportation as part of their routine roadside ditch maintenance activities that entail the clearing of excess sediment and vegetation in the ditch to improve and direct flow away from the highway.

Wetland 7 (WL7 or Upper East Flume)
Wetland 7 comprises approximately 0.99 acres and consists of the area within the boundaries of the Upper East Flume (**Figure 4**) that contain hydrophytes, predominantly common reed. This vegetation occurs along the fringe of the flume. The outside boundary of the wetland is defined by the banks of the flume, and the internal (towards the flume) boundary is defined by the limits of common reed growing as an emergent plant at the perimeter (fringe) of the flume.

4.1.2. Function and Value Assessment

The completed Wetland Function-Value Evaluation Forms for the assessed areas of SYW-19 appear in **Appendix D** as **Tables D-1, D-2, D-11, D-12,** and **D-13**. Five separate assessment forms were completed for SYW-19 based on the findings of the wetland delineation described above. WL1 and WL2 are contiguous although Harbor Brook bisects them. WL3 and WL4 are also contiguous except that the Lower East Flume bisects them. Therefore, one wetland function and value assessment was completed for WL1 and WL2, and another was completed for WL3 and WL4. Function and value assessments were also completed for WL5, WL6, and WL7 as these areas are within the 100-year floodplain area. Based on the results of the function and value assessment, the principal functions/values of WL1, WL2, WL3, WL4, WL5, WL6 and WL7 are:

- flood flow alteration
- sediment/toxicant retention
- nutrient removal
- sediment/shoreline stabilization
- wildlife habitat.

Groundwater recharge/discharge was excluded from the list of principal functions/values because of the area's low topographic gradient and lack of significant field indicators (no seeps observed) for groundwater recharge/discharge.

4.1.3. Ecological Survey

The results of the ecological surveys for SYW-19 appear in **Appendix E** as **Tables E-1**, **E-2, E-11, E-12,** and **E-13**. Similar to the function and value assessment described above, one wetland ecological survey form was completed for WL1 and WL2 combined, and another was completed for WL3 and WL4 combined. Individual survey forms were completed for each of the remaining three wetlands (WL5, WL6, and WL7). As indicated on the forms and discussed in Section 4.1.1, the dominant vegetation observed in these wetlands was common reed. Other species observed in and around these wetlands included bittersweet nightshade, eastern cottonwood, and common buckthorn. The primary wildlife species observed were songbirds. Osprey and mallard were observed transiting the SYW-19 area. As supplemental ecological information, **Tables 3** and **4** and the tables of **Exhibit 1** list potential wildlife species of the Onondaga Lake area, many of which could utilize the SYW-19 area, including the delineated areas not contiguous with the lake (WL5, WL6, and WL7).

4.2. WETLAND SYW-12

As agreed to by the NYSDEC, the initial study area for this NYS-regulated wetland included only the portion of the wetland located adjacent to Onondaga Lake and south of Ley Creek and south and west of the railroad tracks (see **Figures 13** and **14**). However, in accordance with the NYSDEC comment letter of July 17, 2008, and subsequent conversations between the site stakeholders, the additional portions of the SYW-12 Area located south of Ley Creek were added to the assessment. Therefore, as described in the following sections, a delineation, ecological survey, and wetland function

and value assessments of some of the additional portions of SYW-12 were conducted.

4.2.1. Delineation of Impacted Wetlands

NYS-regulated Wetland SYW-12, as mapped by the NYSDEC, is located along the northeastern shoreline of Onondaga Lake north of the mouth of Onondaga Creek and northwest of Carousel Mall (**Figure 1**). As mapped, SYW-12 consists of several wetland cells, with the two largest cells located between Ley Creek and Onondaga Creek and immediately north of Ley Creek. SYW-12 is recognized by the NYSDEC as a Class I wetland. It covers approximately 42 acres and has vegetative cover containing common reed and an area of floodplain deciduous forest. It is likely that SYW-12 is considered a Class I wetland because of its size, location within an urban area, proximity to Onondaga Lake, and the presence of unique habitat characteristics. Portions of SYW-12 not included in this assessment (north of Ley Creek) have been documented as salt marsh habitat by the New York Natural Heritage Program (NYSDEC/TAMS 2002a). Based on the characteristics required for Class I NYSDEC wetland, as listed in 6 NYCRR 664, NYS-regulated wetlands that contain at least 4 of the 17 Class II characteristics are considered to be Class I wetlands.

Based on the USFWS NWI mapping for this area (see **Figure 3**), the northern portion of SYW-12, near Ley Creek, is depicted as PEM1Cs (a palustrine system dominated by emergent vegetation with some broad-leaved deciduous vegetation, some seasonal flooding, and spoils materials in the substrate). An area on the southern portion of the wetland and along the lakeshore is also depicted as PEM1Cs. Lacustrine habitat is indicated on the NWI mapping; however, these habitats are associated with the open waters of Onondaga Lake.

Soils mapped for this area include Made land (*Ma*) and cut and fill lands (C.F.L.). *Ma* soils, as previously described, consist predominantly of bed areas of chemical waste, which may or may not be covered with vegetation. Cut and fill lands soils vary widely within Onondaga County (USSCS 1977).

Wetland delineation efforts were conducted as part of the site investigation tasks in September 2004 and October and November 2008. Delineations were performed utilizing the methods described previously. The portion of SYW-12 delineated and identified by O'Brien & Gere in 2004 (WL1) consists of approximately 17 acres south of Ley Creek and to the south and west of the railroad tracks along the northeastern shoreline of Onondaga Lake. Onondaga Lake forms the western border. An abrupt rise in topography (*i.e.*, berm and railroad bed) defines the eastern border of the wetland, and Ley Creek defines the northern boundary. The delineated wetland boundary (**Figure 14**) somewhat matches the depicted NYSDEC-mapped boundary for the southern portion of SYW-12 (**Figure 1**). The delineated wetland is a combination of a monoculture stand of common reed and a forested floodplain that comprises an overstory of predominantly eastern cottonwood. Wetland soils were indicated via presence of low matrix chroma and coarse sands with organic streaking. Wetland hydrology was indicated by the presence of saturated soils, drift lines, watermarks, and drainage patterns.

The portions of SYW-12 identified and delineated by O'Brien & Gere in 2008 consist of two relatively small wetlands (WL2 and WL3) south of Ley Creek and east of the railroad tracks that border WL1. WL2 is a 1.1-acre triangular-shaped area bordered on two sides by railroad tracks and by a dirt road on the third side. The delineated wetland is a monoculture of common reed. Wetland soils were indicated via the presence of low chroma colors with organic streaking of the soil strata. Wetland hydrology was indicated by the presence of saturated soils and drainage patterns, with observed standing water in the central portion of the wetland. WL3 is a 0.26-acre narrow strip of common reed bordered by railroad tracks and a dirt road. Soils were saturated in the upper 12 inches and exhibited low-chroma colors. O'Brien & Gere biologists were accompanied by a representative from the NYSDEC for the portion of the field effort conducted on October 22, 2008.

As part of the October 22, 2008 site investigations, two additional areas in the vicinity of the mouth of Ley Creek were visited by the field team. These investigations were performed in response to NYSDEC comments (**Appendix A**) on the draft version of this report. A qualitative assessment of areas north of Ley Creek resulted in the conclusion that, if delineated, the wetland boundary would be similar to the NYSDEC-mapped boundaries (see **Figure 1**). That is, an emergent wetland exists between the railroad tracks and Onondaga Lake

Parkway starting near the north bank of Ley Creek and extending westward.

During the October 22, 2008 site visit, the NYSDEC and O'Brien & Gere representatives also surveyed the riparian area along the south bank of Ley Creek. The riparian area was dominated by common reed, but upland species such as bittersweet nightshade, grape vine, common buckthorn, and poplar species were present. Additionally, hydric soils and hydrology were not present at this site. Both parties agreed that this site did not fully meet wetland criteria and, therefore, did not require delineation.

4.2.2. Function and Value Assessment

Tables D-3 and **D-4** of **Appendix D** present the wetlands function and value evaluation forms for the assessed cells of the SYW-12 area south of Ley Creek. The results of the function and value assessment indicates that the principal functions/values for WL1 are:

- groundwater recharge/discharge
- floodflow alteration
- sediment/toxicant retention
- nutrient removal
- sediment/shoreline stabilization
- wildlife habitat.

The results of this assessment were compared to an equivalent assessment performed by Parsons as part of the lake trail project (Parsons 2003). The two assessments closely matched, although Parsons did not identify wildlife habitat as a principal function.

The function and value assessment was conducted for WL2 and WL3 combined as the two cells had similar attributes and were in close proximity of each other, separated only by railroad tracks. The results of the function and value assessment of WL2 and WL3 indicate that the principal functions/values for these delineated areas are:

- wildlife habitat.

4.2.3. Ecological Survey

The results of the ecological surveys for the SYW-12 area appear in **Appendix E** as **Tables E-3** and **E-4**. As indicated on the forms and discussed in Section 4.2.1, the dominant vegetation observed in this wetland was common reed. Other species observed near this wetland were eastern cottonwood, bittersweet nightshade, jewelweed, box-elder, and American pokeweed. The primary wildlife species observed were songbirds. Double-crested cormorant, mallard, and gulls were observed transiting the SYW-12 area. Supplemental information is provided in **Tables 3** and **4** and **Exhibit 1** listing potential wildlife species of the Onondaga Lake area, many of which could utilize the SYW-12 area.

4.3. WETLAND SYW-10

4.3.1. Delineation of Impacted Wetlands

NYS-regulated Wetland SYW-10 consists of several wetland cells that are located in the vicinity of the mouth of Ninemile Creek and northwest of the Routes 690 and 695 interchange (**Figure 1**). SYW-10 is recognized by the NYSDEC as a Class I wetland that covers approximately 27 acres and has a vegetative cover containing emergent vegetation and deciduous trees and shrubs (Rhodes and Alexander 1980). It is likely that SYW-10 is considered a Class I wetland due to its size, location within an urban area, diversity of habitat, and proximity to Onondaga Lake.

Based on the USFWS NWI (see **Figure 3**), none of the SYW-10 cells are depicted as palustrine habitat. However, lacustrine habitat is indicated adjacent to SYW-10 as associated with the open waters of Onondaga Lake.

As agreed to by the NYSDEC, the SYW-10 study area for this assessment included two wetland cells located northeast of I-690 and adjacent to Onondaga Lake (**Figure 7**). One cell is a floodplain forest and common reed stand west of the mouth of Ninemile Creek; the other cell is a common reed stand east of the mouth of Ninemile Creek.

TES conducted a jurisdictional wetland delineation of the SYW-10 area in the fall of 2003 as part of the *Geddes Brook/Ninemile Creek Feasibility Study Revised Report* (Parsons 2005). The delineation was performed utilizing the methods previously described herein. TES re-visited the site in October 2008 as part of investigative activities associated with the Geddes Brook/Ninemile Creek Feasibility Study. Based on that visit, TES concluded that the wetland boundaries and functions and values have not changed and remain as presented in this report. Results of this assessment are presented in *Wetland/Floodplain Assessment Ninemile Creek and Lower Reach of Geddes Brook* (TES 2009), which is currently under review by NYSDEC.

The portion of the SYW-10 study area west of the mouth of Ninemile Creek, delineated by TES and depicted on **Figure 7** consists of an approximate 4.4-acre area. Onondaga Lake forms the eastern border of this wetland. An abrupt rise in topography (the Route 690 roadbed) defines the southern border of the wetland, and a rise in topography (berm) along the west bank of Ninemile Creek defines the eastern boundary. This portion of SYW-10 is predominantly forested floodplain comprised of an overstory of silver maple, American elm, and box-elder. A monoculture stand of common reed is located at the eastern tip of this delineated wetland cell near the mouth of Ninemile Creek.

The portion of the SYW-10 study area east of Ninemile Creek delineated by TES, and depicted on **Figure 7**, consists of an approximate 1.3-acre area. Onondaga Lake surrounds this wetland to the west, north, and east and an abrupt rise in topography (Wastebeds 1 through 8 Site) defines the southern border of the wetland, and Ninemile Creek is at the southwestern boundary. This portion of SYW-10 is a monoculture stand of common reed that occurs on a delta that protrudes into the lake. This area is not depicted on the NYSDEC wetland mapping for SYW-10.

Soils mapped for the larger wetland cell include Saprists and Fluvaquents (*SA*) and Edwards muck (*Ed*) soils (USSCS 1977). *SA* soils are soils that are typically permanently under water a few inches to three feet deep and are associated with freshwater marshes. *Ed* soils contain 16 to 50 inches of well-decomposed organic material over highly calcareous marl (USSCS 1977). The soils are poorly drained and have a water table that is at or near the surface for long periods of time (USSCS 1997). According to the wetland delineation information (Parsons 2005), soils in these wetlands are highly disturbed and generally do not match mapped soils.

4.3.2. Function and Value Assessment

Tables D-5 and **D-6** of **Appendix D** present the wetland function and value evaluation forms for the assessed areas of SYW-10. Two separate assessment forms were completed for SYW-10 based on the findings of the wetland delineation as described above. The function and value assessment indicates that the principal functions/values for the 4.4-acre wetland cell west of Ninemile Creek are:

- floodflow alteration
- fish and shellfish habitat
- sediment/toxicant retention
- nutrient removal
- production export
- sediment/shoreline stabilization
- wildlife habitat
- recreation
- uniqueness/heritage
- visual quality/aesthetics.

The function and value assessment indicates that the principal functions/values for the 1.3-acre wetland cell east of Ninemile Creek are:

- groundwater recharge/discharge
- sediment/toxicant retention
- nutrient removal
- sediment/shoreline stabilization
- wildlife habitat.

4.3.3. Ecological Survey

The results of the ecological surveys for SYW-10 are in **Appendix E** as **Tables E-5** and **E-6**. As indicated on the forms and discussed in Section 4.3.1, the dominant vegetation observed in the wetland cell west of Ninemile Creek were deciduous trees and shrubs (*i.e.*, silver maple, American elm, box-elder, and green ash). Other species observed in this wetland were common reed (particularly at the lakeshore near the mouth of Ninemile Creek), jewelweed, false nettle, and poison ivy. The dominant vegetation observed in the wetland cell east of Ninemile Creek was common reed. Other species of note near this wetland were paper birch, sweet clover, and goldenrod species. The primary wildlife species observed in SYW-10 were songbirds. Double-crested cormorant, mallard, and gulls were observed transiting the SYW-10 area. Supplemental ecological information is provided in **Tables 3** and **4** and **Exhibit 1** listing potential wildlife receptors of the Onondaga Lake area, many of which could utilize the SYW-10 area.

4.4. BOAT RECONNAISSANCE AREAS 1 THROUGH 7

Boat reconnaissance performed along the entire lakeshore yielded seven areas (BR1 to BR7) that required further investigation. The site investigation performed for these areas is described in this section.

4.4.1. Delineation of Impacted Wetlands

BR1

The site consisted of a narrow strip of shoreline approximately 5 to 15 feet wide located adjacent to the northern end of SMU 2 and the boat access area south of the Wastebeds 1 through 8 Site (**Figure 5**). The shoreline area contained sparse stands of common reed. An abrupt rise in topography (elevated area) from the shoreline resulted in a change in species to a community dominated by woody vegetation (common buckthorn and eastern cottonwood) and common reed intermixed with upland herbaceous species (hedge bindweed, cleavers, field garlic, and Queen Anne's lace). The substrate along the shoreline consisted mainly of silty sand inundated with one to four inches of lake water and was within lake surf zone. The substrate from 4 inches to 12 inches was comprised of weathered Solvay waste with some silt. The BR1 shoreline area was not classified as a wetland because this area exists as part of the lacustrine (lake) habitat and the common reed community was relatively sparse, consisting of few individuals. The elevated area beyond the shoreline did not meet the wetland vegetation criteria and, therefore, was not identified as wetland. Note that the northern portion of BR1 was also evaluated with the representatives of the USFWS and NYSDEC as part of the delineation efforts performed at the Wastebeds 1 through 8 Site. That area, adjacent to Ditch A which borders the Wastebeds 1 through 8 Site boundary, was determined to be non-wetland during that July 2008 field evaluation.

BR2

BR2 is part of the Lakeshore Area of the Wastebeds 1 through 8 Site. Detailed information regarding the delineation of this area is provided in the *Wetland Delineation and Floodplain Assessment Final Report, Wastebeds 1 through 8 Site, Geddes, New York* (O'Brien & Gere 2009). According to that report, the vegetative species present along the lakeshore area investigated (including BR2 and BR3) were not indicative of wetland vegetation, with the exception of two small emergent wetlands. These wetlands are depicted on **Figure 6** as Wetlands A and B. The remainder of the BR2 site consisted of a shoreline flat adjacent to the southern half of SMU 3 (**Figure 6**). Vegetative communities within this area were mixed and consisted of common reed, goldenrod species, New England and calico asters, purple loosestrife, common buckthorn, Indian mustard, prickly lettuce, teasel, common plantain, jewelweed, butter-and-eggs, bittersweet nightshade, eastern cottonwood, thistle species, ground ivy, and common milkweed. The substrate was predominately unsaturated above 12 inches below ground surface (bgs) and consisted primarily of Solvay waste. Except for Wetlands A and B, the remaining portions of the BR2 area were identified as non-wetland. Note that this area was evaluated with the representatives of the USFWS and NYSDEC as part of the delineation efforts performed at the Wastebeds 1 through 8 Site.

BR3

Similar to the BR2 area, BR3 is part of the Wastebeds 1 through 8 Site and detailed information regarding the delineation of that site is provided in the *Wetland Delineation and Floodplain Assessment Final Report, Wastebeds 1 through 8 Site, Geddes, New York* (O'Brien & Gere 2009). The BR3 site consisted of a narrow (approximately 10 to 30 feet wide and 200 feet long) shoreline flat, similar to BR2, located along the eastern shoreline of Lakeview Point (**Figure 6**). Vegetative communities within this region were a mix of upland and wetland species and consisted of common reed, calico aster, purple loosestrife, mint, Queen Anne's lace, beach clotbur, Indian mustard, prickly lettuce, bittersweet nightshade, bull thistle, ground ivy, beggar ticks, and green ash saplings. The substrate was predominately Solvay waste unsaturated above 12 inches bgs. Based on these observations, BR3 was identified as a non-wetland.

BR4

A small area of lakeshore that was identified during the boat reconnaissance (termed BR4) was delineated as part of this study. As shown on **Figure 7,** BR4 is located adjacent to the northern end of SMU 4, approximately 700 feet north of the western portion of SYW-10. A wetland delineation was conducted as part of the site investigation tasks in September 2004.

The delineated wetland (BR4, SMU 4/5 area) is not depicted on the NWI mapping. Lacustrine habitat associated with the open waters of Onondaga Lake (**Figure 3**) is indicated adjacent to BR4.

The delineated area consists of an approximate 0.11-acre wetland located along the northwestern shore of Onondaga Lake between an unpaved portion of the Onondaga Lake Park trail system and the lakeshore. The lake shoreline forms the eastern border of this wetland, and an abrupt rise in topography associated with the lake trail defines

the western border. The delineated wetland is predominantly a narrow strip of common reed (3 to 10 feet wide) that parallels the lakeshore. Wetland soils were indicated by the presence of low matrix chroma and mottles within the upper twelve inches of the soil strata. Wetland hydrology was indicated by the presence of saturated soils, drift lines, and sediment deposits.

BR5

The BR5 site is located on the northern shore of the lake just south of the Bloody Brook outlet (**Figure 11**). Vegetative species within BR5 included eastern cottonwood and common reed mixed with abundant upland species (vetch species, bittersweet nightshade, catnip, grape vine, ground ivy, wild strawberry, and common milkweed). Common reed was prevalent adjacent to the shoreline. However, sand and gravel with little or no organic streaking dominated the substrate in the shoreline area. Based on the predominance of upland species and the lack of hydric soils, BR5 was identified as a non-wetland.

BR6

The BR6 area is located between Onondaga Creek and the Metro outfall (**Figures 14** and **15**). BR6 consisted of a narrow strip of shoreline, varying from approximately 0 to 20 feet wide and sparsely vegetated. Vegetation along the shoreline consists of a variety of upland and wetland species including common reed, jewelweed, bittersweet nightshade, Japanese knotweed, ground ivy, Indian mustard, and woody species including common buckthorn and box-elder. An area of large riprap, presumably used to stabilize the adjacent railroad bed, was also observed to encroach on the lakeshore in portions of BR6. The substrate along the shoreline consisted of a mix of sand and gravel, which was inundated by the surf zone in some areas of BR6 and in some areas, was sparsely vegetated with individual specimens of common reed. It was determined that the BR6 shoreline area was non-wetland due to the lack of a dominant community of hydrophytes and the substrate was primarily sand and gravel which lacked hydric soil indicators.

BR7

BR7 consists of a wetland area located along the northwestern shoreline of Onondaga Lake adjacent to Polygon S111 (**Figure 9**). The subject wetland is part of a larger wetland complex that is mapped as NYS-regulated wetland SYW-6 (**Figure 1**). SYW-6 consists of numerous wetland cells along the northeastern portion of the lake that extend from the area historically known as Pleasant Beach on Onondaga Lake northward to the Onondaga Lake outlet. SYW-6 is recognized by the NYSDEC as a Class I wetland that covers approximately 41 acres and is dominated by emergent vegetation and deciduous shrubs. Live deciduous trees, dead trees, open water and floating vegetation are also present in considerable quantity (Rhodes and Alexander 1980). It is likely that SYW-6 is considered a Class I wetland due to its size, location in an urban area, diversity of habitat, and its close proximity to Onondaga Lake.

As agreed to by the NYSDEC, the project study area consists of that portion of the SYW-6 area immediately adjacent to Polygon S111. The area delineated in this study (described below) was initially identified during the boat reconnaissance as BR7. A representative of TAMS, NYSDEC's subcontractor, accompanied O'Brien & Gere biologists during the September 2004 delineation field effort.

The wetland delineated at BR7 is not depicted on the NWI mapping. However, other portions of SYW-6 not within the project study area are depicted as palustrine habitats, and lacustrine habitat is indicated on the NWI mapping adjacent to the delineated wetland (**Figure 3**). The lacustrine habitats are associated with the open waters of Onondaga Lake. Soils mapped for this wetland cell include Edwards muck (*Ed*) and cut and fill lands, previously described (USSCS 1977). Previous investigations of areas to be impacted by the Onondaga Lake West Shore Trail Improvement Project were conducted by Barton & Loguidice in 2000 (Barton & Loguidice 2001). That study identified and delineated forested and emergent/herbaceous wetlands at the impact areas for the paved path.

The wetland cell delineated by O'Brien & Gere at BR7, as depicted on **Figure 9**, consists of an approximate 5.5-acre area located along the northwestern Onondaga Lake shoreline between a paved portion of the Onondaga Lake Park trail system and the lakeshore. The delineated wetland boundary resembles the depicted NYSDEC-mapped boundary for a portion of SYW-6. Onondaga Lake forms the eastern and southern borders of this wetland and an abrupt rise in topography associated with the lake trail defines the western and northern borders of the wetland.

The delineated wetland is predominantly forested floodplain with some smaller stands of common reed along the immediate lakeshore. The main feature of the delineated wetland was an approximate 3 to 4 acres of inundated forested area composed of an overstory of predominantly silver maple, eastern cottonwood, and green ash, as well as American elm and swamp white oak. The remainder of the delineated wetland cell consisted of a narrow strip of deciduous trees and shrubs (American elm, green ash, eastern cottonwood, and common buckthorn) along the lakeshore. The herbaceous species present were common reed, false nettle, and jewelweed. Wetland soils were indicated via the presence of low matrix chroma and coarse sands with organic streaking and silty loam over marl within the upper soil strata. Wetland hydrology was indicated by the presence of inundated and saturated soils, drift lines, watermarks, and drainage patterns.

4.4.2. Function and Value Assessment

BR4

Table D-7 of **Appendix D** presents the wetland function and value evaluation form for BR4. The function and value assessment indicates that the principal functions/values for the 0.11-acre delineated wetland in the BR4 area are:

- sediment/toxicant retention
- sediment/shoreline stabilization
- wildlife habitat
- recreation.

BR7

Table D-8 of **Appendix D** presents the wetland function and value evaluation form for the wetland at BR7. The function and value assessment indicates that the principal functions/values for this 5.5-acre delineated wetland are:

- sediment/toxicant retention
- nutrient removal
- sediment/shoreline stabilization
- wildlife habitat
- recreation
- uniqueness/heritage
- visual quality/aesthetics.

4.4.3. Ecological Survey

BR4

The results of the ecological survey for BR4 appear in **Appendix E** as **Table E-7**. As indicated on the forms and discussed in Section 4.4.1, the dominant vegetation observed in this wetland was common reed. The primary wildlife observed were multiple species of songbirds. Double-crested cormorant, green heron, mallard, and gulls were observed transiting the BR4 area. As supplemental ecological information, **Tables 3** and **4** and **Exhibit 1** list potential wildlife species of the Onondaga Lake area, many of which could utilize the BR4 area.

BR7

The results of the ecological survey for BR7 are provided in **Appendix E** as **Table E-8**. As indicated on the forms and discussed in Section 4.4.1, the primary tree species observed in this wetland were American elm, green ash, silver maple, and eastern cottonwood. Other species observed in and near this wetland were swamp white oak, black willow, common buckthorn, poison ivy, dogwood species, white avens, moneywort, common reed, false nettle and grape vine. The primary wildlife species observed were songbirds. Double-crested cormorant, mallard, and gulls were observed transiting this area. Supplemental ecological information is provided in **Tables 3** and **4** and **Exhibit 1** listing potential wildlife species of the Onondaga Lake area, many of which could utilize the BR7 area.

4.5. WASTEBEDS 1 THROUGH 8 SITE - WETLANDS A AND B

4.5.1. Delineation of Impacted Wetlands

Delineation of Wetlands A and B is documented and described in detail in the *Wetland Delineation and Floodplain Assessment Final Report, Wastebeds 1 through 8 Site, Geddes, New York* (O'Brien & Gere 2009). Two wetlands (A and B) totaling 0.721 acres were identified within BR-2 and within the eastern portion of the Lakeshore Area (**Figure 6**) using the delineation methods described in Section 3.2.2 of this report. During the delineation, O'Brien & Gere and TES biologists were accompanied by Rich Henry, a representative of the USFWS on behalf of the USEPA, and John Rollino, a representative of Earth Tech on behalf of NYSDEC. The wetland boundaries were approved by the NYSDEC in their letter dated June 9, 2009. A copy of this letter is included in **Appendix A**.

Wetland A is a 0.317-acre wetland located near the northeastern site boundary. Common reed dominates Wetland A, with little to no other vegetative species observed. Soils within Wetland A were primarily Solvay waste saturated within the

upper 12 inches (on July 1, 2008), indicative of hydric conditions. Wetland B is a 0.404-acre wetland located just southeast of Wetland A. Wetland B is also dominated by common reed with little to no other vegetative species observed. Soils (primarily Solvay waste) associated with this wetland were also saturated within the upper 12 inches during the July 1, 2008 field efforts, indicative of hydric conditions.

4.5.2. Function and Value Assessment

Tables D-9 and **D-10** of **Appendix D** present the wetland function and value evaluation forms for the assessed areas of the Wastebeds 1 through 8 Site. A separate assessment form was completed for each wetland based on the findings of the wetland delineation discussed above. The function and value assessments indicate that the principal functions/values for both Wetlands A and B are:

- floodflow alteration
- sediment/toxicant retention
- nutrient removal.

Generally, the delineated wetlands provide minimal function and value to the site and surrounding area, due primarily to their small size, lack of vegetative diversity, and presence of disturbed soil/fill conditions.

4.5.3. Ecological Survey

The results of the ecological surveys for Wetlands A and B are in **Appendix E** as **Tables E-9** and **E-10**. As indicated on the forms, the dominant vegetation observed in the vicinity of Wetlands A and B were common reed, Canada goldenrod, and field sow thistle. The primary wildlife species observed in the vicinity of Wetlands A and B were birds, including but not limited to ring-billed gull, catbird, red-winged blackbird, mallard, great blue heron, and spotted sandpiper. Supplemental ecological information is provided in **Tables 3** and **4** and **Exhibit 1** listing potential wildlife receptors in the Onondaga Lake area, many of which could utilize the Wetlands A and B area.

4.6. WASTEBED 13

4.6.1. Delineation of Impacted Wetlands

Based on the USFWS NWI, the central area of Wastebed 13 is classified as a L2UBKFhs wetland (**Figure 3**). This indicates a lacustrine, littoral habitat with unconsolidated bottom with spoils materials in the substrate that is artificially and semi-permanently flooded by man-made barriers or dams that obstruct the inflow or outflow of water. Classification of this area was based on aerial photographs from April 1981 taken at a scale of 1:80,000. Since the information collected by the USFWS for mapping and classification purposes was unavailable for review, the reasons for the classification of Wastebed 13 as a lacustrine (lake) habitat are unknown, but may be due to conditions at the time of the aerial survey or the scale of the aerial image. April in Central New York is synonymous with spring snow melt, so standing water may have been present in this area at the time of the aerial survey, but may not represent hydrologic conditions that prevail the rest of the year. Also, the scale of the image was large, and may not have provided the detail necessary to make an accurate interpretation. Regardless of the map review findings, Wastebed 13 was identified as non-wetland based on the assessments presented below.

Two assessments of Wastebed 13 were conducted as part of this investigation. A qualitative assessment was performed on September 8, 2004 by representatives from O'Brien & Gere, Parsons, and TAMS to evaluate the presence of potential wetland areas that could be impacted by utilization of the wastebed as the Sediment Consolidation Area in association with lake remedial activities. A vehicle was used to survey the perimeter and portions of the wastebed were traversed on foot. Reconnaissance efforts concluded that wetlands were not present at Wastebed 13.

Based on NYSDEC's comments on the draft report, a more rigorous assessment was conducted in 2008. On August 8, 2008, O'Brien & Gere personnel conducted a qualitative survey of the vegetation and soil types occurring in Wastebed 13. Based on this survey, it was concluded that an additional survey for wetland habitats was warranted. On September 17, 2008, an assessment of Wastebed 13 was conducted to collect vegetative, soil, and hydrologic data from representative portions of the wastebed in an attempt to verify the presence or absence of wetland habitats. Potential wetland areas were evaluated in accordance with the "atypical circumstances" methodology described in USACE 1987 and Section 3.2.2 herein. Data were recorded on wetland survey data forms.

Eight plots (SB1 through SB8) were performed in areas where hydrophytes were observed. Locations

were field recorded using a Trimble GPS unit and are provided in **Figure 16**. Copies of the wetland data sheets are provided within **Appendix C** and representative photographs of the site are in **Appendix B**.

Solvay waste was observed at each location within the upper soil profile beginning at depths ranging from one to four inches bgs. Moisture was noted at various depths throughout the profile but saturation was not observed within 20 inches bgs at any of the eight plots. Indicators of wetland hydrology were not observed at these locations during the visit.

Vegetative communities were dominated by successional old field habitat characterized by grasses and forbs, with smaller areas of successional northern hardwoods comprised mainly of quaking aspen and box-elder. An area that appears dark on aerial imagery did contain a region of hydrophytes including common reed, eastern Joe-pye weed, and rough bedstraw. However, the predominance of tall nettle, white snakeroot, and box-elder seedlings throughout the area suggests that saturated soil conditions do not exist long enough to support a community dominated by hydrophytes.

Based on the results of this reconnaissance, no site areas were observed that would be considered wetlands in accordance with the atypical approach utilized at the Wastebeds 1 through 8 Site. Specifically, no areas were observed that: 1) contain robust stands of hydrophytes and; 2) possess a substrate that is saturated, or exhibits indicators of saturation, within the upper 10 to 12 inches of the ground surface.

On October 22, 2008, a representative of NYSDEC accompanied the wetland biologists on a reconnaissance of Wastebed 13. Following the reconnaissance, the NYSDEC representative agreed with the biologists' findings that, due to a lack of hydrologic indicators and the presence of vegetative community dominated by upland species, no wetland habitats are present at Wastebed 13. Dredged sediments from Onondaga Lake will be pumped through a pipeline to the SCA on Wastebed 13 for dewatering. The route of the slurry pipeline will generally parallel the western shore of the lake and Ninemile Creek in a southwest direction to the SCA. As part of this project, a wetland identification and delineation was performed to evaluate potential crossings of wetlands by the proposed pipeline construction. The draft delineation report will be submitted for NYSDEC review in the near future.

Additional areas between Onondaga Lake and Wastebed 13 that may be impacted by remedial operations (*e.g.*, handling and/or sediment processing facilities, cap material staging areas, and water treatment facilities either near the lake or on or near Wastebed 13) will be evaluated in accordance with the methods outlined in this report as part of remedial design efforts.

Willow Plot Studies

In order to evaluate potential reduction in infiltration/leachate as part of the closure of Wastebeds 9 through 15, experimental vegetative studies are being conducted on Wastebed 13. A Biomass Pilot Study at Wastebed 13 sponsored by Honeywell and conducted by the State University of New York College of Environmental Science and Forestry (SUNY ESF), Syracuse, New York, was initiated in 2003 to evaluate the uptake of water by poplar and willow trees and to estimate the effects of uptake on the production of leachate (O'Brien & Gere 2004). **Figure 16** presents the approximate location of the study plots.

The study was anticipated to take three growing seasons to complete and entailed seven different tasks. Task 1 consisted of project planning. Task 2 consisted of greenhouse screening of potential clones. The screening trials were conducted in the lab to examine how different willow and poplar clones responded to soil conditions found in Wastebed 13. Task 3 consisted of field trials on Wastebed 13 while monitoring environmental conditions at the site. Preliminary Task 3 results indicate willows and hybrid poplars planted in unamended soils exhibited visible signs of stress while varieties planted in amended soils exhibited good re-growth (O'Brien & Gere 2007b). Laboratory analyses are still underway. Task 4 consisted of the development of a water budget model. This task was critical in determining the potential of using willow and poplar plantations as a hydrologic control to reduce the volume of water percolating through the wastebed, thereby reducing the amount of leachate transported to nearby water bodies. Task 5 assessed the effects of organic amendments on willow and poplar performance. As such, various varieties of willow and poplar plants were evaluated for their response to various soil

conditions: soils with no organic amendments added, and soils with different organic amendments added. Task 6 applied the information gathered to evaluate large-scale willow production, economics, and market analysis for the wastebeds, and Task 7 was comprised of meetings. Summaries of the study are prepared semi-annually by O'Brien & Gere, Honeywell, and SUNY ESF.

4.7. LAKESHORE HABITAT

The overall physical characteristics of portions of the lake shoreline observed as part of this study can generally be described as follows:

- Gravel and cobble shoreline that may include areas dominated by drift deposits including garbage and dead vegetative matter
- Solvay waste shoreline (*e.g.,* primarily SMUs 1, 2, and 3, and eastern portion of SMU 4)
- Armored (riprap lined) shoreline (*e.g*., portions of SMU 5 at Onondaga Lake Park).

Some of these shoreline areas, particularly along the eastern shoreline (*e.g*., west of Ley Creek and north and south of Onondaga Creek; **Figure 14**), contained emergent vegetation predominantly rooted in a substrate of sand and/or gravel with surficial organic drift material (predominantly vegetative stems and detritus). During the field investigations, the lake level was observed to fluctuate, which resulted in varying levels of surface water inundation investigated along the shoreline habitat.

The USFWS document *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al*. 1979) offers one method of classifying lakeshore areas. The USFWS utilizes the Cowardin classification scheme for its NWI mapping project, as discussed in Section 3.1.1. In accordance with Cowardin *et al*. (1979), freshwater lakeshore areas can generally be classified into one of two systems: Lacustrine or Palustrine. These systems are described below.

Lacustrine systems are habitats that are situated in topographic depressions, have less than 30% areal coverage of trees, shrubs, or persistent emergents, and are typically greater than 20 acres in size (Cowardin *et al*. 1979). The Lacustrine System can be further divided into two subsystems: littoral or limnetic. The littoral subsystem is described as habitat that extends from the shoreward boundary of a lacustrine system to a depth of 6.6 feet below low water or to a maximum extent of nonpersistent emergents (Cowardin *et al.* 1979). The limnetic subsystem is described as all deepwater (beyond 6.6 feet) habitats within the lacustrine system.

Based on the NWI mapping (USFWS 1978) for the study area (**Figure 3**), the Onondaga Lake shoreline is predominantly classified as *Lacustrine, littoral* (L2) habitat. Examples of L2 habitats include aquatic beds, nonpersistent emergents, and unconsolidated shore. The extent of the Lacustrine, littoral zone in any given area of the lake depends on lake water level and lake topography. The Lacustrine, littoral area that characterizes the portion of the Onondaga Lake shoreline evaluated in this study is a transitional zone, linking Lacustrine, limnetic habitats to Palustrine (discussed below) and upland habitats.

Habitat classes depicted on the NWI map for the Onondaga Lake shoreline are comprised of unconsolidated bottom (UB), and unconsolidated shore (US) (USFWS 1978). The water regime modifiers (hydrologic characteristics) for the shoreline are permanently flooded (H), seasonally flooded (C), temporarily flooded (A), and intermittently exposed (G) (USFWS 1978). The special modifier (s), for spoil, is listed for two of the L2 habitats present along the eastern lakeshore.

Based on the field investigations performed for this project, the natural shoreline areas that were not identified as wetlands according to the criteria and methods described herein are consistent with the NWI mapping as Lacustrine, littoral, unconsolidated bottom (L2UB) and unconsolidated shore (L2US) habitats. Unconsolidated bottom habitats are typically areas of relatively lower energy but still may be unstable due to wave and current action. This habitat type is predominant throughout much of the lakeshore. Unconsolidated shores include areas where erosion and deposition by waves and currents may produce landforms such as beaches, bars, and flats. Unconsolidated shore habitats are found adjacent to unconsolidated bottom habitats. Based on the NWI mapping, unconsolidated shore habitats exist at the mouth of Ninemile Creek and adjacent to the southern portion of the SYW-12 area.

Each system, subsystem and class described above has unique physical characteristics, often providing important habitat essential to many species of flora

and fauna. Exposure to wave and current action, combined with temperature, salinity, and light penetration, determine the composition and abundance of organisms in these areas. Most animals of the lacustrine habitat types live within the substrate and provide a food source not found in other habitat types. These areas may also perform important flood protection and sediment/shoreline stabilization functions.

The Palustrine System consists of wetlands dominated by trees, shrubs, and persistent emergents. It also includes wetlands lacking such vegetation if the wetland is less than 20 acres, is lacking wave-formed or bedrock shoreline features, has a maximum depth less than 6.6 feet at low water, and has a salinity of less than 0.5%. The Palustrine System is also called the "zone of emergent vegetation" and can be characterized as a marsh, swamp, bog, fen, prairie, or pond. In accordance with the Cowardin *et al*. (1979) classification, the wetlands described in this report are classified as palustrine systems of the emergent (EM), scrub-shrub (SS) and/or forested (FO) classes. Palustrine habitats provide transition zones for wildlife migrating between the lacustrine and upland habitats. Additional function and values and the wildlife observed in the assessed palustrine habitats are described in previous sections of this report.

4.8. LAKE FLOODPLAIN ASSESSMENT

As previously discussed, FEMA computed the 100- and 500-year flood boundaries in the vicinity of Onondaga Lake as topographic elevations of 372 and 373 feet amsl, respectively. FEMA has adopted the 100-year flood boundary as a base flood for purposes of floodplain management measures. The 500-year flood boundary is used to indicate additional areas of flood risk in a community. Local and regional planners use this information in their efforts to promote sound floodplain management. Encroachment on floodplains, such as artificial fill, reduces an area's flood-carrying capacity.

The 100- and 500-year flood boundaries for Onondaga Lake, as demarcated by FEMA's *Flood Insurance Study* (1981), are shown on **Figure 2**. Additionally, **Figures 4** through **15** present the flood boundaries in relation to the study area wetlands. As shown on **Figure 16**, there are no flood boundaries associated with Wastebed 13.

Data obtained as part of the site investigation tasks performed for the wetland areas included within the project study area are applicable to the floodplain associated with those wetland areas. That is, the vegetative communities, functions and values, and wildlife species identified for the project study area and documented in this report, in general, apply to the flood boundaries that overlap the assessed areas (see **Figures 4** through **15**).

As indicated throughout this report, artificial fill in the form of Solvay waste and sludge has been deposited throughout the assessment area over a number of years. As such, it's likely the region's floodways have been altered from their historical state. Current floodways are comprised of stream channels plus their adjacent floodplain areas, and must be kept free of encroachment in order for current flood boundaries to apply. Proposed future remedial activities associated with Onondaga Lake will incorporate appropriate planning and be conducted to minimize potential effects to flood zones.

5. SUMMARY

The scope of work for this assessment, as described in the Work Plan, was comprised of two main tasks: document review and site investigation of wetlands and floodplains associated with Onondaga Lake. The assessment focused on areas that could be potentially impacted by future lake remediation activities. The site investigation portion of the assessment consisted of three tasks: wetland boundary delineation, wetland function and value assessment, and characterization of site flora and fauna (ecological survey).

O'Brien & Gere biologists conducted site investigations at portions of NYS-regulated wetlands SYW-19, SYW-12, SYW-10, SYW-6, and other areas along the Onondaga Lake shoreline identified as part of a boat reconnaissance, and also at Wastebed 13. Fourteen delineated wetland areas totaling approximately 44 acres were assessed.

This report provides evaluations of wetland functions and values and ecological survey results for the wetlands delineated along the shoreline. Wetland functions and values were evaluated in accordance with the USACE's Highway Methodology Workbook (USACE 1999). The most common function and value of the wetlands investigated was Sediment/Toxicant Retention, followed by, in decreasing order of occurrence, Nutrient Removal, Floodflow Alteration, Sediment/Shoreline Stabilization, Wildlife Habitat, Recreation, Groundwater Recharge/Discharge, Uniqueness/Heritage, Visual Quality/Aesthetics, Fish and Shellfish Habitat and Production Export.

Thirty-seven species of birds, four mammals, two reptiles, and one amphibian were observed in ecological surveys conducted at the wetlands. Sixty-eight different plants were identified to the species level and twelve identified to genus during site investigations. In delineated wetlands, common reed was the most common species observed followed by green ash, Virginia creeper and bittersweet nightshade. Hydric soils were indicated mainly by low-chroma colors and by organic streaking in sandy soils when native mineral soils were observed. In areas where Solvay waste was the predominant substrate, wetlands were identified and delineated based on the dominance of hydrophytes and evidence of inundation or saturation within 12 inches of the ground surface.

The Onondaga Lake shoreline is predominantly classified as *lacustrine, littoral* habitat, with *unconsolidated bottom*. The overall physical characteristics of portions of the lake shoreline evaluated as part of this study can generally be described as gravel and cobble shoreline that may include areas dominated by drift deposits including garbage and dead vegetative matter, and some areas with eroded Solvay waste. Rip-rap lined shoreline is also present, mainly along the northern and eastern shoreline.

This report provides the 100- and 500-year flood boundaries, computed by FEMA using topographic elevations of 372 and 373 feet amsl, respectively, for Onondaga Lake. FEMA has adopted the 100-year flood boundary as a base flood for purposes of floodplain management measures.

Of the eight Wetland elements and five Floodplain elements identified in USEPA's *Policy on Floodplains and Wetland Assessments for CERCLA Actions* (1985), this report addresses three elements under Wetlands and one element under Floodplain in detail. These elements evaluate and characterize existing conditions at the assessed areas. The remaining elements focus on remedial actions and are beyond the scope of this assessment. These elements will require additional evaluation to be performed during the Remedial Design for the respective areas of Onondaga Lake.

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Table 1
Honeywell – Onondaga Lake
Wetlands/Floodplain Assessment Final Report
Location and Assessment Status of Evaluated Areas

Area	Approximate Location	Delineation Necessary	F & V Assessment/ Ecosurvey
SYW-12	Northeast corner of lake, south of Ley Creek, adjacent to SMU 6	Yes[2]	Yes
SYW-19	Southeast corner of lake adjacent to SMUs 1 and 7	Yes[3]	Yes
SYW-10	Mouth of Ninemile Creek adjacent to SMU 4	Yes[1]	Yes
BR-1	Adjacent to north end of SMU 2	No	No
BR-2	Adjacent to south end of SMU 3	No	No
BR-3	Adjacent to north end of SMU 3	No	No
BR-4	Adjacent to SMUs 4 and 5 junction	Yes[2]	Yes
BR-5	Adjacent to SMU 5 south of Bloody Brook	No	No
BR-6	Adjacent to south end of SMU 6	No	No
BR-7	Northwest corner of lake, part of SYW-6	Yes[2]	Yes
Wetlands A & B (within BR-2)	Wastebeds 1 through 8 Site adjacent to SMU 3	Yes[4]	Yes
Settling Basin 13	Off of Gerelock Road, southeast of Ninemile Creek	No	No
Floodplain	Lakeshore	No[5]	Yes

Notes:
[1] *Geddes Brook/Ninemile Creek Feasibility Study Report* (Parsons 2005); boundaries confirmed October 2008
[2] Conducted as part of efforts described herein
[3] *Jurisdictional Wetland Delineation Report, Harbor Brook Site* (O'Brien & Gere 2003)
[4] *Wetland Delineation and Floodplain Assessment Final Report, Wastebeds 1 through 8 Site, Geddes, New York* (O'Brien & Gere 2009)
[5] Boundaries presented based on FEMA's *Flood Insurance Study* (1981)
BR = Boat Reconnaissance
SMU = Sediment Management Unit
SYW = Syracuse West USGS Quadrangle

Table 2
Honeywell – Onondaga Lake
Wetlands/Floodplain Assessment Final Report
Vegetation Identified

Common Name	Scientific Name	Stratum	Indicator[1]
American elm	*Ulmus americana*	herb/shrub	FACW-
American pokeweed	*Phytolacca americana*	herb	FACU+
Arrowhead	*Sagittaria latifolia*	herb	OBL
Beach clotbur	*Xanthium echinatum*	herb	NA
Beggar ticks	*Bidens frondosa*	herb	FACW
Bittersweet nightshade	*Solanum dulcamara*	vine	FAC-
Black mustard	*Brassica nigra*	herb	NA
Black willow	*Salix nigra*	tree/shrub	FACW+
Box-elder	*Acer negundo*	tree/shrub	FAC+
Buckthorn	*Rhamnus* sp.	tree/shrub	NS
Bull thistle	*Cirsium vulgare*	herb	FACU-
Butter-and-eggs	*Linaria vulgaris*	herb	NA
Butternut	*Juglans cinerea*	sapling	FACU+
Calico aster	*Aster lateriflorus*	herb	FACW-
Canada goldenrod	*Solidago canadensis*	herb	FACU
Catnip	*Nepeta cataria*	herb	FACU
Clasping-leaved dogbane	*Apocynum sibiricum*	herb	FAC
Clearweed	*Pilea pumila*	herb	FACW
Cleavers	*Galium aparine*	herb	FACU
Common buckthorn	*Rhamnus cathartica*	tree/shrub	FAC-
Common clotbur	*Xanthium chinense*	herb	FAC
Common milkweed	*Asclepias syriaca*	herb	FACU-
Common mugwort	*Artemisia vulgaris*	herb	FACU-
Common plantain	*Plantago major*	herb	FACU
Common reed	*Phragmites australis*	herb	FACW
Creeping thistle	*Cirsium arvense*	herb	FACU
Crown vetch	*Coronilla varia*	herb	NI
Dock	*Rumex* sp.	herb	NS
Dogwood	*Cornus* sp.	shrub	NS
Eastern cottonwood	*Populus deltoides*	tree	FAC
Eastern Joe-Pye weed	*Eupatorium dubium*	herb	FACW
False nettle	*Boehmeria cylindrica*	herb	FACW+

Table 2
Honeywell – Onondaga Lake
Wetlands/Floodplain Assessment Final Report
Vegetation Identified

Common Name	Scientific Name	Stratum	Indicator[1]
Field garlic	*Allium vineale*	herb	FACU-
Field mustard	*Brassica rapa*	herb	NA
Field sow thistle	*Sonchus arvensis*	herb	UPL
Fox grape	*Vitis labrusca*	vine	FACU
Fox-tail barley	*Hordeum jubatum*	herb	FAC
Grape vine	*Vitis* sp.	vine	FACU
Grass	*Graminoides* sp.	grass	NI
Gray dogwood	*Cornus racemosa*	shrub	FAC-
Green ash	*Fraxinus pennsylvanica*	tree/shrub	FACW
Ground ivy	*Glechoma hederacea*	herb	FACU
Hedge bindweed	*Convolvulus sepium*	herb	FAC-
Indian hemp	*Apocynum cannabinum*	herb	FACU
Indian mustard	*Brassica juncea*	herb	NA
Japanese knotweed	*Polygonum cuspidatum*	herb	FACU-
Jewelweed	*Impatiens* sp.	herb	FACW
Lance-leaved goldenrod	*Solidago graminifolia*	herb	FAC
Late goldenrod	*Solidago gigantea*	herb	FACW
Mint	*Labiatae* sp.	herb	NS
Moneywort	*Lysimachia nummularia*	herb	OBL
Moth mullein	*Verbascum blattaria*	herb	UPL
Multiflora rose	*Rosa multiflora*	shrub	FACU
New England aster	*Aster novae-angliae*	herb	FACW-
Paper birch	*Betula papyrifera*	shrub	FACU
Poison ivy	*Toxicodendron radicans*	herb/vine	FAC
Prickly lettuce	*Lactuca serriola*	herb	FAC-
Primrose	*Primula* sp.	herb	NS
Purple loosestrife	*Lythrum salicaria*	herb	FACW+
Quaking aspen	*Populus tremuloides*	tree	FACU
Queen Anne's lace	*Daucus carota*	herb	NA
Red maple	*Acer rubrum*	tree	FAC
Rough bedstraw	*Galium asprellum*	herb	OBL
Silky dogwood	*Cornus ammomum*	shrub	FACW

Table 2
Honeywell – Onondaga Lake
Wetlands/Floodplain Assessment Final Report
Vegetation Identified

Common Name	Scientific Name	Stratum	Indicator[1]
Silver maple	*Acer saccharinum*	tree/shrub	FACW
Slender-leaved goldenrod	*Solidago tenuifolia*	herb	FAC
Spotted knapweed	*Centaurea maculosa*	herb	NA
Swamp white oak	*Quercus bicolor*	shrub	FACW+
Sweet clover	*Melilotus* sp.	herb	FACU-
Tall goldenrod	*Solidago altissima*	herb	FACU-
Tall nettle	*Urtica procera*	herb	FACU
Tartarian honeysuckle	*Lonicera tatarica*	shrub	FACU
Teasel	*Dipsacus sylvestris*	herb	FACU-
Vetch	*Vicia* sp.	vine	NS
Virginia creeper	*Parthenocissus quinquefolia*	vine	FACU
White avens	*Geum canadense*	herb	FACU
White boneset	*Eupatorium album*	herb	NA
White snakeroot	*Ageratina altissima*	herb	FACU-
White vervain	*Verbena urticifolia*	herb	FACU
Wild strawberry	*Fragaria virginiana*	herb	FACU
Willow	*Salix* sp.	shrub	FACW
Yellow sweet clover	*Melilotus officinalis*	herb	FACU-

Notes:
[1] Northeast (Region 1) Indicator Status

NA Indicator status is not available
NI not enough information exists to determine status
NS species not specified

OBL obligate wetland; 99% occurrence in wetlands
FACW facultative wetland; 67-99% occurrence in wetlands
FAC facultative; occurs equally in wetlands and non-wetlands
FACU facultative upland; 67-99% occurrence in non-wetlands
UPL upland; 99% occurrence in non-wetlands

Table 3
Honeywell - Onondaga Lake
Wetlands/Floodplain Assessment Final Report
NYS Breeding Bird Atlas Information[1] for Onondaga Lake Area

BIRDS		ATLAS BLOCK					
		3976B		3977C		3977D	
English Name[2]	Scientific Name	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]
Great Blue Heron	*Ardea herodias*	POS	POS	-	POS	POS	PRO
Green Heron	*Butorides virescens*	PRO	PRO	CON	PRO	CON	CON
Turkey Vulture	*Cathartes aura*	-	PRO	-	POS	-	POS
Canada Goose	*Branta canadensis*	-	CON	-	CON	-	CON
Wood Duck	*Aix sponsa*	-	POS	CON	-	-	POS
American Black Duck	*Anas rubripes*	-	-	CON	-	PRO	-
Mallard	*Anas platyrhynchos*	CON	CON	CON	CON	CON	CON
Osprey	*Pandion haliaetus*	-	-	-	-	-	POS
Sharp-shinned Hawk	*Accipiter striatus*	POS	-	-	-	-	-
Cooper's Hawk	*Accipiter cooperii*	-	-	-	CON	-	-
Red-tailed Hawk	*Buteo jamaicensis*	CON	CON	CON	CON	CON	CON
American Kestrel	*Falco sparverius*	CON	CON	CON	POS	CON	CON
Ring-necked Pheasant	*Phasianus colchicus*	CON	PRO	POS	-	PRO	-
Ruffed Grouse	*Bonasa umbellus*	-	-	-	-	POS	-
Wild Turkey	*Meleagris gallopavo*	-	CON	-	CON	-	-
Virginia Rail	*Rallus limicola*	CON	-	CON	-	-	-
Sora	*Poizana carolina*	-	POS	CON	-	-	-
Killdeer	*Charadrius vociferus*	CON	CON	CON	CON	CON	CON
Spotted Sandpiper	*Actitis macularia*	CON	PRO	CON	POS	CON	CON
American Woodcock	*Scolopax minor*	-	-	-	-	PRO	-
Rock Pigeon	*Columba livia*	CON	CON	CON	CON	CON	PRO
Mourning Dove	*Zenaida macroura*	CON	CON	CON	CON	CON	CON
Black-billed Cuckoo	*Coccyzus erythropthalmus*	-	-	-	PRO	-	-
Great Horned Owl	*Bubo virginianus*	PRO	-	CON	-	PRO	-
Common Nighthawk	*Chordeiles minor*	PRO	-	-	-	POS	-
Chimney Swift	*Chaetura pelagica*	PRO	PRO	-	-	POS	PRO
Ruby-throated Hummingbird	*Archilochus colubris*	POS	POS	-	POS	POS	POS
Belted Kingfisher	*Ceryle alcyon*	POS	CON	CON	CON	POS	POS
Red-headed Woodpecker	*Melanerpes erythrocephalus*	POS	-	-	-	-	-
Red-bellied Woodpecker	*Melanerpes carolinus*	POS	PRO	POS	CON	-	POS
Downy Woodpecker	*Picoides pubescens*	CON	CON	CON	CON	POS	CON
Hairy Woodpecker	*Picoides villosus*	CON	CON	POS	CON	POS	-
Northern Flicker	*Colaptes auratus*	CON	CON	CON	PRO	CON	CON
Pileated Woodpecker	*Dryocopus pileatus*	-	CON	-	POS	-	-
Eastern Wood-pewee	*Contopus virens*	PRO	PRO	PRO	POS	POS	-
Alder Flycatcher	*Empidonax alnorum*	PRO	-	-	POS	-	-

Table 3
Honeywell - Onondaga Lake
Wetlands/Floodplain Assessment Final Report
NYS Breeding Bird Atlas Information[1] for Onondaga Lake Area

BIRDS		ATLAS BLOCK					
		3976B		3977C		3977D	
English Name[2]	Scientific Name	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]
Willow Flycatcher	*Empidonax traillii*	CON	CON	CON	POS	POS	POS
Least Flycatcher	*Empidonax minimus*	-	PRO	PRO	-	-	-
Eastern Phoebe	*Sayornis phoebe*	PRO	POS	PRO	PRO	POS	PRO
Great Crested Flycatcher	*Myiarchus crinitus*	PRO	CON	PRO	PRO	POS	PRO
Eastern Kingbird	*Tyrannus tyrannus*	CON	CON	PRO	PRO	CON	CON
Yellow-throated Vireo	*Vireo flavifrons*	-	POS	PRO	-	-	-
Warbling Vireo	*Vireo gilvus*	CON	PRO	PRO	CON	PRO	PRO
Red-eyed Vireo	*Vireo olivaceus*	PRO	PRO	CON	PRO	PRO	PRO
Blue Jay	*Cyanocitta cristata*	CON	PRO	CON	PRO	POS	CON
American Crow	*Corvus brachyrhynchos*	CON	CON	CON	CON	CON	CON
Fish Crow	*Corvus ossifragus*	-	-	-	-	-	CON
Horned Lark	*Eremophila alpestris*	CON	-		-	CON	-
Purple Martin	*Progne subis*	-		POS	-	-	-
Tree Swallow	*Tachycineta bicolor*	PRO	CON	CON	PRO	POS	PRO
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	PRO	CON	-	PRO	CON	CON
Bank Swallow	*Riparia riparia*	-	-	CON	CON	-	CON
Barn Swallow	*Hirundo rustica*	CON	CON	CON	CON	POS	CON
Black-capped Chickadee	*Poecile atricapilla*	CON	CON	CON	CON	PRO	CON
Tufted Titmouse	*Baeolophus bicolor*	-	PRO	-	-	-	POS
Red-breasted Nuthatch	*Sitta canadensis*	-	-	-	PRO	-	-
White-breasted Nuthatch	*Sitta carolinensis*	PRO	PRO	CON	PRO	POS	PRO
Brown Creeper	*Certhia americana*	POS	-	PRO	-	-	-
Carolina Wren	*Thryothorus ludovicianus*	-	-	-	-	-	PRO
House Wren	*Troglodytes aedon*	CON	CON	CON	-	CON	CON
Marsh Wren	*Cistothorus palustris*	-	-	CON	-	-	-
Blue-gray Gnatcatcher	*Polioptila caerulea*	-	-	CON	-	-	-
Eastern Bluebird	*Sialia sialis*	-	-	-	PRO	-	-
Veery	*Catharus fuscescens*	POS	-	-	-	-	-
Wood Thrush	*Hylocichla mustelina*	CON	PRO	PRO	PRO	POS	PRO
American Robin	*Turdus migratorius*	CON	CON	CON	CON	CON	CON
Gray Catbird	*Dumetella carolinensis*	CON	CON	CON	CON	CON	CON
Northern Mockingbird	*Mimus polyglottos*	PRO	CON	-	CON	CON	PRO
Brown Thrasher	*Toxostoma rufum*	PRO	-	PRO	POS	POS	-

Table 3
Honeywell - Onondaga Lake
Wetlands/Floodplain Assessment Final Report
NYS Breeding Bird Atlas Information[1] for Onondaga Lake Area

BIRDS		ATLAS BLOCK					
		3976B		3977C		3977D	
English Name[2]	Scientific Name	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]	1980-1985 ATLAS[3]	2000-2005 ATLAS[3]
European Starling	*Sturnus vulgaris*	CON	CON	CON	CON	CON	CON
Cedar Waxwing	*Bombycilla cedrorum*	CON	CON	CON	PRO	PRO	PRO
Blue-winged Warbler	*Vermivora pinus*	-	PRO	-	-	-	POS
Yellow Warbler	*Dendroica petechia*	CON	CON	CON	CON	CON	POS
Chestnut-sided Warbler	*Dendroica pensylvanica*	-	-	-	-	-	POS
Yellow-rumped Warbler	*Dendroica coronata*	-	-	-	-	-	POS
American Redstart	*Setophaga ruticilla*	POS	PRO	CON	CON	PRO	-
Mourning Warbler	*Oporornis philadelphia*	-	-	-	POS	-	-
Common Yellowthroat	*Geothlypis trichas*	CON	CON	CON	PRO	CON	PRO
Scarlet Tanager	*Piranga olivacea*	POS	POS	POS	PRO	-	PRO
Eastern Towhee	*Pipilo erythrophthalmus*	CON	POS	-	PRO	-	-
Chipping Sparrow	*Spizella passerina*	CON	CON	CON	CON	CON	CON
Field Sparrow	*Spizella pusilla*	PRO	PRO	CON	-	PRO	POS
Savannah Sparrow	*Passerculus sandwichensis*	-	-	PRO	PRO	CON	-
Song Sparrow	*Melospiza melodia*	CON	CON	CON	-	PRO	CON
Swamp Sparrow	*Melospiza georgiana*	PRO	PRO	CON	-	-	-
Northern Cardinal	*Cardinalis cardinalis*	CON	CON	CON	PRO	CON	CON
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	POS	PRO	CON	-	CON	-
Indigo Bunting	*Passerina cyanea*	PRO	PRO	PRO	-	PRO	-
Bobolink	*Dolichonyx oryzivorus*	-	CON	PRO	PRO	-	-
Red-winged Blackbird	*Agelaius phoeniceus*	CON	-	CON	CON	CON	CON
Eastern Meadowlark	*Sturnella magna*	POS	-	PRO	CON	CON	POS
Common Grackle	*Quiscalus quiscula*	CON	CON	CON	CON	CON	CON
Brown-headed Cowbird	*Molothrus ater*	CON	CON	CON	CON	CON	CON
Orchard Oriole	*Icterus spurius*	-	POS	-	-	-	-
Baltimore Oriole	*Icterus galbula*	CON	CON	CON	POS	CON	PRO
Purple Finch	*Carpodacus purpureus*	PRO	-	POS	-	-	-
House Finch	*Carpodacus mexicanus*	CON	CON	CON	POS	CON	PRO
American Goldfinch	*Carduelis tristis*	CON	CON	CON	PRO	CON	PRO
House Sparrow	*Passer domesticus*	CON	CON	CON	CON	CON	CON

Notes:

1 Source: New York State Breeding Bird Atlas 2000. New York State Department of Environmental Conservation. [updated 2007 Jun 11; cited 2008 Nov 10]. Available from: http://www.dec.ny.gov/animals/3712.html

2 English and scientific names according to AOU (1998) and supplements through 2006.

3 Recorded in Blocks 3976B, 3977C, and 3977D as part of the 1980-1985 and 2000-2005 Atlas projects.

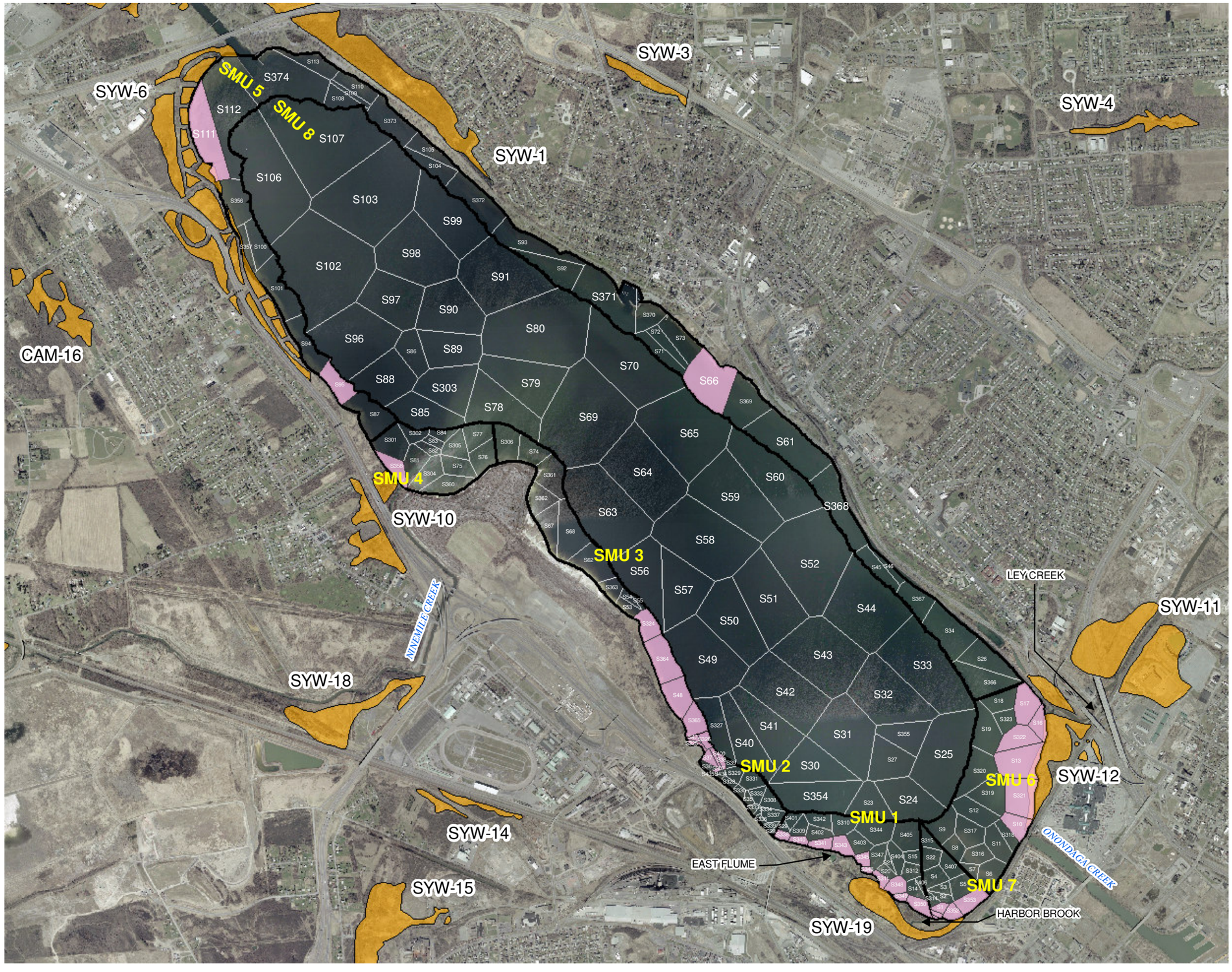
- = Not Recorded, CON = Confirmed Breeder, PRO = Probable Breeder, POS = Possible Breeder.

Table 4
Honeywell - Onondaga Lake
Wetlands/Floodplain Assessment Final Report
Amphibians & Reptiles Documented in the Vicinity of Onondaga Lake[1]

Standard English Name	Scientific Name	Atlas Location
SALAMANDERS		
Common Mudpuppy	*Necturus m. maculosus*	Adjacent
Jefferson Salamander	*Ambystoma jeffersonianum*	Adjacent
Blue-spotted Salamander	*Ambystoma laterale*	Adjacent
Spotted Salamander	*Ambystoma maculatum*	In
Red-spotted Newt	*Notophthalmus v. viridescens*	In
Northern Dusky Salamander	*Desmognathus fuscus*	In
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*	Adjacent
Northern Redback Salamander	*Plethodon cinereus*	In
Northern Slimy Salamander	*Plethodon glutinosus*	In
Four-toed Salamander	*Hemidactylium scutatum*	Adjacent
Northern Spring Salamander	*Gyrinophilus p. porphyriticus*	Adjacent
Northern Two-lined Salamander	*Eurycea bislineata*	In
TOADS AND FROGS		
Eastern American Toad	*Bufo a. americanus*	In
Gray Treefrog	*Hyla versicolor*	In
Northern Spring Peeper	*Pseudacris c. crucifer*	In
Western Chorus Frog	*Pseudacris triseriata*	Adjacent
American Bullfrog	*Rana catesbeiana*	Adjacent
Northern Green Frog	*Rana clamitans melanota*	In
Wood Frog	*Rana sylvatica*	Adjacent
Northern Leopard Frog	*Rana pipiens*	In
Pickerel Frog	*Rana palustris*	Adjacent
TURTLES		
Common Snapping Turtle	*Chelydra s. serpentina*	In
Common Musk Turtle	*Sternotherus odoratus*	In
Spotted Turtle[2]	*Clemmys guttata*	Adjacent
Wood Turtle[2]	*Glyptemys insculpta*	In
Eastern Redbelly Turtle	*Pseudemys rubriventris*	Adjacent
Painted Turtle	*Chrysemys picta*	In
SNAKES		
Northern Water Snake	*Nerodia s. sipedon*	In
Northern Brown Snake	*Storeria d. dekayi*	In
Northern Redbelly Snake	*Storeria o. occipitomaculata*	In
Common Garter Snake	*Thamnophis sirtalis*	In
Northern Ringneck Snake	*Diadophis punctatus edwardsii*	In
Smooth Green Snake	*Opheodrys vernalis*	Adjacent
Eastern Rat Snake	*Elaphe alleghaniensis*	Adjacent
Eastern Milk Snake	*Lampropeltis t. triangulum*	In
Eastern Massasauga[3]	*Sistrurus c. catenatus*	Adjacent

Notes:
[1] Recorded during the Amphibian & Reptile Atlas Project (1990-1998) accessed 4/27/09: http://www.dec.ny.gov/animals/7140.html. In = Recorded in Syracuse West USGS quadrangle, Adjacent = Recorded in at least one of eight adjacent quadrangles.
[2] Special Concern. State status from List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State accessed 4/27/09: http://www.dec.ny.gov/animals/7494.html.
[3] Endangered. State status from List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State accessed 4/27/09: http://www.dec.ny.gov/animals/7494.html.

FIGURE 1



LEGEND

- NYSDEC - REGULATED WETLANDS
- SMU BORDER
- TARGETED POLYGON
- THEISSEN POLYGONS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

STATE WETLANDS AND STUDY AREAS

0 1,000 2,000 4,000
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE

PARSONS

This document was developed in color. Reproduction in B/W may not represent the data as intended.

Data source: NYSDEC Wetlands data acquired from http://cugir/mannlib.cornell.edu

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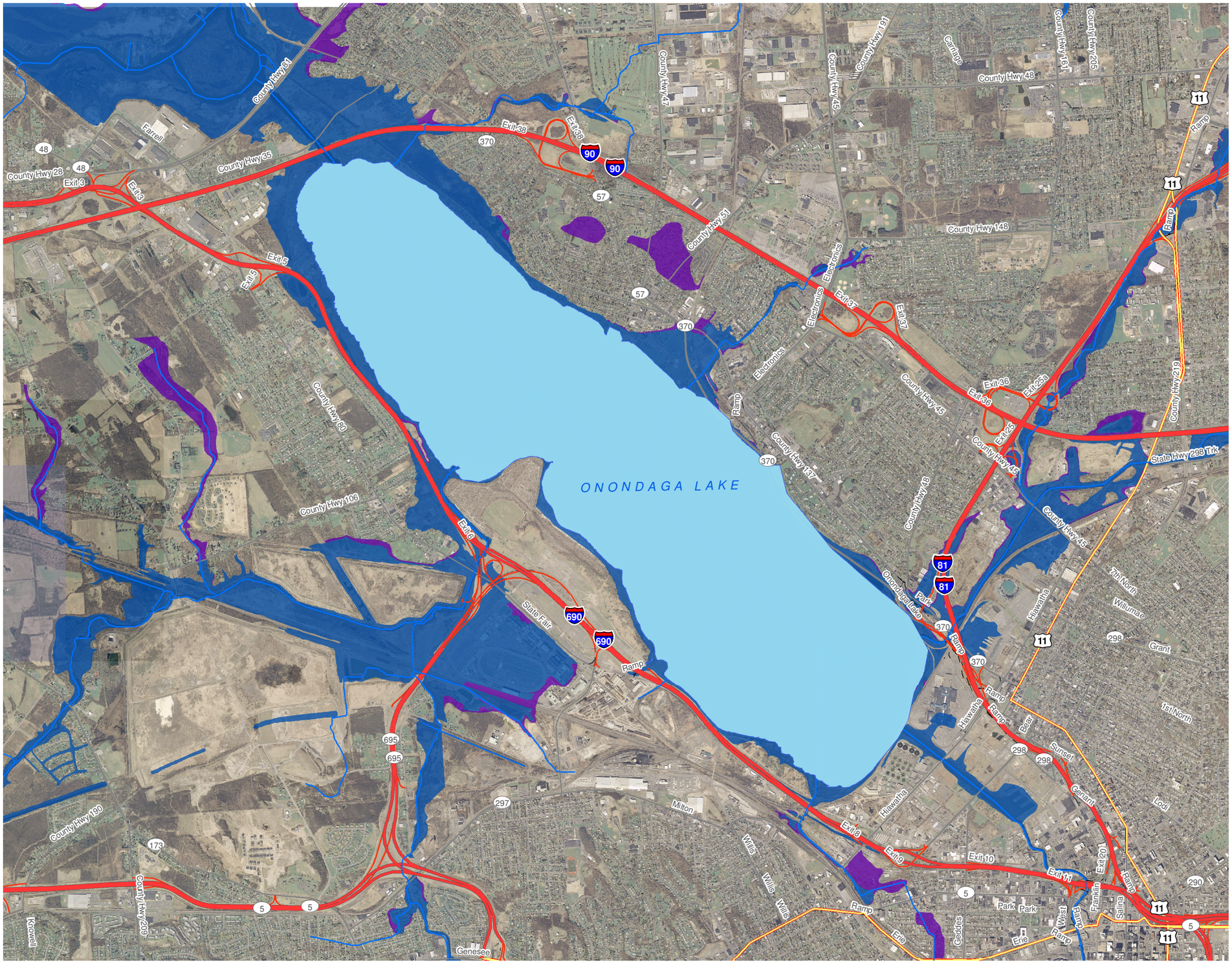

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Data source: Q-3 Floodplain data acquired from http://www.fema.gov

DATE: 3/10/2010 11:58:12 AM NAME: MortonAK

FIGURE 2

N

LEGEND

- AREA INUNDATED BY 100-YEAR FLOOD
- AREA INUNDATED BY 500-YEAR FLOOD

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

100- AND 500-YEAR FLOOD BOUNDARIES

0 1,500 3,000 6,000
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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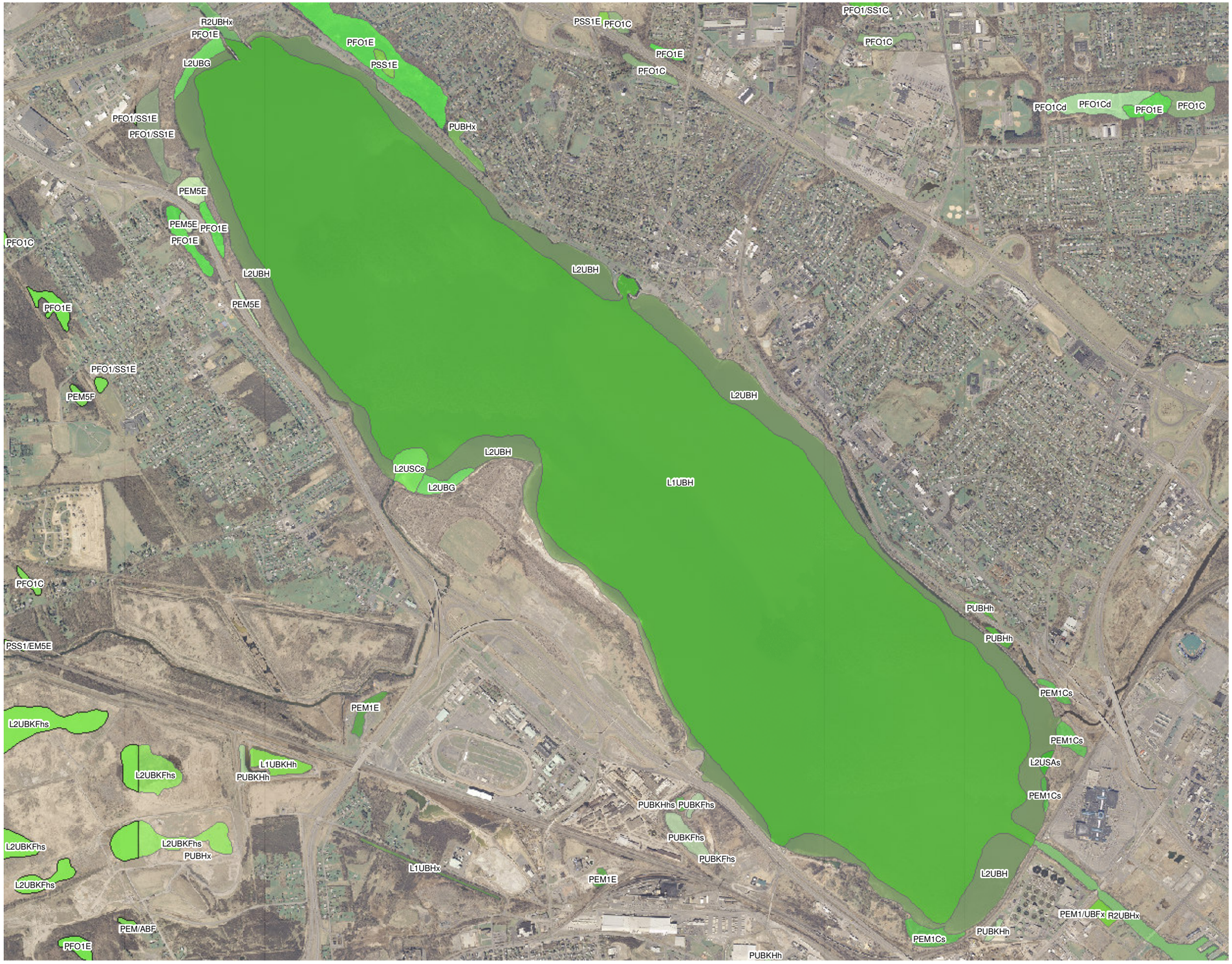

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Data source: National Wetlands Inventory <http://www.fws.gov/wetlands/>

DATE: 3/10/2010 1:23:35 PM

FIGURE 3

N

LEGEND

NATIONAL WETLANDS INVENTORY HABITATS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

NWI HABITATS ASSOCIATED WITH ONONDAGA LAKE

0 1,050 2,100 4,200
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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FIGURE 4

N

LEGEND

- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

SMU 1
OBG WL 1 - 7

WETLAND AND FLOODPLAIN AREAS

0 150 300 600
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

PATH: I:\Honeywell.1163\43776.Habitat-Twg\Docs\DWG\MXD\On_Lk_Wtds_Fldpln_Rpt\SMU2.mxd

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FIGURE 5

N

LEGEND

- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

SMU 2

WETLAND AND FLOODPLAIN AREAS

0 125 250 500
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

LEGEND

- DELINEATED WETLANDS
- EVALUATION AREA
- SMU BORDER
- APPROXIMATE WASTEBED BOUNDARY
- WETLAND PLOT DATA

FLOOD ZONE

- 100 YEAR
- 500 YEAR

SMU 3
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 250 500 1,000
Feet

N

FIGURE 6

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

FIGURE 7

LEGEND

- WETLAND DATA PLOT
- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER
- APPROXIMATE WASTEBED BOUNDARY

FLOOD ZONE

- 100 YEAR
- 500 YEAR

N

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

SMU 4
SYW-10 AREA

WETLAND AND FLOODPLAIN AREAS

0 125 250 500
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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LEGEND

- WETLAND DATA PLOT
- LAKE TRAIL
- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

SMU 5 (1)
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 200 400 800
Feet

N

FIGURE 8

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

PATH: I:\Honeywell.1163\43776.Habitat-Twg\Docs\DWG\MXD\On_Lk_Wtlds_Fldpln_Rpt\SMU5-2A.mxd

NAME: NewtonJM

DATE: 3/10/2010 2:55:47 PM

LEGEND

- WETLAND DATA PLOT
- LAKE TRAIL
- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

SMU 5 (2) / SYW-6 AREA
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 200 400 800
Feet

N

FIGURE 9

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

LEGEND

SMU BORDER

FLOOD ZONE

100 YEAR

500 YEAR

SMU 5 (3)
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 200 400 800
Feet

N

FIGURE 10

MARCH 2010
1163.43776

O'BRIEN & GERE

PARSONS

LEGEND

EVALUATION AREA

SMU BORDER

FLOOD ZONE

100 YEAR

500 YEAR

SMU 5 (4)
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 200 400 800
Feet

N

FIGURE 11

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

LEGEND

- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

SMU 5 (5)
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

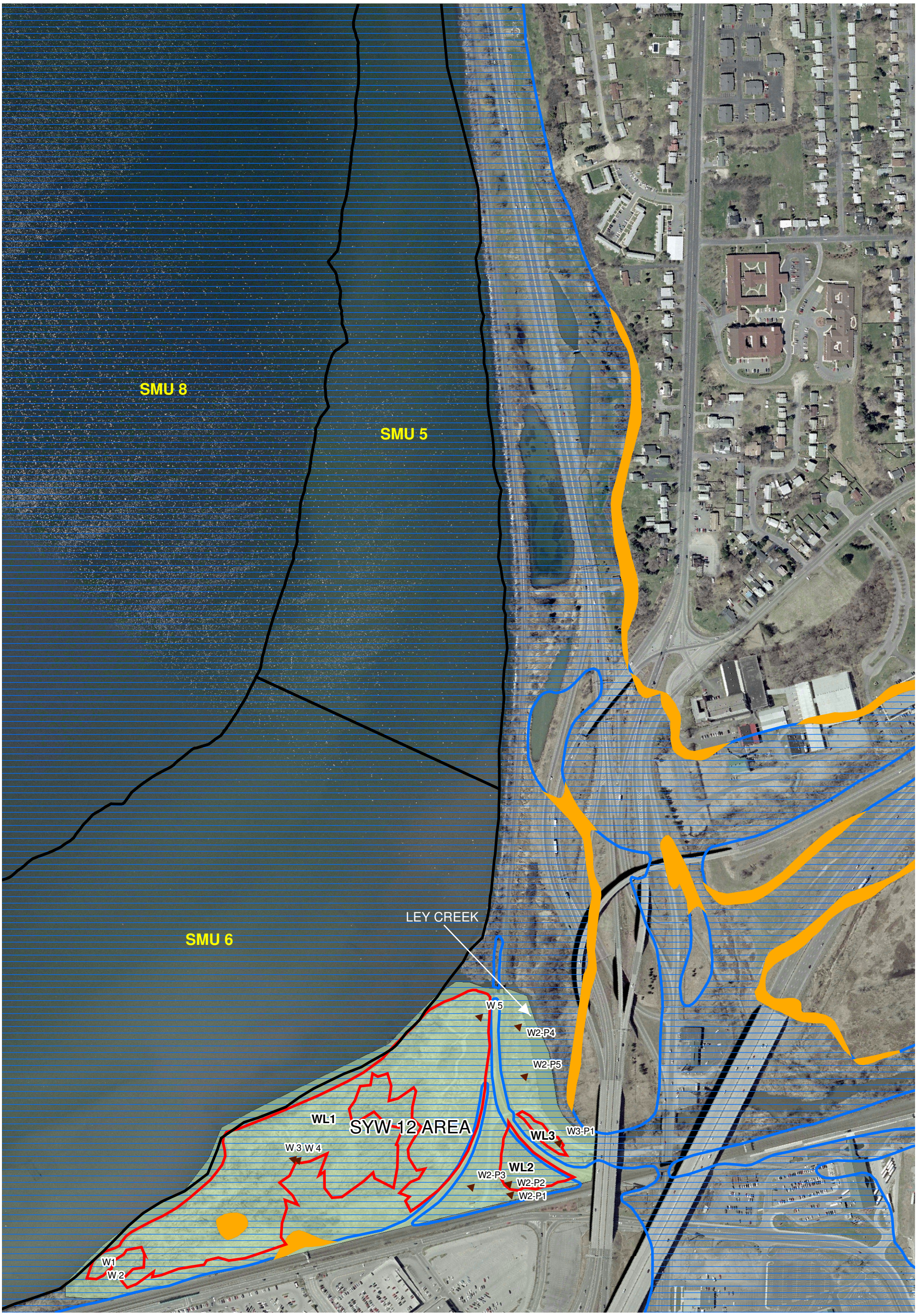
0 200 400 800
Feet

N

FIGURE 12

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS



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NAME: NewtonJM

DATE: 3/10/2010 3:30:01 PM

LEGEND

- WETLAND DATA PLOT
- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

SMU 5 AND 6/SYW-12 AREA
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 200 400 800
Feet

FIGURE 13

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

LEGEND

- WETLAND DATA PLOT
- METRO OUTFALL
- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

SMU 6 AND 7/SYW-12 and SYW-19 AREAS
WETLAND AND FLOODPLAIN AREAS

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

0 200 400 800
Feet

N

FIGURE 14

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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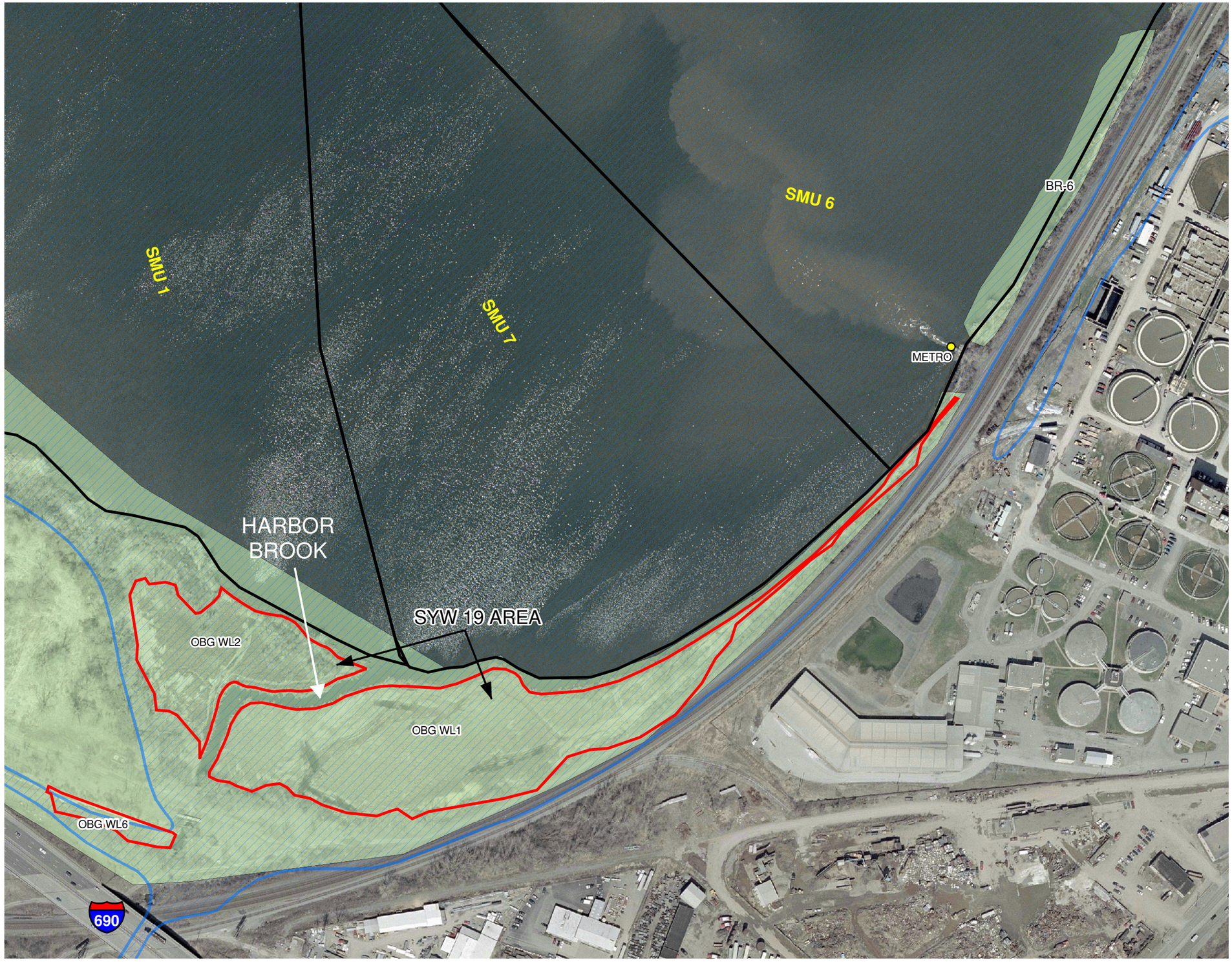
DATE: 3/10/2010 3:37:30 PM NAME: NewtonJM

FIGURE 15



N

LEGEND

- METRO OUTFALL
- DELINEATED WETLAND
- EVALUATION AREA
- SMU BORDER

FLOOD ZONE

- 100 YEAR
- 500 YEAR

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

SMU 7/SYW-19 AREA
WETLAND AND FLOODPLAIN AREAS

0 125 250 500
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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DATE: 3/10/2010 3:40:50 PM NAME: NewtonJM

FIGURE 16

N

LEGEND

- WETLAND DATA PLOT
- WILLOW STUDY PLOTS
- PAVED ROAD
- UNPAVED ROAD

FLOOD ZONE

- 100 YEAR
- 500 YEAR

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

WASTEBED 13

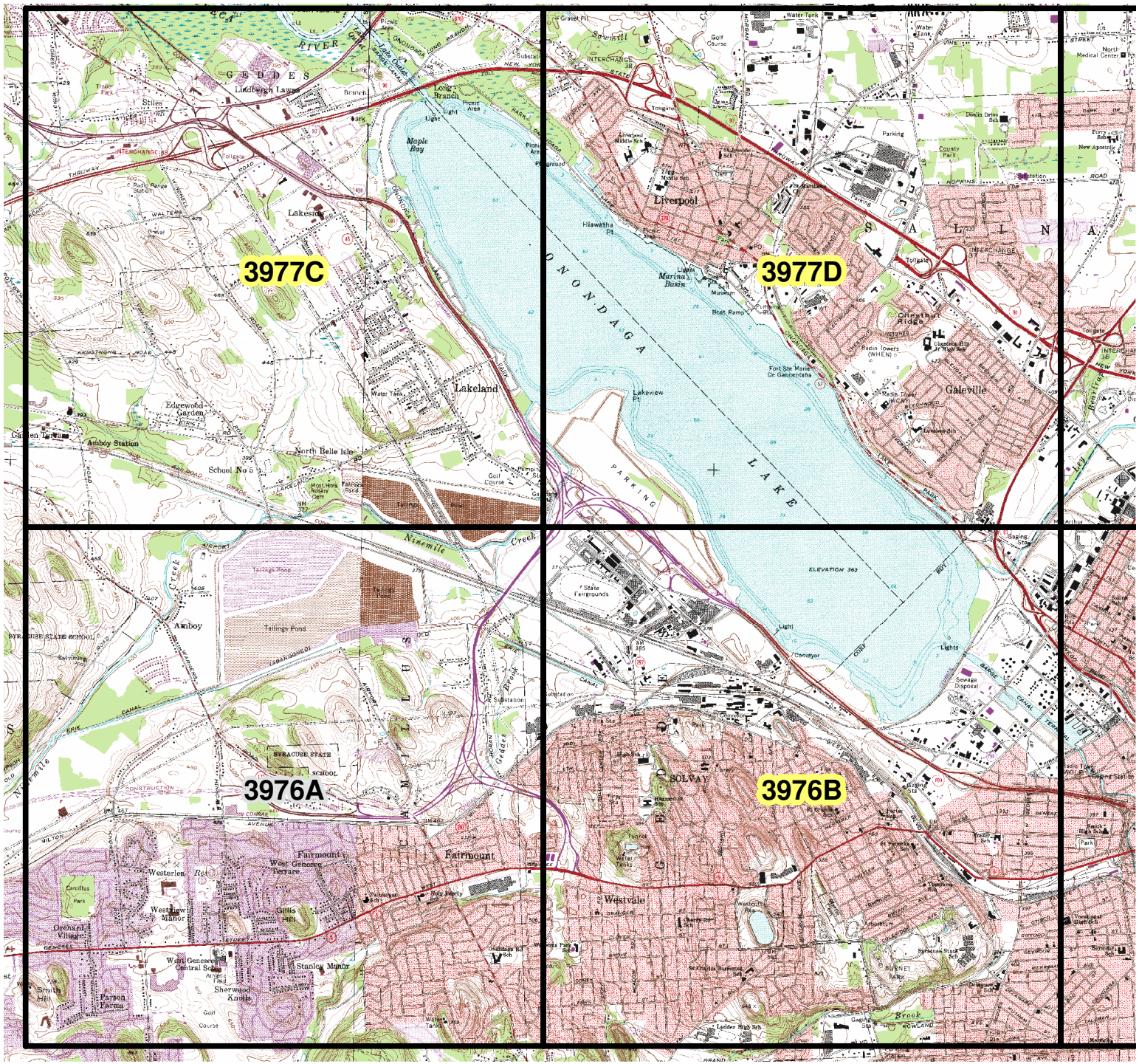
WETLAND AND FLOODPLAIN AREAS

0 175 350 700
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

FIGURE 17



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N

LEGEND

ATLAS BLOCK

NOTES:
1. BLOCKS HIGHLIGHTED IN YELLOW HAVE DATA REFERENCED IN THIS REPORT.
2. ATLAS BLOCKS APPROXIMATED FROM "NEW YORK STATE BREEDING BIRD ATLAS 2000 [INTERNET]."

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

NEW YORK STATE BREEDING BIRD ATLAS 2000-2005

ONONDAGA LAKE BLOCKS

0 2,250 4,500
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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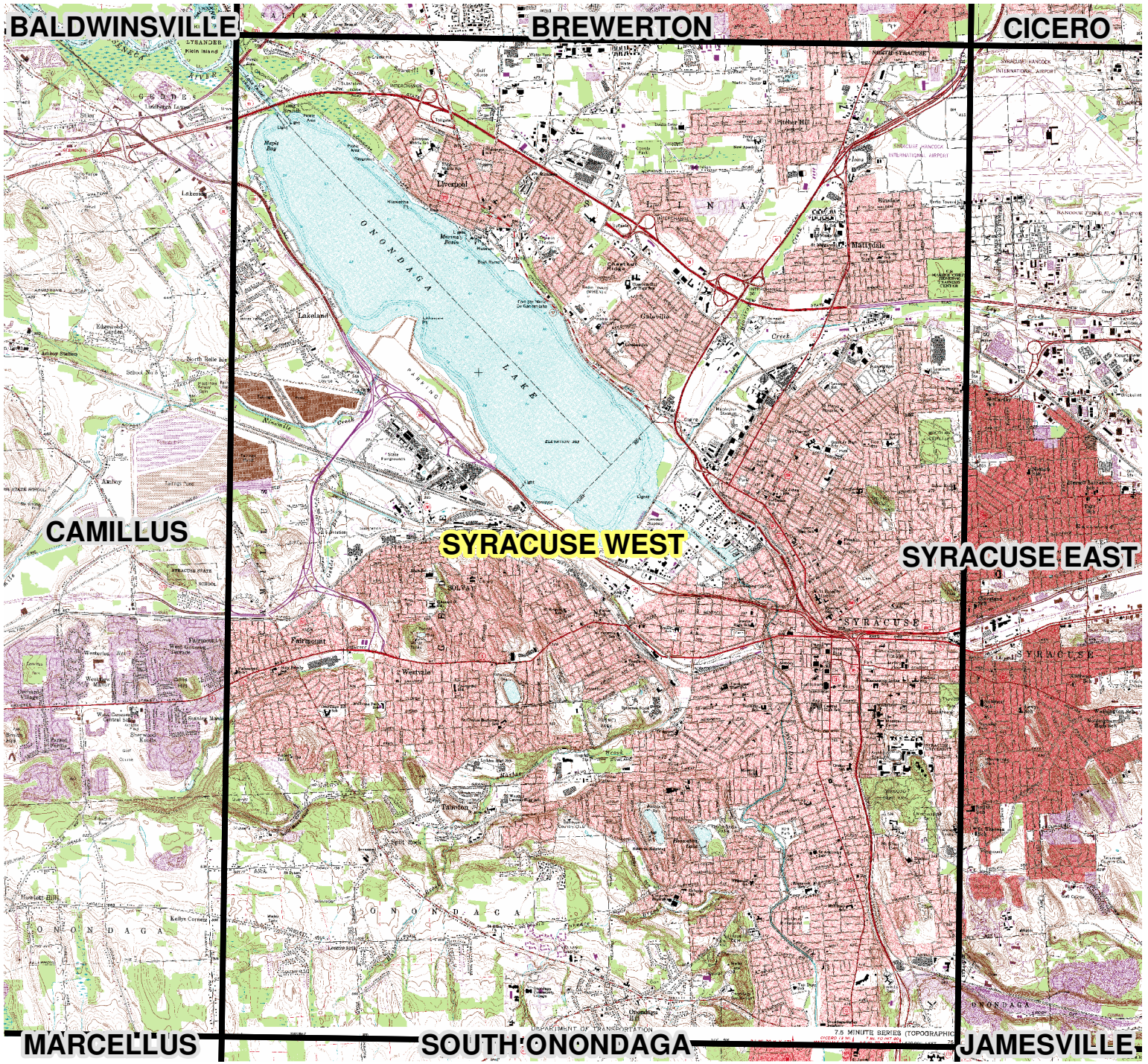
DATE: 5/28/2009 4:41:55 PM

FIGURE 18



N

LEGEND

ATLAS BLOCK

NOTES:
1. BLOCKS HIGHLIGHTED IN YELLOW HAVE DATA REFERENCED IN THIS REPORT.
2. ATLAS BLOCKS PROVIDED BY NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.

HONEYWELL
ONONDAGA LAKE
SYRACUSE, NEW YORK

NEW YORK STATE AMPHIBIAN AND REPTILE ATLAS PROJECT 1990-1998

SYRACUSE WEST QUADRANGLE

0 3,250 6,500
Feet

MARCH 2010
1163.43776

O'BRIEN & GERE
PARSONS

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NAME: NewtonJM
DATE: 3/10/2010 11:29:21 AM

Comments on "Revised Report – Wetlands/Floodplain Assessment, Onondaga Lake, Geddes and Syracuse, New York" Prepared for Honeywell by O'Brien and Gere Engineers, Inc. and Parsons, June 2009

General Comments

G.1 The revised report successfully addresses the vast majority of the concerns that were raised in our July 17, 2008 comment letter and only a few remaining comments need to be addressed prior to the report being finalized.

G.2 Follow up to previous General Comment G.4. It appears that Section 3.2.2 Wetland Boundary Delineation (page 8) was added to address General Comment 4 (NYSDEC's July 17, 2008 comment letter to Honeywell, Appendix A, Correspondence Letters), which requests that "more emphasis should be placed on habitat value, and flora and fauna resources that existed prior to contamination" in the Solvay Wastebed area. Additional discussion of wetland areas that were eliminated, such as Geddes Marsh, should be included in this section. The April 2008 RI for WB 1-8 (OB&G) cites the 1989 BBL document and notes that "The wastebeds were constructed over Geddes Marsh, which was reclaimed from Onondaga Lake in 1822 when the lake level was lowered to the same level as the Seneca River." Further, there is only a brief mention of salt marshes that surrounded the lake but no discussion of the salt marshes (and other wetlands such as marl fens) that surrounded the southern portion of the lake (Onondaga Lake RI, TAMS/NYSDEC 2002), in the areas of SMUs 1, 2, 3, and 7.

Specific Comments

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Typically, numbering includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph introducing them.

1. Page 2, Paragraph 2, Section 1.1. The text should state that the portion of SYW-10 north of I-690 has been investigated and is being remediated consistent with the Geddes Brook/Ninemile Creek Operable Unit 2 Site Record of Decision (NYSDEC and USEPA ROD, October 2009).

2. Page 4, Section 2.4. The second sentence of the first paragraph of this section should be reworded to state, "A portion of the wastebed has been selected as the location of the sediment containment area (SCA) for storage of dredge spoils from Onondaga Lake." The second paragraph of this section should also refer to any handling and/or sediment processing facilities, cap material staging areas, and water treatment facilities either near the lake or on or near Wastebed 13. (Comment also applies to Paragraph 7 on page 24.)

3. Page 7, Paragraph 2, Section 3.2.2. The text should be reorganized to link specific events, such as the construction of the Syracuse Northern Railroad and construction of the New

York State Barge Canal, to specific impacts (e.g., decrease in lake level, loss of wetland habitats).

4. Page 7, Paragraph 6, Section 3.2.2. Please change "hydrophytic (water tolerant) species" to "hydrophytic (species adapted to grow in water)."

5. Page 14, Paragraph 2, Section 4.1.2. While additional wetland areas of SYW-19 were delineated, "function and value assessments were not completed for WL5, WL6, and WL7 as these areas are not contiguous with Onondaga Lake." However, these wetlands are within the 100 year floodplain area, which is a project assessment area (page 3, Section 2 Project Study Area, first paragraph, second sentence). Further, other wetland areas (WL2 and WL3 in SYW-12) which are not contiguous with Onondaga Lake were evaluated. Therefore, the function and value assessments should be completed.

6. Page 22, Section 4.5 and Table 1. It should be noted here that Wetlands A and B are within BR-2.

7. Page 24, Paragraph 7, Section 4.6.1. It is stated that the willow pilot study was initiated "in anticipation of the Wastebeds as receptors of Onondaga Lake dredge spoils." The purpose of the study was to evaluate potential reduction in infiltration/leachate as part of the closure of Wastebeds 9 through 15. Please revise.

8. Page 24, Paragraph 8, Last Sentence, Section 4.6.1. Please include a reference to the approved NYSDEC work plan associated with the willow plot study and include a short summary (one paragraph) of Task 3 (field trials).

9. References. The NYSDEC (1973) freshwater wetlands map link should be updated. Explain why the 1986 map cited in the 2004 report was not used.

Tables

10. Tables 2 and 3. Page 2 of these tables is missing in the hard copy report.

Honeywell
5000 Brittonfield Parkway
Suite 700
East Syracuse, NY 13057
315-431-4443
315-431-4777 Fax

June 12, 2009

Mr. Timothy Larson
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau D, 12th Floor
625 Broadway
Albany, New York 12233-7013

Re: Wetlands/Floodplain Assessment, Onondaga Lake, Geddes and Syracuse, New York - Revised Report

Dear Mr. Larson:

Enclosed you will find the revised version of the *Wetlands/Floodplain Assessment Report for Onondaga Lake*. This document has been updated from the October 2004 version and incorporates applicable responses to New York State Department of Environmental Conservation (NYSDEC) comments submitted to Honeywell in a letter dated July 17, 2008.

In response to NYSDEC comments, site visits to Wastebed 13 and New York State-regulated Wetland SYW-12 were conducted in 2008. Wastebed 13 was evaluated for the presence of wetlands on September 17, 2008. The northern portion of Wetland SYW-12 was evaluated and delineated on November 4, 2008. Records pertaining to these evaluations have been added to this report. In addition, this report has been updated to include findings from the June 2008 supplemental wetland delineation performed at the Wastebeds 1 through 8 Site.

Much of the data and information presented in the attached report has been incorporated into the *Onondaga Lake Remedial Design Elements for Habitat Restoration* (Habitat Plan). The draft Habitat Plan is scheduled for submittal to the NYSDEC in July 2009. Therefore, NYSDEC approval of the attached report is critical to the schedule for finalization and approval of the Habitat Plan.

The required copies of the revised Wetland/Floodplain Assessment are enclosed for your review. Please contact me or Tim Johnson at 315-451-9560 if you have any questions.

Sincerely,

John P. McAuliffe, P.E.
Program Director, Syracuse

Attachments (1 Electronic, 5 Bound hardcopies, 1 Unbound hardcopy)

Cc:	Mr. Robert Nunes	USEPA (5 copies, 1 electronic)
	Argie Cirillo, Esq.	USEPA (ltr only)
	Mr. Gregg Townsend	NYSDEC, Region 7 (1 copy, 1 electronic)
	Margaret A. Sheen, Esq.	NYSDEC, Region 7 (ltr only)
	Mr. Mark Sergott	NYSDOH (1 copy, 1 electronic)
	Mr. Geoffrey J. Laccetti	NYSDOH (ltr only)

Mr. Kenneth Lynch	NYSDEC, Region 7
Mr. Norman Spiegel	NYSDOL (ltr only)
Mr. Andrew Gershon	NYSDOL (ltr only)
Mr. Robert Montione	Earthtech (2 copies, 2 electronic)
Mr. Michael Spera	EarthTech (2 copies, 2 electronic)
Mr. William Hague	Honeywell
Mr. Alfred J. Labuz	Honeywell
Brian D. Israel, Esq.	Arnold & Porter (electronic)
Thomas Milch, Esq.	Arnold & Porter (ltr only)
Joseph J. Heath, Esq.	(1 copy, 1 electronic)
Mr. Gerry Jamieson	HETF/Onondaga Nation (1 electronic)
Mr. Steven Miller	Parsons (ltr only)
Mr. Tim Johnson	Parsons
Mr. Steve Mooney	O'Brien & Gere
Mr. Christopher C. Calkins	O'Brien & Gere

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau D, 12th Floor
625 Broadway, Albany, New York 12233-7013
Phone: (518) 402-9676 • **FAX:** (518) 402-9819
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

June 9, 2009

John McAuliffe
Honeywell International
5000 Brittonfield Parkway, Suite 700
East Syracuse, New York 13057

Re: Wastebeds 1 through 8 Site, Geddes, New York, Revised Wetland Delineation and Floodplain Assessment Report, dated May 2009

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation has reviewed the revised Wastebeds 1-8 Wetland Delineation and Floodplains Assessment Report, dated May 2009. The report is hereby approved.

Please place copies of this report in the project document repositories listed below.

Onondaga County Public Library at the Galleries
447 South Salina Street
Syracuse, NY 13204

Atlantic States Legal Foundation
658 West Onondaga Street
Syracuse, NY 13204

The Report is approved conditioned on a copy of this letter being affixed to all copies of the May 14, 2009 report that are distributed by Honeywell (including any copies distributed within Honeywell) to its agents (including all contractors working on the Focused Feasibility Study)and to the public.

If you have any questions regarding this approval letter, please contact me at 518-402-9676.

Sincerely,

Susan Edwards

Susan Edwards
NYSDEC Project Manager

ec: Alfred J. Labuz - Honeywell
William Hague - Honeywell
Brian D. Israel, Esq. - Arnold & Porter
David Coburn - Onondaga Co. Dept. of Environment
Joseph J. Heath, Esq.
Gerry Jamieson, HETF / Onondaga Nation
Douglas M. Crawford - O'Brien & Gere
Christopher C. Calkins - O'Brien & Gere
Thomas Conklin - O'Brien & Gere
Steven Mooney, O'Brien & Gere

New York State Department of Environmental Conservation

Division of Fish, Wildlife and Marine Resources, Region 7

Bureau of Habitat
1285 Fisher Avenue, Cortland, New York 13045-1090

Phone: (607) 753-3095 · **FAX:** (607) 753-8532

Website: www.dec.state.ny.us

February 28, 2008

Mr. Peter E. Grevelding
O'Brien & Gere
5000 Brittonfield Parkway
East Syracuse, NY 130578

Re: Wetland / Floodplain Assessment; Onondaga Lake; Geddes and Syracuse , NY; October 2004

Dear Mr. Grevelding:

This office has reviewed the referenced wetland report. This letter constitutes the Department's acceptance of the freshwater wetland boundaries as depicted in the report. This determination will be valid for three years from the date of this letter pursuant to the terms of the Division of Fish, Wildlife and Marine Resources' policy memorandum FW 87-1 issued August 1987.

Thank you for your time. If there are any questions or concerns feel free to contact me.

Sincerely,

JME
Joseph M. Eifert
Biologist 1 (Ecology)
Region 7 - Cortland

cc: Don Hesler
Rebecca Quail

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau D, 12th Floor
625 Broadway, Albany, New York 12233-7013
Phone: (518) 402-9676 • **FAX:** (518) 402-9819
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

July 17, 2008

John McAuliffe
Honeywell International
5000 Brittonfield Parkway
Suite 700
East Syracuse, NY 13057

Re: Comments on Draft Wetlands/Floodplains Assessment, Onondaga Lake, Geddes and Syracuse, New York" Prepared for Honeywell by O'Brien & Gere Engineers and Parsons, October 2004

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation and support agencies have reviewed the above-named report and have comments which need to be addressed in a revised Assessment Report.

General Comments

G.1 **Insufficient Documentation of Reconnaissance Efforts.** All areas that were first identified during the boat reconnaissance (BR) as potential wetlands (i.e., BR1 through BR7) and evaluated during the further assessment phase should be fully described and documented in this report. Those areas that were initially identified as potential wetlands during the boat reconnaissance and later determined not to be wetlands by O'Brien & Gere should also be shown on the figures and fully described in this report (see Specific Comment 1 below). Information related to this can be found in a September 10, 2004 e-mail from Parsons (Tim Johnson) to NYSDEC (Tim Larson).

G.2 **Incomplete Assessment of Wastebed 13.** The Wetlands/Floodplain Assessment Report covers Wastebed 13 in a brief paragraph at the end of the report (see Section 4.6.3). Since it has now been determined that Wastebed 13 will be used as the sediment consolidation area, a detailed description of the potential wetland and floodplain areas including characterization of vegetation, soils, and hydrology is required. In addition, a description of the willow/mint test plots should be provided.

G.3 **Limited Discussion of Lacustrine and Palustrine Wetland Habitats.** A description of the lakeshore lacustrine habitat is provided in Section 4.6.1 of the assessment, but there is no discussion of the relationship between this habitat and the palustrine wetlands surrounding the lake or a characterization of the value of this shallow water wetland area. The discussion of the lakeshore habitat should be expanded to further characterize the value of the habitat and clarify the potential relationships between the lacustrine and palustrine wetlands around Onondaga Lake.

G.4 **Application of "Normal Circumstances" Assumptions for Wetland Boundary Delineation/Wetland Conditions in Absence of Contamination**. The lakeshore area around Onondaga Lake has been highly disturbed, with wetlands around the lake being filled in from

prior to the 1920s. Much of the surface of these areas is composed of Solvay and other wastes and does not support the diversity or abundance of typical vegetation that would be expected. Therefore, application of "normal circumstances" is not necessarily appropriate for these areas and the presence of fill material and its potential impacts on wetlands should be noted and discussed.

The report should provide an indication as to what the wetlands were, or should have been, like in the absence of contamination. If contamination is the basis for wetlands loss or degradation, remediation efforts should include restoration or replacement to the pre-contamination condition and not to the current degraded or absent condition. For example, adjacent to SMUs 1, 2, 3, and 7 and possibly other areas, there were likely to have been shallow water or emergent wetlands that were buried in waste materials, or otherwise eliminated.

More emphasis should be placed on habitat value, and flora and fauna resources that existed prior to contamination. The first page of the report states "This assessment supports the EPA's *Policy on Floodplain and Wetland Assessments for CERCLA Actions* (1985) which identifies the following elements for a wetland/floodplain assessment." The fifth element of this policy, "effects of contaminants on wetland resources," emphasizes the importance of adequately characterizing the pre- and post-contamination conditions.

G.5 **Change in Presentation/Formatting.** As noted in the report, various project elements have not been designed and other wetlands and floodplains impacts are still being assessed at this time. The figures and information presented have been appropriately developed considering what elements of the project have been established so far. However, in future submittals of the report, the text portion of the report should be broken up into wetland and floodplain sections for clarity of presentation. The "Wetland Assessment" section should be further divided into eight subsections discussing the individual elements of the wetlands assessment based on EPA's *Policy on Floodplain and Assessments for CERCLA Actions* (listed on the bottom of page 1 of the report). Similarly, the "Floodplain Assessment" section should also be divided into five subsections discussing the individual elements of the floodplain assessment (listed on the top of page 2 of the report). The updated version of this report should be included as an appendix to the Habitat Plan.

G.6 **Wastebeds 1 through 8 Wetland Delineation**. This wetland assessment report should be updated to include the findings of the recent (June 2008) wetland delineation of the lakeshore area of the Wastebeds 1 through 8 site, as discussed in NYSDEC's May 27, 2008 letter to you and the additional field work conducted in June 2008.

Specific Comments

Typically, paragraph numbering corresponds to complete paragraphs on a page, and begins with the first full paragraph on a page. Typically, numbering includes the last paragraph on a page, even if that paragraph continues onto the next page. Bullets are considered part of the paragraph introducing them.

1. Page 9, Paragraph 2, Section 3.2.1. The boat reconnaissance yielded seven areas (BR1 to BR7, where BR7 was for the area adjacent to the S111 polygon) that required further investigation. A discussion of these areas should be included in this section along with a summary table and a figure depicting their general location (these BR areas can be outlined on the existing figures). Missing areas include:

- BR1 – I-690 and Wastebeds 1 through 8 drainage swale near boat ramp (northern area of SMU 2). This area was further investigated under the Waste Beds 1-8 Wetland Delineation. The information from that delineation effort should be discussed here. (See General Comment G.6 above regarding the delineation for Wastebeds 1 through 8).

- BR2 – long strip of vegetation along southern half of SMU 3. This area was further investigated under the Waste Beds 1-8 Wetland Delineation. The information from that delineation effort should be discussed here. (See General Comment G.6 above regarding the delineation for Wastebeds 1 through 8).

- BR3 – SMU 3 near tip of horn (S362). This area was further investigated under the Waste Beds 1-8 Wetland Delineation. The information from that delineation effort should be discussed here. (See General Comment G.6 above regarding the delineation for Wastebeds 1 through 8).

- BR5 – SMU 5 near Bloody Brook.

- BR6 – SMU 6 between Onondaga Creek and Metro outfall.

In addition, the second sentence should also include SMUs 2 and 6 (in addition to SMUs 3 and 5) and "i.e." should be changed to "e.g." as there were other polygons that were assessed. Also, in the following paragraph, it is indicated that BR4 is at the southern border of SMU 5; however, as shown on Figure 7, most of the BR4 area is in SMU 4.

2. Page 10, Paragraph 2, Section 3.2.2. Provide an estimate of when Solvay waste and sludge were disposed in the area. Based on past disposal activities and the definitions contained in the 1987 US Army Corps of Engineers' *Wetlands Delineation Manual*, the presence of these materials is not considered to represent "normal circumstances," as the vegetation has been substantially altered by man's activities and it is unknown whether the time since disposal occurred is sufficient to allow waste and sludge disposed in wetlands to acquire hydric soil characteristics. (See also General Comment G.4).

3. Page 11, Paragraph 3, Section 3.2.3. It should be noted that S111 was also named BR7 for reconnaissance purposes (see Specific Comment 1 above).

4. Page 14, Section 4.1.1, Page 17, Section 4.2.1, Page 18, Section 4.3.1, Page 21, Section 4.4.1, and Page 22, Section 4.5.1. Add a summary table of wetland areas evaluated in this report.

5. Page 14, Section 4.1.1 and Figure 4. The delineated wetlands in the western portion of Wastebed B in the Dredge Spoil Area and within and along the Upper East Flume (see Figure 4, wetland areas not labeled) should be labeled and also discussed in the text. These two areas are designated as Wetlands WL5 and WL7, respectively, in the revised wetland delineation report for the Wastebed B/Harbor Brook site.

6. Page 16, Bulleted List, Section 4.1.2. Although "ground water recharge/discharge" is listed as a principal function/value for the Wetland SYW-12 area (Section 4.2.2), it is not listed as a principal function/value for the Wetland SYW-19 area (Section 4.1.2). This function should be listed in Section 4.1.2 for the Wetland SYW-19 area or an explanation should be provided indicating why it is not a principal function/value for this area.

7. Page 17, Paragraph 1, Section 4.2 and Figures 13 and 14. It is stated that the study area for the Wetland SYW-12 delineation, as agreed to by NYSDEC, was the portion of SYW-12 south of Ley Creek. However, although NYSDEC agreed that the northern portion of SYW-12, as mapped by NYSDEC (see Figure 1), north of Ley Creek and east of the railroad tracks to Onondaga Lake Parkway would not need to be delineated for this lake assessment as this area is likely associated with Ley Creek and the inland salt ponds to the north, the area along the lakeshore north of Ley Creek between the railroad tracks and the lake would be further assessed and delineated. Either an assessment/delineation of this area should be done at this stage or a statement should be added to indicate that an assessment/delineation will be conducted in this area should the remediation potentially impact the shoreline north of Ley Creek.

8. Pages 19 and 20, Section 4.3.2. "Ground water recharge/discharge" should be added as a principal function/value for Wetland SYW-10 since groundwater and seeps from Wastebeds 1 through 8 are believed to discharge to the wetland area south of Ninemile Creek. Also, "wildlife habitat" should be added as a principal function/value for the wetland south of Ninemile Creek (top of page 20) due to the size, location, and nature of this wetland area and its similarity to other wetlands (e.g., north of Ninemile Creek, near Harbor Brook [SYW-19]) for which "wildlife habitat" was determined to be a principal function/value. These changes should also be reflected in the forms in Appendix C.

9. Page 22, Section 4.4.2. Three values (recreation, uniqueness/heritage, and visual quality/aesthetics) were included as principal functions/values for the S111 wetland area due, in part, to the proximity of the bike trail. Since the trail now extends into the Ninemile Creek area, these values should be added for the Wetland SYW-10 areas since these areas consist of "emergent marsh and/or open water [that] are visible from primary viewing locations" (Consideration #2 under Visual/Aesthetics).

10. Page 24, Section 4.6.1. All seven areas investigated during the boat reconnaissance should be included in this discussion (see comments above).

11. Page 25, Paragraph 3, Section 4.6.3. The Wastebed 13 characterization is incomplete and does not explain why wetlands are not considered to be present at Wastebed 13. The following elements of the Wastebed 13 investigation should be discussed in the text:

    - Vegetative species (e.g., goldenrod, buckthorn, cottonwood, sumac, locust, *Phragmites* sp.).
    - Absence of wetland soil indicators and presence of Solvay waste.
    - Willow/mint test plots (with soil amendments and without soil amendments).

12. Section 4. A summary of the findings should be added to the report.

Figures

13. Figure 1. "Targeted polygon" areas should be clearly shown in this figure, as stated in Section 2.2 (Page 6, Paragraph 2). Please highlight targeted polygon areas (e.g., S95, S111, S66) and BR areas.

14. Figures 4 to 15. Provide more precise titles for figures (e.g., SMU 1 Wetland and Floodplain Areas).

15. Figure 4. As noted above, the delineated wetlands in the Dredge Spoil Area (WL5) and Upper East Flume (WL7) should be labeled.

16. Figure 6 (SMU 3). As per General Comment G.6 above, this figure should be updated after completion of the wetland delineation for Wastebeds 1 through 8.

17. Figures 7 and 8. Although the BR4 area determined to be a wetland is shown, the extent of the area comprising BR4 within which the delineation/assessment was conducted should also be shown.

18. Figure 9. Although the BR7 (S111) area determined to be a wetland is shown, the extent of the area comprising BR7 within which the delineation/assessment was conducted should also be shown. Also, the lake trail (both paved and unpaved parts) should be highlighted as well as the hydraulic connections of Wetland SYW-6 to the lake.

19. Figures 13 through 15. Label Wetlands SYW-12 and SYW-19.

Appendices

20. Appendix A (Photos). Provide a table of contents for the photo log and the date of each photo within this appendix, either in an introductory paragraph or by individual photograph. Add photos of Wastebed 13.

21. Appendix B (Wetland Delineation Forms).

- As stated in General Comment G.4 and Specific Comment 2, it is questionable whether "normal circumstances" are present on site. Remarks should be made noting atypical conditions or potential problem areas encountered during the reconnaissance/delineation.

- All parts of each form should be filled out (e.g., note whether or not recorded data are available).
- An introductory paragraph should be added that identifies the documents that contain the remainder of the wetland delineation forms (i.e., Wetlands SYW-10 and SYW-19).
- Plots ID W5 and S111S2. The percent of dominant species that are OBL, FACW, or FAC line should be completed.
- Plot ID S111S1. Describe in the Remarks section at the end of the form why the site is considered to be significantly disturbed (atypical situation) if other than "trail berm fill adjacent to area" (as indicated under Soils).

22. Appendix C. The initials of the NYSDEC oversight representative (LAM) should be removed from these forms.

23. Appendix C, Table C-1. Add "2 (Harbor Brook and Onondaga Lake)" as the answer for "How many tributaries [waterbodies] contribute to the wetland?"

24. Appendix C, Table C-3 Comment Table. Production Export (2). Please clarify the sentence "much of the detritus is wastebed..."

25. Table C-3 (SYW-12). Based on the selection of the various considerations/qualifiers, Nutrient Removal should also be considered a Principal Function/Value.

26. Appendix C, Table C-4 Comment Table.

- Fish and Shellfish Habitat (7). Ninemile Creek supports a variety of fish species. The comment should be modified to reflect this. Please also explain why fish and shellfish habitat is not considered to be a principal function/value for these wetlands. For Consideration 8 (streamside vegetation), it is believed the comment field should be Yes for Ninemile Creek instead of No.

- Recreation (2). The comment should be revised since the area of Wetland SYW-10 north of Ninemile Creek is owned by Onondaga County (not Honeywell) and access is not restricted. A map showing property ownership within the Ninemile Creek area was prepared by O'Brien & Gere and provided to NYSDEC in September 2004 for the Geddes Brook/Ninemile Creek FS and Proposed Plan.

27. Appendix C, Table C-5 Functions/Values Assessment. Endangered Species Habitat should be checked "No" in the Suitability column.

28. Appendix C, Table C-5 Comment Table. Groundwater Recharge/Discharge (4). The sentence "Strong odor of naphthalene present" was removed from the original comments in the field and should be inserted back into the comment table.

29. Appendix D. The initials of the NYSDEC oversight representative (LAM) should be removed from these forms.

30. Appendix D. Common names of vegetation are provided in this appendix, while Latin names are used in Appendix B. A table of plant species observed on site should be included in the main text providing common names, Latin names, stratum, and indicator status of each species.

31. Appendix D, Table D-5 Ecological Survey Form. The weather conditions portion of the form is blank and should be completed.

32. Appendix E, Table 3-14. Page 2 of 2 is missing from the report and should be included.

Editorial Comments

33. Page 9, 4th paragraph; 1st sentence: The acronym "USACE" should follow the United States Army Corp of Engineers. Also, replace "(Manual; 1987)" with "(USACE, 1987)".

Page 14, Paragraph 4, Sentence 2, Section 4.1.1. Place "See Figures 4 and 15" in parentheses at the end of the first sentence.

Page 19, 1st paragraph, 3rd sentence. The reference to "topography" is misspelled. Please correct.

34. Appendix B. Change Plot ID "S11S2" to "S111S2."

35. Appendix C, Tables C-1 through C-7, Fish and Shellfish Habitat (7). Revise "Fish advisory correctly in place" to read "Fish consumption advisory currently in place."

36. Appendix C, Table C-4 Functions/Values Assessment, Wildlife Habitat. Number 18 is repeated twice. Delete the second occurrence.

Please address these comments in a revised report. If you have any questions prior to resubmittal, please call me at 518-402-9676.

Sincerely,

Donald J. Hesler GLE

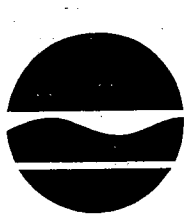
Donald J. Hesler
Section Chief
Onondaga Lake Section

Copies: Alfred Labuz, Honeywell
Chris Calkins, O'Brien & Gere

bc: D. Hesler/File
S. Edwards
T. Larson

bec: R. Nunes, USEPA
H. Hamel, NYSDOH
R. Quail, DFWMR
J. Eifert, Region 7, Cortland
G. Townsend, Region 7
M. Sheen, Region 7
M. Spera, Earth Tech
edocs: letter.hw734034.2008-07-17.Wetland_Assess_comments.pdf

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources, Region 7
Bureau of Habitat
1285 Fisher Avenue, Cortland, New York 13045-1090
Phone: (607) 753-3095 • **FAX:** (607) 753-8532
Website: www.dec.state.ny.us



Denise M. Sheehan
Commissioner

July 17, 2006

Mr. Christopher Calkins
O'Brien & Gere
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, NY 13221-4873

Re: December 11, 2003 Delineation Report by O'Brien & Gere for Harbor Brook

Dear Mr. Calkins:

This office has reviewed the referenced wetland delineation report. This letter constitutes the Department's acceptance of the freshwater wetland boundary as depicted in the report. This determination will be valid for three years from the date of this letter pursuant to the terms of the Division of Fish, Wildlife and Marine Resources' policy memorandum FW 87-1 issued August 1987.

If there are any questions or concerns please contact me.

Sincerely,

Joseph M. Eifert
Biologist 1 (Ecology)
Region 7 - Cortland

cc: R. Quail, DFWMR
T. Smith, DER

PHOTOGRAPH LOG TABLE OF CONTENTS

Photo 1. Looking east at shoreline habitat, north of Ley Creek (North end of SMU 6).

Photo 2. Assessment of shoreline substrate, north of Ley Creek (North end of SMU 6).

Photo 3. Emergent (*Phragmites* sp.) portion of Wetland WL1 of SYW-12 area (SMU 6 area).

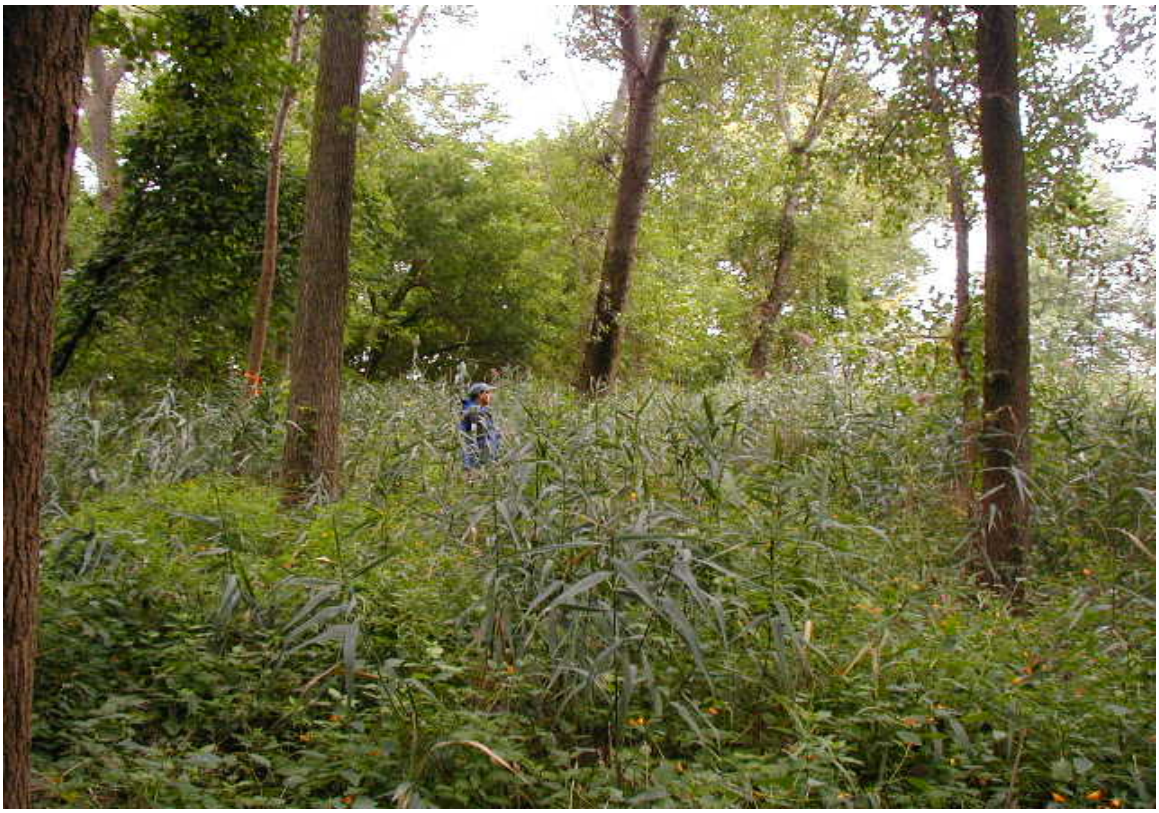


Photo 4. Forested portion of Wetland WL1 of SYW-12 area (SMU 6 area).

Photo 5. Looking east from road at Wetland WL2 of SYW-12 area.

Photo 6. Looking south at right of way in center of Wetland WL2 of SYW-12 area.

Photo 7. Looking north at western edge of Wetland WL3 of SYW-12 area.

Photo 8. Looking south at eastern edge of Wetland WL3 of SYW-12 area.

Photo 9. Looking south at shoreline habitat of OBG WL-1 and SYW-19 areas (SMU 7/1 area).

Photo 10. OBG WL-3/4 (SYW-19 area) near outlet of Lower East Flume (SMU 1 area).

Photo 11. Looking west at portion of Wetland SYW-10 east of Ninemile Creek (SMU 4 area).

Photo 12. Looking west within forested portion of Wetland SYW-10 (SMU 4 area).

Photo 13. Looking south from boat at BR4 Wetland area (SMU 4 area).

Photo 14. Looking east at recreational trail adjacent to BR4 Wetland area (SMU 4 area).

Photo 15. Looking northwest at lakeshore edge of BR7 Wetland associated with Polygon S111 (Wetland SYW-6; SMU 5 area).

Photo 16. Looking west into forested floodplain of BR7 Wetland associated with Polygon S111 (Wetland SYW-6; SMU 5 area).

Photo 17. Looking north at developed shoreline (typical) of Onondaga Lake Park area (North end of SMU 5).

Photo 18. Looking north at western portion of Lakeshore Area on Wastebeds 1-8 Site.

Photo 19. Looking southeast at Wetland A within eastern portion of Lakeshore Area on Wastebeds 1-8 Site.

Photo 20. Looking south at Wetland B within eastern portion of Lakeshore Area on Wastebeds 1-8 Site.

Photo 21. Looking east at the SB1 plot on Settling Basin 13.

Photo 22. Soil boring sample of SB1 plot from Settling Basin 13.

Photo 23. Looking southwest at the SB5 plot on Settling Basin 13.

Photo 24. Growth of willow and hybrid poplar varieties on the unamended Field 2, located along the southern border of Settling Basin 13.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**9/7/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP Chiarello and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W1**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W1**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2 ***Impatiens* sp.**	**herb**	**FACW**	10		
3 ***Salix nigra***	**tree**	**FACW+**	11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **100%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**18 +**	(in.)
Depth to Saturated Soil:	**5**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:

_____	Inundated
X	Saturated in Upper 12 inches
X	Water marks
X	Drift Lines
X	Sediment Deposits
X	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____	Oxidized Root Channels in Upper 12 inches
_____	Water-Stained Leaves
_____	Local Soil Survey Data
_____	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks:

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W1**

Map Unit Name
(Series and Phase): **Made land**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
12	**B**	**2.5y 3/2**	**10yr 4/6**	**Mod/Mod**	**Sand with silt, organics, and clay**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime	**X**	Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
X	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**yes**	Is this Sampling Point Within a Wetland?	**yes**
Wetland Hydrology Present?	**yes**		
Hydric Soils Present?	**yes**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12** West of RR tracks	Date:	**9/7/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP Chiarello and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W1**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W2**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Parthenocissus quinquefolia***	**vine**	**FACU**	9		
2 ***Pila pumila***	**herb**	**FACW**	10		
3 ***Fraxinus pennsylvanica***	**tree/shrub**	**FACW**	11		
4 ***Acer negundo***	**tree/shrub**	**FAC+**	12		
5 ***Solanum dulcamara***	**vine**	**FAC-**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **60%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**N/A**	(in.)
Depth to Saturated Soil:	**N/A**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **No hydrology indicators**

Project/Site: **SYW-12 (dry)**

SOILS

Transect ID: Plot ID: **W2**

Map Unit Name
(Series and Phase): **Made land** Drainage Class

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
12	**B**	**2.5y 3/2**	**N/A**	**N/A**	**Coarse sand with organics**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**yes**	Is this Sampling Point Within a Wetland?	**no**
Wetland Hydrology Present?	**no**		
Hydric Soils Present?	**no**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**9/8/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP Chiarello and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W1**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W3**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2 ***Impatiens* sp.**	**herb**	**FACW**	10		
3 ***Solanum dulcamara***	**herb**	**FAC-**	11		
4 ***Populus deltoides***	**tree**	**FAC**	12		
5 ***Parthenocissus quinquefolia***	**vine**	**FACU**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **60%**

Remarks: **Near W1-97 at S edge of Ley Creek**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
- _____ Stream, Lake or Tide Gauge
- _____ Aerial Photographs
- _____ Other

__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**N/A**	(in.)
Depth to Saturated Soil:	**12 +**	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____	Inundated
_____	Saturated in Upper 12 inches
_____	Water marks
_____	Drift Lines
X	Sediment Deposits
X	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____	Oxidized Root Channels in Upper 12 inches
_____	Water-Stained Leaves
_____	Local Soil Survey Data
_____	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks:

SOILS

Project/Site: **SYW-12**
Transect ID:
Plot ID: **W3**

Map Unit Name
(Series and Phase): **Made land**
Drainage Class

Taxonomy (Subgroup)
Field Observations
Confirm Mapped Type? **yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	**A**	**2.5y 5/2**	**N/A**	**N/A**	**fine, dry sand**
10+	**B**	**2.5y 5/3**	**10yr 5/8**	**low/high**	**fine, dry sand**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime	**X**	Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**yes**	Is this Sampling Point Within a Wetland?	**yes**
Wetland Hydrology Present?	**yes**		
Hydric Soils Present?	**yes**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**9/7/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP Chiarello and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W1**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W4**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Solanum dulcamara***	**herb**	**FAC-**	9		
2 ***Parthenocissus quinquefolia***	**vine**	**FACU**	10		
3 ***Fraxinus pennsylvanica***	**seedling**	**FACW**	11		
4 ***Acer negundo***	**shrubs/tree**	**FAC+**	12		
5 ***Populus deltoides***	**shrubs/tree**	**FAC**	13		
6 ***Vitis labrusca***	**Vine**	**FACU**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **50%**

Remarks: **Sparse understory**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
- _____ Stream, Lake or Tide Gauge
- _____ Aerial Photographs
- _____ Other

__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**N/A**	(in.)
Depth to Saturated Soil:	**N/A**	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- _____ Inundated
- _____ Saturated in Upper 12 inches
- _____ Water marks
- _____ Drift Lines
- _____ Sediment Deposits
- _____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- _____ Oxidized Root Channels in Upper 12 inches
- _____ Water-Stained Leaves
- _____ Local Soil Survey Data
- _____ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: **No hydrology indicators**

SOILS

Project/Site: **SYW-12**
Transect ID: Plot ID: **W4**

Map Unit Name
(Series and Phase): **Made land**
Drainage Class
Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundar Size/Contrast	Texture, Concretions, Structure, etc.
0-12	**A**	**2.5y 5/2**	**N/A**	**N/A**	**Fine, dry sand**
12-14	**B**	**2.5y 5/3**	**10yr 5/8**	**vey low/high**	**Fine, dry sand**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: **Soil indicators**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**no**	Is this Sampling Point Within a Wetland?	**no**
Wetland Hydrology Present?	**no**		
Hydric Soils Present?	**no**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**9/7/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP Chiarello and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W1**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W5**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **100%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**N/A**	(in.)
Depth to Saturated Soil:	**12**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
X Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
Other (Explain in Remarks)

Remarks: **Soil moist at 9-12"**

SOILS

Project/Site: **SYW-12**
Transect ID: Plot ID: **W5**

Map Unit Name
(Series and Phase): **Made land**
Drainage Class
Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundar Size/Contrast	Texture, Concretions, Structure, etc.
0-2	**Organic Matter**				**with sand**
2-8	**A**	**10yr 3/1**	**N/A**	**N/A**	**silty clay**
9-12	**B**	**10yr 4/1**	**10yr 4/4**	**Mod/low**	**silty clay**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
X	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**yes**	Is this Sampling Point Within a Wetland	**yes**
Wetland Hydrology Present?	**yes**		
Hydric Soils Present?	**yes**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**11/4/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and AJ VANDEVALK**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?	**X**	
Is the site significantly disturbed (atypical situation?)		**X**
Is the area a potential Problem Area?		**X**

(if needed, explain on reverse).

Community ID: **Up1**
Transect ID:
Plot ID: **W2-P1**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Populus tremuloides***	**tree**	**FACU**	9		
2 ***Rhamnus* sp.***	**shrub/herb**	**NS**	10		
3 ***Phragmites australis***	**herb**	**FACW**	11		
4 ***Solidago altissima***	**herb**	**FACU**	12		
5 ***Vitis labrusca***	**vine**	**FACU**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **25%**

Remarks: *** not included in percent dominanace calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__x__ No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)
Depth of Free Water in Pit: - (in.)
Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks: **No hydric indicators present**
Soil plot in SE of SYW-12 W2 in wooded/shrub area. Plot approx. 15 ft from RR ballast/fill.

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W2-P1**

Map Unit Name
(Series and Phase): **cut and fill**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4		**10 yr 2/2**	---	---	**silty loam**
4-12		**10 yr 3/2**			**fill**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: **Gravel fill encountered at 4 inches. Fill consisted of silt with varying sizes of gravel, brick, and some sand. Refusal (gravel layer) at approx. 12 inches.**

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

Is this Sampling Point within a Wetland?	Yes	No
		X

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**11/4/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and AJ VANDEVALK**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?	**X**	
Is the site significantly disturbed (atypical situation?)		**X**
Is the area a potential Problem Area? (if needed, explain on reverse).		**X**

Community ID: **Em. Wet**
Transect ID:
Plot ID: **W2-P2**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **100%**

Remarks: **Robust community of Phragmites monoculture**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__**x**__ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)
Depth of Free Water in Pit: 0 (in.)
Depth to Saturated Soil: 0-1 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
x Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
x Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks: **Observed standing water (1-2 inches) in central portion of delineated wetland.**

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W2-P2**

Map Unit Name
(Series and Phase): **cut and fill**

Drainage Class

Field Observations
Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6		**10 yr 2/1**	**---**	**---**	**organics**
6-9		**10 yr 3/2**	**---**	**---**	**organics with silt**
9-12		**10 yr 4/1**	**---**	**---**	**sand/silt/organic streaking in sand/fill layer**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor	**x**	Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
x	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **Yes**

Remarks: ***Phragmites*** **remnants.**
Below organic layer appears to be fill with mostly sand below 9".
Organic streaking observed in the sand layer.

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?	**X**	
Wetland Hydrology Present?	**X**	
Hydric Soils Present?	**X**	

Is this Sampling Point within a Wetland?	Yes	No
	X	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**11/4/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and AJ VANDEVALK**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?	**X**	
Is the site significantly disturbed (atypical situation?)		**X**
Is the area a potential Problem Area?		**X**
(if needed, explain on reverse).		

Community ID: **UPL**
Transect ID:
Plot ID: **W2-P3**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Dipsacus sylvestris***	**herb**	**FACU-**	9		
2 ***Centaurea maculosa****	**herb**	**NA**	10		
3 ***Rhamnus* sp.***	**shrub**	**NS**	11		
4 ***Nepeta cataria***	**herb**	**FACU**	12		
5 ***Solidago altissima***	**herb**	**FACU**	13		
6 ***Rumex* sp.***	**herb**	**NS**	14		
7 ***Solanum dulcamara***	**vine**	**FAC-**	15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **0%**

Remarks: **** not included in percent dominanace calculation***

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__**x**__ No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)
Depth of Free Water in Pit: - (in.)
Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W2-P3**

Map Unit Name
(Series and Phase): **cut and fill**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4		**10 yr 2/1**			**fill**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
x	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **Yes**

Remarks: **Soil was predominantly gravel and silt with some sand.**
Refusal at 4" due to gravel. Fill encountered.
Low chroma of fill only indicator of hydric soil.

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**x**
Wetland Hydrology Present?		**x**
Hydric Soils Present?	**x**	

Is this Sampling Point within a Wetland?

Yes	No
	x

Remarks: **Color only hydric soil indicator.**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**11/4/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and AJ VANDEVALK**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?	**X**	
Is the site significantly disturbed (atypical situation?)		**X**
Is the area a potential Problem Area?		**X**

(if needed, explain on reverse).

Community ID: **Riparian UPL**
Transect ID:
Plot ID: **W2-P4**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Solanum dulcamara***	**vine**	**FAC-**	9		
2 ***Lythrum salicaria***	**herb**	**FACW+**	10		
3 ***Solidago altissima***	**herb**	**FACU**	11		
4 ***Phragmites australis***	**herb**	**FACW**	12		
5 ***Brassica rapa****	**herb**	**NA**	13		
6 ***Glechoma hederacea***	**herb**	**FACU**	14		
7 ***Verbascum blattaria***	**herb**	**UPL**	15		
8 ***Dipsacus sylvestris***	**herb**	**FACU-**	16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **29%**

Remarks: ***** not included in percent dominanace calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__**x**__ No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)
Depth of Free Water in Pit: - (in.)
Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W2-P4**

Map Unit Name
(Series and Phase): **cut and fill**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12+		**10 yr 3/2**			**fill material**
					gravel, some silt and sand

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks:

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**x**
Wetland Hydrology Present?		**x**
Hydric Soils Present?		**x**

	Yes	No
Is this Sampling Point Within a Wetland?		**x**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**11/4/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and AJ VANDEVALK**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?	**X**	
Is the site significantly disturbed (atypical situation?)		**X**
Is the area a potential Problem Area? (if needed, explain on reverse).		**X**

Community ID: **Riparian UPL**
Transect ID:
Plot ID: **W2-P5**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Solidago altissima***	**herb**	**FACU**	9		
2 ***Phragmites australis***	**herb**	**FACW**	10		
3 ***Glechoma hederacea***	**herb**	**FACU**	11		
4 ***Lonicera tatarica***	**shrub**	**FACU**	12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **25%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__**x**__ No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)
Depth of Free Water in Pit: - (in.)
Depth to Saturated Soil: - (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks: **Hole in low spot of area. Topo rises toward creek and towards rr track. Extensive fill and debris observed along rr track in Phragmites stand.**

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W2-P5**

Map Unit Name
(Series and Phase): **cut and fill**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12+		**10 yr 3/1**			**Clay, silt, sand with gravel**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
x	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **Yes**

Remarks: **Low chroma of fill only indicator observed for hydric soil.**

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**x**
Wetland Hydrology Present?		**x**
Hydric Soils Present?	**x**	

Is this Sampling Point Within a Wetland?	Yes	No
		x

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake SYW-12**	Date:	**11/4/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and AJ VANDEVALK**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?	**X**	
Is the site significantly disturbed (atypical situation?)		**X**
Is the area a potential Problem Area?		**X**
(if needed, explain on reverse).		

Community ID: **Emer Wet**
Transect ID:
Plot ID: **W3-P1**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **100%**

Remarks: **Robust *Phragmites* stand.**
Multi-stem black willow (*Salix nigra*) in middle of *Phragmites* stand.

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__**x**__ No Recorded Data Available

Field Observations:

Depth of Surface Water: - (in.)
Depth of Free Water in Pit: - (in.)
Depth to Saturated Soil: 12 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
x Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inche
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks: **Hydrology not as strong as observed on 10/23/08.**

Project/Site: **SYW-12**

SOILS

Transect ID: Plot ID: **W3-P1**

Map Unit Name
(Series and Phase): **cut and fill**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10		**10 yr 3/1**			**fill-mix of silt and sand**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
x	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **Yes**

Remarks: **Refusal at 10".**
Low chroma colors.

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?	**x**	
Wetland Hydrology Present?	**x**	
Hydric Soils Present?	**x**	

Is this Sampling Point Within a Wetland?	Yes	No
	x	

Remarks: Flagged W3-1 to W3-15.
Flagged around concrete structure (storm sewer?) with flags W3-7 to W3-9.

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake BR-4**	Date:	**9/21/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**SE MOONEY AND RP CHIARELLO**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W1**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W1**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **100%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**6**	(in.)
Depth to Saturated Soil:	**4**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:

_____	Inundated
X	Saturated in Upper 12 inches
_____	Water marks
X	Drift Lines
X	Sediment Deposits
_____	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____	Oxidized Root Channels in Upper 12 inches
_____	Water-Stained Leaves
_____	Local Soil Survey Data
_____	FAC-Neutral Test

Remarks:

Project/Site: **BR-4**

SOILS

Transect ID: Plot ID: **W1**

Map Unit Name
(Series and Phase): **Cut and fill land**

Drainage Class

Field Observations
Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
3-4"	**A**		**dark sand and gravel**		
4-8"	**B**	**10yr 4/2**	**10yr 5/6**		**silty clay**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
X	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Hydric Soil Present?

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	Is this Sampling Point Within a Wetland	**Yes**
Wetland Hydrology Present?	**Yes**		
Hydric Soils Present?	**Yes**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake BR-4**	Date:	**9/21/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**SE MOONEY AND RP CHIARELLO**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**W2**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**W2**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Rhamnus cathartica***	**tree**	**FAC-**	9		
2 ***Parthenocissus quinquefolia***	**vine**	**FACU**	10		
3 ***Fraxinus pennsylvanica***	**tree/shrub**	**FACW**	11		
4 ***Salix* sp.**	**shrub**	**FACW**	12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) **50%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **N/A** (in.)
Depth of Free Water in Pit: **N/A** (in.)
Depth to Saturated Soil: **N/A** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
Other (Explain in Remarks)

Remarks:

Project/Site: **BR-4**

SOILS

Transect ID: Plot ID: **W2**

Map Unit Name
(Series and Phase): **Cut and fill land**

Drainage Class

Field Observations
Taxonomy (Subgroup)

Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3"	**A**				**brown gravelly sand with some silt (embankment fill)**
3-14"	**B**				**light brown gravelly sand with silt (fill); refusal at 14"**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Hydric Soil Present?

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**No**	Is this Sampling Point Within a Wetland	**No**
Wetland Hydrology Present?	**No**		
Hydric Soils Present?	**No**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake BR7 (S111)**	Date:	**9/13/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**S111W1**
Is the site significantly disturbed (atypical situation?)	**Yes**	Transect ID:	
Is the area a potential Problem Area? (if needed, explain on reverse).	**No**	Plot ID:	**S111S1**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Populus deltoides***	**shrub/tree**	**FAC**	9		
2 ***Fraxinus pennsylvanica***	**shrub/tree**	**FACW**	10		
3 ***Acer saccharinum***	**shrub/tree**	**FACW**	11		
4 ***Phragmites australis***	**herb**	**FACW**	12		
5 ***Rhamnus cathartica***	**shrub/tree**	**FAC-**	13		
6 ***Toxicodendron radicans***	**herb**	**FAC**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **83%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
- _____ Stream, Lake or Tide Gauge
- _____ Aerial Photographs
- _____ Other

__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**N/A**	(in.)
Depth of Free Water in Pit:	**7**	(in.)
Depth to Saturated Soil:	**7**	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- _____ Inundated
- _____ Saturated in Upper 12 inches
- **X** Water marks
- **X** Drift Lines
- _____ Sediment Deposits
- _____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- _____ Oxidized Root Channels in Upper 12 inches
- _____ Water-Stained Leaves
- _____ Local Soil Survey Data
- _____ FAC-Neutral Test
- Other (Explain in Remarks)

Remarks: **Lake water level appears above normal; plot performed in shoreline area**

SOILS

Project/Site: **BR7**
Transect ID:
Plot ID: **S111S1**

Map Unit Name
(Series and Phase): **Edwards muck**
Drainage Class

Taxonomy (Subgroup)
Field Observations
Confirm Mapped Type? **no** **cut and fill land**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-7	**A**	**dark brown- black**			**Coarse sand and gravel on roots**
7+	**B**	**brown**			**Coarse sand and gravel on roots**
		Not consolidated-does not stay in auger could not get color			

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
X	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks: **Trail berm fill adjacent to area appears to have eroded into the wetland plot area**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**yes**	Is this Sampling Point Within a Wetland?	**yes**
Wetland Hydrology Present?	**yes**		
Hydric Soils Present?	**assumed**		

Remarks: **Plot area considered atypical based on apparent presence of fill from steep berm bank adjacent to wetland**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake BR7 (S111)**	Date:	**9/13/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**Yes**	Community ID:	**S111**
Is the site significantly disturbed (atypical situation?)	**No**	Transect ID:	
Is the area a potential Problem Area?	**No**	Plot ID:	**S111S2**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2 ***Acer saccharinum***	**tree**	**FACW**	10		
3 ***Boehmeria cylindrica***	**herb**	**FACW+**	11		
4 ***Acer rubrum***	**tree**	**FAC**	12		
5 ***Fraxinus pennsylvanica***	**shrub**	**FACW**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **100%**

Remarks: **Taken in standing water in floodplain area.**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**4**	(in.)
Depth of Free Water in Pit:	**0**	(in.)
Depth to Saturated Soil:	**0**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:

X	Inundated
X	Saturated in Upper 12 inches
X	Water marks
X	Drift Lines
X	Sediment Deposits
X	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

	Oxidized Root Channels in Upper 12 inches
	Water-Stained Leaves
	Local Soil Survey Data
	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks:

SOILS

Project/Site: **BR7**
Transect ID:
Plot ID: S111S2

Map Unit Name
(Series and Phase): **Edwards muck**
Drainage Class
Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **no**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	**A**	**10yr 2/1**	**N/A**	**N/A**	**organic loam with shells**
4-18	**B**	**2.5y 6/2**	**10yr 6/6**	**low/Mod**	**sand with shells (marl)**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime	**X**	Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
X	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**yes**	Is this Sampling Point Within a Wetland?	**yes**
Wetland Hydrology Present?	**yes**		
Hydric Soils Present?	**yes**		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Onondaga Lake BR7**	Date:	**9/13/2004**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**RP CHIARELLO and KW Buelow**	State:	**NEW YORK**

Do Normal Circumstances exist on the site?	**No**	Community ID:	**S111**
Is the site significantly disturbed (atypical situation?)	**Yes**	Transect ID:	
Is the area a potential Problem Area? (if needed, explain on reverse).	**No**	Plot ID:	**S111S3**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Rhamnus cathartica***	**shrub/tree**	**FAC-**	9		
2 ***Rosa multiflora***	**shrub**	**FACU**	10		
3 ***Graminoids*** **sp.***	**grass**	**NI**	11		
4 ***Fragaria virginiana***	**herb**	**FACU**	12		
5 ***Aster novae-angliae***	**herb**	**FACW-**	13		
6 ***Cornus ammomum***	**shrub**	**FACW**	14		
7 ***Solidago gigantea***	**herb**	**FACW**	15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **50%**

Remarks: **On berm for bike trail.**
*** not included in percent dominance calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **N/A** (in.)
Depth of Free Water in Pit: **N/A** (in.)
Depth to Saturated Soil: **N/A** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
Other (Explain in Remarks)

Remarks: **No hydrology**

SOILS

Project/Site: **BR7**
Transect ID:
Plot ID: **S111S3**

Map Unit Name
(Series and Phase): **C.F.L.**
Drainage Class
Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **Yes**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	**A**	**10yr 2/2**	**N/A**	**N/A**	**Sandy silt and gravel**
3-15		**2.5y 6/2**	**N/A**	**N/A**	**Coarse sand and gravel**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: **No hydric soil indicators**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**no**	Is this Sampling Point Within a Wetland?	**no**
Wetland Hydrology Present?	**no**		
Hydric Soils Present?	**no**		

Remarks: **Dry plot performed on berm fill area**

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-1**	Date:	**6/17/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**Joe McMullen (TES); John Rollino (ET); Rich Henry (FWS); SEM, RPC (OBG)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-1U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Sonchus arvensis***	**Herb**	**UPL**	9		
2 ***Cirsium arvense***	**Herb**	**FACU**	10		
3 ***Apocynum cannabinum***	**Herb**	**FACU**	11		
4 ***Phragmites australis***	**Herb**	**FACW**	12		
5 ***Convolvulus sepium***	**Herb**	**FAC-**	13		
6 ***Solanum dulcamara***	**Herb**	**FAC-**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **17%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
___**x**_ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **-** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Shallow surface water data indicate that the shallow groundwater table is deeper than 12".**

SOILS

Project/Site: **ASB-1**
Transect ID: Plot ID **ASB-1U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)**

Drainage Class **MWD-PD**

Taxonomy (Subgroup)

Field Observations
Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
2-3		**10 yr 4/2**	**---**	**---**	**silt loam**
2-5					**black streaking (Solvay waste)**
5-20		**---**	**---**	**---**	**mostly whitish Solvay waste**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland? Yes **No**

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-1**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-1W**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **100%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

x Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__x__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**-**	(in.)
Depth of Free Water in Pit:	**-**	(in.)
Depth to Saturated Soil:	**12**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
x Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Wetland plot saturation at 12"**

Project/Site: **ASB-1**

SOILS Transect ID: Plot ID **ASB-1W**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2		**10 yr 2/1**	---	---	**organic**
2-6		---	---	---	**Solvay waste**

Hydric Soil Indicators:

_____ Histosol	_____ Concretions
_____ Histic Epipedon	_____ High Organic Content in Surface Layer in Sandy Soils
_____ Sulfidic Odor	_____ Organic Streaking in Sandy Soils
_____ Aquic Moisture Regime	_____ Listed on Local Hydric Soils List
_____ Reducing Conditions	_____ Listed on National Hydric Soils List
_____ Gleyed or Low-Chroma Colors	_____ Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No			
Wetland Hydrology Present?	**Yes**	No	Is this Sampling Point		
Hydric Soils Present?	Yes	No	Within a Wetland	**Yes**	No

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-2**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-2U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2 ***Xanthium chinense***	**Herb**	**FAC**	10		
3 ***Convolvulus sepium***	**Herb**	**FAC-**	11		
4 ***Solidago canadensis***	**Herb**	**FACU**	12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **50%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**_ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **14** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **No water in hole.**
Shallow surface water data indicate that the shallow groundwater table is deeper than 12".

Project/Site: **ASB-2**

SOILS Transect ID: Plot ID **ASB-2U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color Munsell Mois	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		**10 yr 2/1**	**---**	**---**	**organic**
3+		**---**	**---**	**---**	**Solvay waste**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland Yes **No**

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-2**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-2W**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **100%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**-**	(in.)
Depth of Free Water in Pit:	**-**	(in.)
Depth to Saturated Soil:	**6**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:

_____	Inundated
x	Saturated in Upper 12 inches
_____	Water marks
_____	Drift Lines
_____	Sediment Deposits
_____	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____	Oxidized Root Channels in Upper 12 inches
_____	Water-Stained Leaves
_____	Local Soil Survey Data
_____	FAC-Neutral Test
_____	Other (Explain in Remarks)

Remarks:

SOILS

Project/Site: **ASB-2**
Transect ID: Plot ID **ASB-2W**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)**

Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2		**10 yr 2/1**	**---**	**---**	**organic**
2+		**---**	**---**	**---**	**Solvay waste**

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** No
Wetland Hydrology Present? **Yes** No
Hydric Soils Present? Yes No

Is this Sampling Point Within a Wetland **Yes** No

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-3**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-3U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2 ***Daucus carota****	**Herb**	**NI**	10		
3 ***Solidago canadensis***	**Herb**	**FACU**	11		
4 ***Lonicera tatarica***	**Herb**	**FACU**	12		
5 ***Dipsacus sylvestris***	**Herb**	**FACU-**	13		
6 **Unid *Aster/Centaurea* spp.***	**Herb**	**NS**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **25%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.* (* not included in % dominance calculation)**

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **-** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **No saturation observed to 6", then confining layer hit.**
Shallow surface water data indicate that the shallow groundwater table is deeper than 12".

Project/Site: **ASB-3**

SOILS Transect ID: Plot ID **ASB-3U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		**10 yr 3/1**	**---**	**---**	**Mix silt & organics**
3-6		**---**	**---**	**---**	**Solvay waste**
confining layer		**---**	**---**	**---**	**waste**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland? Yes **No**

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-3**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	**Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:	
Is the area a potential Problem Area?	Yes	**No**	Plot ID	**ASB-3W**
(if needed, explain on reverse).				

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **100%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **5** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
x Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Soil moist to surface.**

SOILS

Project/Site: **ASB-3**
Transect ID:
Plot ID **ASB-3W**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)**

Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1.5		**7.5 yr 2.5/2**	**---**	**---**	**organic**
1.5+		**---**	**---**	**---**	**Solvay waste**

Hydric Soil Indicators:

_____ Histosol	_____ Concretions
_____ Histic Epipedon	_____ High Organic Content in Surface Layer in Sandy Soils
_____ Sulfidic Odor	_____ Organic Streaking in Sandy Soils
_____ Aquic Moisture Regime	_____ Listed on Local Hydric Soils List
_____ Reducing Conditions	_____ Listed on National Hydric Soils List
_____ Gleyed or Low-Chroma Colors	_____ Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** No
Wetland Hydrology Present? **Yes** No
Hydric Soils Present? Yes No

Is this Sampling Point Within a Wetland **Yes** No

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-4**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-4U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2 ***Brassica nigra****	**Herb**	**NA**	10		
3 ***Sonchus arvensis***	**Herb**	**UPL**	11		
4 ***Hordeum jubatum***	**Herb**	**FAC**	12		
5 ***Daucus carota****	**Herb**	**NA**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **67%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.* (* not included in % dominance calculation)**

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **-** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Soil moist, not saturated at 10-12"**
Shallow surface water data indicate that the shallow groundwater table is deeper than 12".

SOILS

Project/Site: **ASB-4**
Transect ID: Plot ID **ASB-4U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)**

Drainage Class **MWD-PD**

Taxonomy (Subgroup)

Field Observations
Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2		**10 yr 2/1**	---	---	**Mix silt & organics**
2-12		---	---	---	**Solvay waste**

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer in Sandy Soils
Sulfidic Odor	
Aquic Moisture Regime	Organic Streaking in Sandy Soils
Reducing Conditions	Listed on Local Hydric Soils List
Gleyed or Low-Chroma Colors	Listed on National Hydric Soils List
	Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland? Yes **No**

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-4**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-4W**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **100%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **8** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Confining layer at 14"**

Project/Site: **ASB-4**

SOILS Transect ID: Plot ID **ASB-4W**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		**10 yr 2/2**	**---**	**---**	**Mix silt & organics**
3+		**---**	**---**	**---**	**Solvay waste**

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		
	Aquic Moisture Regime		Organic Streaking in Sandy Soils
	Reducing Conditions		Listed on Local Hydric Soils List
	Gleyed or Low-Chroma Colors		Listed on National Hydric Soils List
			Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No
Hydric Soils Present?	Yes	No

Is this Sampling Point Within a Wetland **Yes** No

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-5**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-5U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Convolvulus sepium***	**Herb**	**FAC-**	9		
2 ***Phragmites australis***	**Herb**	**FACW**	10		
3 ***Brassica nigra****	**Herb**	**NA**	11		
4 ***Plantago major***	**Herb**	**FACU**	12		
5 ***Glechoma hederacea***	**Herb**	**FACU**	13		
6 ***Sonchus arvensis***	**Herb**	**UPL**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **20%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.* (* not included in % dominance calculation)**

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **-** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Moist at about 12", saturated at about 14"**
Shallow surface water data indicate that the shallow groundwater table is deeper than 12".

Project/Site: **ASB-5**

SOILS Transect ID: Plot ID **ASB-5U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16		---	---	---	**Mixed waste with some soil**

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer in Sandy Soils
Sulfidic Odor	
Aquic Moisture Regime	Organic Streaking in Sandy Soils
Reducing Conditions	Listed on Local Hydric Soils List
Gleyed or Low-Chroma Colors	Listed on National Hydric Soils List
	Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland? Yes **No**

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-6**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-6U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Solidago canadensis***	**Herb**	**FACU**	9		
2 ***Phragmites australis***	**Herb**	**FACW**	10		
3 ***Galium aparine***	**Herb**	**FACU**	11		
4 ***Glechoma hederacea***	**Herb**	**FACU**	12		
5 ***Convolvulus sepium***	**Herb**	**FAC-**	13		
6 ***Sonchus arvensis***	**Herb**	**UPL**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **17%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **-** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Saturated at about 18"BS**
Shallow surface water data indicate that the shallow groundwater table is deeper than 12".

Project/Site: **ASB-6**

SOILS Transect ID: Plot ID **ASB-6U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		**10 yr 3/2**	**---**	**---**	**Mix silt & organics**
3-16		**---**	**---**	**---**	**Solvay waste**

Hydric Soil Indicators:

_____ Histosol	_____ Concretions
_____ Histic Epipedon	_____ High Organic Content in Surface Layer in Sandy Soils
_____ Sulfidic Odor	_____ Organic Streaking in Sandy Soils
_____ Aquic Moisture Regime	_____ Listed on Local Hydric Soils List
_____ Reducing Conditions	_____ Listed on National Hydric Soils List
_____ Gleyed or Low-Chroma Colors	_____ Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland? Yes **No**

Remarks:

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation ASB-7**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID: **Lakeshore Area**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:
Is the area a potential Problem Area?	Yes	**No**	Plot ID **ASB-7U**
(if needed, explain on reverse).			

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2 ***Convolvulus sepium***	**Herb**	**FAC-**	10		
3 ***Galium aparine***	**Herb**	**FACU**	11		
4 ***Allium vineale***	**Herb**	**FACU-**	12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **25%**

Remarks: **In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites.***

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **-** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks: **Saturated at about 24" BS**
Shallow surface water data indicate that the shallow groundwater table is deeper than 12".

Project/Site: **ASB-7**

SOILS Transect ID: Plot ID **ASB-7U**

Map Unit Name
(Series and Phase): **Made land, chemical waste (Ma)** Drainage Class **MWD-PD**

Field Observations
Taxonomy (Subgroup) Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		**10 yr 3/2**	**---**	**---**	**Mix silt & organics**
3+		**---**	**---**	**---**	**Solvay waste**

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer in Sandy Soils
Sulfidic Odor	
Aquic Moisture Regime	Organic Streaking in Sandy Soils
Reducing Conditions	Listed on Local Hydric Soils List
Gleyed or Low-Chroma Colors	Listed on National Hydric Soils List
	Other (Explain in Remarks)

Remarks: **Saturated at about 24" BGS.**
Data from test pits indicate shallow groundwater table is deeper than 12".

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**
Hydric Soils Present?	Yes	**No**

Is this Sampling Point Within a Wetland Yes **No**

Remarks: **Near mouth of ditch A.**

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebeds 1-8: Supplemental Delineation Ditch A**	Date:	**7/1/2008**
Applicant/Owner:	**Honeywell**	County:	**Onondaga**
Investigator:	**O'Brien & Gere (KWB, RPC)**	State:	**NY**

Do Normal Circumstances exist on the site?	**Yes**	No	Community ID:	**S. side of wastebeds**
Is the site significantly disturbed (atypical situation?)	**Yes**	No	Transect ID:	
Is the area a potential Problem Area?	Yes	**No**	Plot ID	**Ditch A**
(if needed, explain on reverse).				

VEGETATION

Dominant Plant Species	Stratum	Regional Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**Herb**	**FACW**	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC, (excluding FAC-). **100%**

Remarks: **Sparse Phragmites within inundated portions of ditch only. No dense stands.**
In accordance with the "Site Specific" approach, the hydrophytic criteria are met if the area contains a monoculture stand of *Phragmites. Other FAC/FACU species on banks (bindweed, Canada goldenrod).*

HYDROLOGY

__**x**__ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
__**x**__ Other
_____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	**2**	(in.)
Depth of Free Water in Pit:	**0**	(in.)
Depth to Saturated Soil:	**0**	(in.)

Wetland Hydrology Indicators:
Primary Indicators:

X	Inundated
X	Saturated in Upper 12 inches
	Water marks
	Drift Lines
	Sediment Deposits
	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

	Oxidized Root Channels in Upper 12 inches
	Water-Stained Leaves
	Local Soil Survey Data
	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the hydrologic criteria are met if the substrate is saturated within the upper 10 inches of the ground surface.**

SOILS

Project/Site: **Ditch A**
Transect ID: Plot ID **Ditch A**

Map Unit Name
(Series and Phase): **Urban land (Ub)**

Drainage Class **---**

Field Observations
Taxonomy (Subgroup)
Confirm Mapped Type? **Yes** No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-14		---	---	---	**Unconsolidated waste**
14+		---	---	---	**Unconsolidated gravel**

Hydric Soil Indicators:

Histosol	Concretions
Histic Epipedon	High Organic Content in Surface Layer in Sandy Soils
Sulfidic Odor	
Aquic Moisture Regime	Organic Streaking in Sandy Soils
Reducing Conditions	Listed on Local Hydric Soils List
Gleyed or Low-Chroma Colors	Listed on National Hydric Soils List
	Other (Explain in Remarks)

Remarks: **In accordance with the "Site Specific" approach, the requirement for hydric soil was discounted where the presence of waste precludes hydric soil indicators.**

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	**No**
Wetland Hydrology Present?	**Yes**	No
Hydric Soils Present?	Yes	No

Is this Sampling Point Within a Wetland: Yes **No**

Remarks: **Plot at ds of box culvert.**
Steep banks to roadside ditch/ SW ditch.

* Regional indicators obtained from USDA, NRCS.The PLANTS Database (http://plants.usda.gov) National Plant Data Center, Baton Rouge, LA 70784-4409 USA; and Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service Biological Report 88 (26.1) 111pp.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area?		**X**

(if needed, explain on reverse).

Community ID:
Transect ID:
Plot ID: **SB1**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Eupatorium album****	**herb**	**NA**	9		
2 ***Solidago altissima***	**herb**	**FACU-**	10		
3 ***Coronilla varia****	**herb**	**NI**	11		
4 ***Melilotus* sp.**	**herb**	**FACU-**	12		
5 **Miscellaneous grasses***	**herb**	**NI**	13		
6 ***Linaria vulgaris****	**herb**	**NA**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **0%**

Remarks: ***** not included in percent dominanace calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

SOILS

Project/Site: **Wastebed 13**
Transect ID: Plot ID: **SB1**

Map Unit Name
(Series and Phase): **Gravel pit**
Drainage Class

Taxonomy (Subgroup)
Field Observations
Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2		**10YR 2/2**			silty loam with dense fibrous roots
2-20					Solvay waste; mix of white, tan, and grey waste

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered
Moist toward bottom of pit

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		X
Is the site significantly disturbed (atypical situation?)	X	
Is the area a potential Problem Area?		X

(if needed, explain on reverse).

Community ID:
Transect ID:
Plot ID: **SB2**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Acer negundo***	**tree**	**FAC+**	9		
2 ***Urtica procera***	**herb**	**FACU**	10		
3 ***Brassica juncea****	**herb**	**NA**	11		
4 ***Eupatorium dubium***	**herb**	**FACW**	12		
5 ***Galium asprellum***	**herb**	**OBL**	13		
6 ***Phragmites australis***	**herb**	**FACW**	14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **80%**

Remarks: **Nearby milkweed**
*** not included in percent dominanace calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB2**

Map Unit Name
(Series and Phase): **Gravel pit**

Drainage Class

Field Observations
Confirm Mapped Type? **No**

Taxonomy (Subgroup)

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1		**10YR 2/2**			silty loam with dense fibrous roots, slightly moist
1-20					Solvay waste-slightly moist

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area?		**X**

(if needed, explain on reverse).

Community ID:
Transect ID:
Plot ID: **SB3**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2 ***Urtica procera***	**herb**	**FACU**	10		
3 ***Acer negundo*** **seedlings**	**herb**	**FAC+**	11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **67%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB3**

Map Unit Name
(Series and Phase): **Gravel pit** Drainage Class

Field Observations

Taxonomy (Subgroup) Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4		10YR 2/2			silty loam with some fibrous roots, dry
4-20					Solvay waste-some rhizomes, slightly moist towards bottom

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area?		**X**

(if needed, explain on reverse).

Community ID:
Transect ID:
Plot ID: **SB4**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2 ***Urtica procera***	**herb**	**FACU**	10		
3 ***Acer negundo*** **seedlings**	**herb**	**FAC+**	11		
4			12		
5			13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **67%**

Remarks:

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB4**

Map Unit Name
(Series and Phase): **Gravel pit**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4		10YR 2/2			silty loam with some fibrous roots, dry
4-20					Solvay waste-some rhizomes, slightly moist towards bottom

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area? (if needed, explain on reverse).		**X**

Community ID:
Transect ID:
Plot ID: **SB5**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Populus tremuloides***	**tree**	**FACU**	9		
2 ***Solidago altissima***	**herb**	**FACU-**	10		
3 ***Artemisia vulgaris***	**herb**	**FACU-**	11		
4 **Miscellaneous grasses***	**herb**	**NI**	12		
5 ***Daucus carota****	**herb**	**NA**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **0%**

Remarks: *** not included in percent dominanace calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB5**

Map Unit Name
(Series and Phase): **Gravel pit**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		10YR 4/1			dry silty loam
3-20					Solvay waste, moist near bottom

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area? (if needed, explain on reverse).		**X**

Community ID:
Transect ID:
Plot ID: **SB6**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Cornus racemosa***	**shrub**	**FAC-**	9		
2 ***Phragmites australis***	**herb**	**FACW**	10		
3 ***Aster lateriflorus***	**herb**	**FACW-**	11		
4 ***Artemisia vulgaris***	**herb**	**FACU-**	12		
5 ***Solidago altissima***	**herb**	**FACU-**	13		
6 ***Rhamnus cathartica***	**shrub**	**FAC-**	14		
7 **Miscellaneous grasses***	**herb**	**NI**	15		
8 ***Sonchus arvensis***	**herb**	**UPL**	16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **29%**

Remarks: ***** not included in percent dominance calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB6**

Map Unit Name
(Series and Phase): **Gravel pit** Drainage Class

Field Observations

Taxonomy (Subgroup) Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1		10YR 3/2			silty loam with some fibrous roots, dry
1-20					Solvay waste, slightly moist

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area?		**X**
(if needed, explain on reverse).		

Community ID:
Transect ID:
Plot ID: **SB7**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 **Miscellaneous grasses***	**herb**	**NI**	9		
2 ***Phragmites australis***	**herb**	**FACW**	10		
3 ***Solidago altissima***	**herb**	**FACU-**	11		
4 ***Melilotus officinalis***	**herb**	**FACU-**	12		
5 ***Aster novae-angliae***	**herb**	**FACW-**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **50%**

Remarks: *** not included in percent dominance calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB7**

Map Unit Name
(Series and Phase): **Gravel pit** Drainage Class

Field Observations

Taxonomy (Subgroup) Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1		10YR 4/3			silty loam with fibrous roots, slightly moist
1-20					Solvay waste, moist

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	**Wastebed 13**	Date:	**9/17/2008**
Applicant/Owner:	**HONEYWELL**	County:	**ONONDAGA**
Investigator:	**KWB and AJV**	State:	**NEW YORK**

	Yes	No
Do Normal Circumstances exist on the site?		**X**
Is the site significantly disturbed (atypical situation?)	**X**	
Is the area a potential Problem Area?		**X**

(if needed, explain on reverse).

Community ID:
Transect ID:
Plot ID: **SB8**

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 ***Phragmites australis***	**herb**	**FACW**	9		
2 ***Aster novae-angliae***	**herb**	**FACW-**	10		
3 **Miscellaneous grasses***	**herb**	**NI**	11		
4 ***Melilotus officinalis***	**herb**	**FACU-**	12		
5 ***Solidago graminifolia***	**herb**	**FAC**	13		
6			14		
7			15		
8			16		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). **75%**

Remarks: *** not included in percent dominance calculation**

HYDROLOGY

_____ Recorded Data (Describe in Remarks):
_____ Stream, Lake or Tide Gauge
_____ Aerial Photographs
_____ Other
__X__ No Recorded Data Available

Field Observations:

Depth of Surface Water: **-** (in.)
Depth of Free Water in Pit: **-** (in.)
Depth to Saturated Soil: **>20** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ FAC-Neutral Test

Remarks:

Project/Site: **Wastebed 13**

SOILS

Transect ID: Plot ID: **SB8**

Map Unit Name
(Series and Phase): **Gravel pit**

Drainage Class

Field Observations

Taxonomy (Subgroup)

Confirm Mapped Type? **No**

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1		10YR 4/3			silty loam with fibrous roots, dry
1-20					Solvay waste, dry

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Hydric Soil Present? **No**

Remarks: Soils indicative of waste disposal; no gravel encountered

WETLAND DETERMINATION

	Yes	No
Hydrophytic Vegetation Present?		**X**
Wetland Hydrology Present?		**X**
Hydric Soils Present?		**X**

	Yes	No
Is this Sampling Point Within a Wetland?		**X**

Remarks:

Table D-1 Wetland Function - Value Evaluation Form

Total area of wetland: *9.9 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*
Adjacent land use: *Wastebed, railroad tracks* Distance to nearby roadway or other development? *within 200 feet*
Dominant wetland systems present: *Emergent (Phragmites)*
Is the wetland a separate hydraulic system? *No* Continguous undeveloped buffer zone present? *No*
If not, where does the wetland lie in the drainage basin?
Lower drainage basin for Onondaga Lake
How many tributaries contribute to the wetland? *2 (Harbor Brook and Onondaga Lake)*
Wildlife & vegetation diversity/abundance
(see attached Ecological Survey Form)

Wetland I.D: **SYW-19 (*OBG WL 1&2)***
Latitude: Longitude:
Prepared By:*RPC, KWB* Date: *9/16/04*
Wetland Impact: *Unknown*
Type: Area:
Evaluation based on:
Office: Field: X
Corps manual wetland delineation completed?
Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 8, 15		See attached Comment Table
Floodflow Alteration	X		3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 16, 17, 18	X	See attached Comment Table
Fish and Shellfish Habitat	X		1, 4, 7, 14, 16, 17		See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13	X	See attached Comment Table
Nutrient Removal	X		3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14	X	See attached Comment Table
Production Export	X		1, 2, 4, 5, 7, 10, 11, 13		
Sediment/Shoreline Stabilization	X		1, 3, 4, 6, 7, 9, 12, 13, 15	X	See attached Comment Table
Wildlife Habitat	X		3, 5, 6, 7, 8, 11, 12, 13, 16, 17, 18, 19, 20, 21	X	
Recreation	X		5, 9		
Education/Scientific Value	X		2, 15, 16		
Uniqueness/Heritage	X		5, 7, 22, 25, 27		
Visual Quality/Aesthetics	X		8, 17		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-1 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: SYW-19 (OBG WL 1&2)

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	8	Relatively low topographic gradient with previous soils.
	15	Sediment deposits, water marks, drift lines.
Floodflow Alteration	11	Seneca River properties
	17	Seneca River properties
Fish and Shellfish Habitat	1	Some canopy species on wastebeds (willow, box-elder, buckthorn, sumac, cottonwood).
	7	Onondaga Lake supports abundant fish populations though possibly impacted by contamination. Fish consumption advisory currently in place.
	11	Floatables control facility located upstream - designed so as not to impede fish movement.
Sediment/Toxicant Retention	11	*Phragmites sp.* stands along Harbor Brook.
	12	Effective floodwater storage; no impoundment water.
	13	Some along Harbor Brook.
Nutrient Removal	6	Deeper along Harbor Brook; less so along shoreline and away from Harbor Brook - see wetland survey forms for soils data.
	11	Dense *Phragmites sp.* stand present.
Sediment/Shoreline Stabilization	6	Distinct step along Harbor Brook channel.

Table D-2 Wetland Function - Value Evaluation Form

Total area of wetland? *approx. 2.1 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*

Adjacent land use? *Onondaga Lake, wastebed* Distance to nearby roadway or other development? *approx. 600 feet*

Dominant wetland systems present? *Emergent with wooded areas*

Is the wetland a separate hydraulic system? *No*

If not, where does the wetland lie in the drainage basin? *Lower basin along lake*

How many tributaries contribute to the wetland? *2 (Lower East Flume, Onondaga Lake)*

Wildlife & vegetation diversity/abundance (see attached Ecological Survey Form)

Continguous undeveloped buffer zone present? *Yes (wastebed)*

Wetland ID: **SYW-19 (*OBG WL 3&4)***

Latitude: Longitude:

Prepared By:*RPC, KWB* Date: *9/15/04*

Wetland Impact: *Unknown*

Type: Area:

Evaluation based on:

Office: Field: X

Corps manual wetland delineation completed?

Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 15 (Lake)		See attached Comment Table
Floodflow Alteration	X		5, 6, 7, 8, 9, 10, 11, 13, 16, 17, 18	X	See attached Comment Table
Fish and Shellfish Habitat	X		1, 4, 7, 8 (limited), 14, 16, 17		See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 3, 4 (predominantly waste), 5, 7, 8, 9, 10, 11, 12, 13, 15, 16	X	See attached Comment Table
Nutrient Removal	X		3, 4, 5, 7, 8, 9, 10, 11, 13, 14	X	
Production Export	X		1, 2 (limited), 4, 5, 7, 10, 11, 12, 13		
Sediment/Shoreline Stabilization	X		1, 2(slight towards lake), 3, 4, 7, 9, 12, 13, 15	X	
Wildlife Habitat	X		3, 4, 5, 6, 7, 8, 11, 12, 13, 16, 17, 18, 19, 20, 21	X	
Recreation	X		5, 9		
Education/Scientific Value	X		2, 5, 16		
Uniqueness/Heritage	X		5, 7, 22, 25, 27		
Visual Quality/Aesthetics	X		8		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-2 Wetland Function - Value Evaluation Form
Comment Table

Wetland ID: SYW-19 (OBG WL 3&4)

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	4	Yes, due to permeability of sandy soil and Solvay waste present.
Floodflow Alteration	5	Solvay waste has high water retention capability.
	11	Seneca River properties
	17	Seneca River properties
Fish and Shellfish Habitat	1	Wooded wastebed habitat.
	7	Onondaga Lake supports abundant fish populations though possibly impacted by contamination. Fish consumption advisory currently in place.
Sediment/Toxicant Retention	4	Fine grained, weathered Solvay waste present.
	15	Predominantly during periods of high lake water levels.

Table D-3 Wetland Function - Value Evaluation Form

Total area of wetland: *17.12 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*
Adjacent land use: *Urban, lake* Distance to nearby roadway or other development?
Dominant wetland systems present: *Emergent/forested* *adjacent (railroad and highway)*
Is the wetland a separate hydraulic system? *No*
If not, where does the wetland lie in the drainage basin? Continguous undeveloped buffer zone present? *No*
lower portion of Onondaga Lake watershed
How many tributaries contribute to the wetland? *Ley Creek and Onondaga Lake*
Wildlife & vegetation diversity/abundance
(see attached Ecological Survey Form)

Wetland I.D: ***SYW-12 (WL 1)***
Latitude: Longitude:
Prepared By:*RPC, KWB* Date: *9/10/04*
Wetland Impact: *Unknown*
Type: Area:
Evaluation based on:
Office: Field: X
Corps manual wetland delineation completed?
Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 8, 15	X	See attached Comment Table
Floodflow Alteration	X		3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 17,18	X	See attached Comment Table
Fish and Shellfish Habitat	X		4, 6, 7, 11, 14, 15, 16, 17		See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 4, 7, 8, 9, 10, 12, 13, 16	X	See attached Comment Table
Nutrient Removal	X		3, 4, 8, 9, 10,11, 13	X	See attached Comment Table
Production Export		X	1, 2, 4, 5, 7, 12, 14		See attached Comment Table
Sediment/Shoreline Stabilization	X		1, 4, 6, 7, 9, 12, 13, 14, 15	X	See attached Comment Table
Wildlife Habitat	X		6, 7, 8, 12, 13, 15, 16, 17,18, 19, 21	X	See attached Comment Table
Recreation		X	5, 9		
Education/Scientific Value	X		5, 16		See attached Comment Table
Uniqueness/Heritage	X		1, 2, 15, 22,25, 27		
Visual Quality/Aesthetics	X		4, 6, 8		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-3 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: SYW-12 (WL 1)

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	4	Potential for fill in and adjacent to wetland, especially gravel.
	8	Presence of sandy soils with lack of standing water after periods of prolonged rainfall.
	15	Based on deposits from Onondaga Lake observed along shoreline.
Floodflow Alteration	5	Permeable soils prevent flow through and/or bypass of wetland system.
	7	No ponding but indications of variable water level (I.e., sediment/debris; water marks on trees, etc.)
	11	Properties along Seneca River Shoreline
	14	Areas of diffusion into emergent areas; low sinuosity.
	17	Seneca River
	19	Presence of railroad bed prevents sheet flow from adjacent areas and also serves as barrier to prevent water in wetland from backing upstream to mall property.
Fish and Shellfish Habitat	6	At mouth of Ley Creek. SYW-12 is located along Ley Creek.
	7	Onondaga Lake supports abundant fish populations though possibly impacted by contamination. Fish consumption advisory currently in place.
	11	Yes, but dam is ~ 0.34 mile beyond wetland limits
	17	SYM-12 is located along Ley Creek.
Sediment/Toxicant Retention	1	Yes, for Ley Creek.
	3	No, due to the lack of standing water in wetland.
	4	Limited silt but sand is dominant.
	5	No due to high permeability of soil.
	12	First part is true - flood retention occurs and filtration of water occurs during percolation. Second part is false.
	13	Wave action. No high velocities.
Nutrient Removal	6	Sand deposits not included in answer of "No".
	11	Abundance = yes; diversity = No
Production Export	2	Limited - much of the detritus is washed through sand as water percolates.
	14	Dense vegetation with limited organic layer.
Sediment/Shoreline Stabilization	2	Wetland has low topography gradient, so it does not contribute significantly to shoreline instability; I.e., does not contribute to erosion of bank.
	6	Applicable in areas of shoreline.
Wildlife Habitat	3	Powerline ROW
	7	Limited along railroad tracks
	15	Limited
Education/Scientific Value	16	Studies done by area consultants, agencies, and education facilities for ongoing Onondaga Lake cleanup projects.

Table D-4 Wetland Function - Value Evaluation Form

Total area of wetland: 1.0 *acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*
Adjacent land use: *Urban* Distance to nearby roadway or other development?
Dominant wetland systems present: *Emergent* *adjacent (railroad and highway)*
Is the wetland a separate hydraulic system? *No*
If not, where does the wetland lie in the drainage basin? Continguous undeveloped buffer zone present? *No*
Onondaga Lake watershed
How many tributaries contribute to the wetland? *None*
Wildlife & vegetation diversity/abundance
(see attached Ecological Survey Form)

Wetland I.D: ***SYW-12 (WL-2)***
Latitude: Longitude:
Prepared By:*RPC, AJV* Date: *11/4/08*
Wetland Impact: *Unknown*
Type: Area:
Evaluation based on:
Office: Field: X
Corps manual wetland delineation completed?
Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge		X	4, 5, 8		See attached Comment Table
Floodflow Alteration		X	3, 4, 5, 6, 8, 18		
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention		X	2, 4, 5, 8, 9		
Nutrient Removal		X	3, 7, 8, 9, 12		See attached Comment Table
Production Export		X	2, 4, 7		
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X		7, 8, 13, 17	X	
Recreation		X			
Education/Scientific Value		X			
Uniqueness/Heritage		X	1, 22		
Visual Quality/Aesthetics		X	6		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-4 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: SYW-12 (WL 2)

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	4	fill
	7	wetlands seperated from remainder of SYW-12 by railroad corridor
Nutrient Removal	8	dense Phragmites stand

Table D-5 Wetland Function - Value Evaluation Form

Total area of wetland? *4.74 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*

Adjacent land use? *Lake/Ninemile Creek/I 690 corridor*

Distance to nearby roadway or other development? *less than 500 feet (I-690)*

Dominant wetland systems present? *Forested*

Is the wetland a separate hydraulic system? *No*

If not, where does the wetland lie in the drainage basin? *Lower basin along lake*

How many tributaries contribute to the wetland? *2 (Ninemile Creek and Onondaga Lake)*

Wildlife & vegetation diversity/abundance (see attached Ecological Survey Form)

Continguous undeveloped buffer zone present? *Yes, along lakeshore, not to west (I 690)*

Wetland ID: ***SYW-10 West of Ninemile Creek***

Latitude: Longitude:

Prepared By: *RPC, KWB* Date: *9/15/04*

Wetland Impact:

Type: *Forested* Area:

Evaluation based on:

Office: Field: X

Corps manual wetland delineation completed?

Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		5, 7, 8, 15		See attached Comment Table
Floodflow Alteration	X		5, 6, 7, 8, 9, 10, 11, 13, 16, 17, 18	X	See attached Comment Table
Fish and Shellfish Habitat	X		2, 4, 7, 11, 14, 15, 16, 17	X	See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12 15, 16	X	See attached Comment Table
Nutrient Removal	X		3, 4, 5, 6, 7, 8, 9, 10, 11 13, 14	X	See attached Comment Table
Production Export	X		1, 2, 4, 5, 7, 8, 10, 11, 12, 13	X	
Sediment/Shoreline Stabilization	X		1, 3, 4, 7 9, 12, 13, 14, 15 (at mouth of Ninemile Creek)	X	
Wildlife Habitat	X		3, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21	X	
Recreation	X		2, 5, 9	X	See attached Comment Table
Education/Scientific Value	X		2, 5, 16		
Uniqueness/Heritage	X		4, 5, 6, 7 (at mouth of Ninemile Creek), 15, 19, 22, 25, 27	X	
Visual Quality/Aesthetics	X		4, 8	X	
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-5 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: SYW-10 West of Ninemile Creek

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	6	Clay soil exists but is not dense enough to prevent water movement. Also, high silt content in clay.
	8	Standing water and previous soils.
	15	Water marks on trees, drift line, sediment deposits, adventitious roots.
	16	Unknown
Floodflow Alteration	10	Seneca River properties
	17	Seneca River properties
Fish and Shellfish Habitat	1	Upstream watershed is predominantly wastebed that is scrub/shrub with some buckthorn and cottonwood.
	7	Onondaga Lake and Ninemile Creek support abundant fish populations though possibly impacted by contamination. Fish consumption advisory currently in place.
	8	Yes, for Ninemile Creek. Yes, for Onondaga Lake Shoreline.
Sediment/Toxicant Retention	13	Forest canopy and prevailing wind direction minimize wind and wave erosion on shoreline.
Nutrient Removal	6	Organic (peat) layer from 14-28".
Recreation	2	Public access provided via bike trail.

Table D-6 Wetland Function - Value Evaluation Form

Total area of wetland: *1.53 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*
Adjacent land use: *Lake, wastebed* Distance to nearby roadway or other development?
Dominant wetland systems present: *Emergent* Continguous undeveloped buffer zone present? *Yes, lake*
Is the wetland a separate hydraulic system? *No*
If not, where does the wetland lie in the drainage basin?
How many tributaries contribute to the wetland? *north basin of Lake*
Wildlife & vegetation diversity/abundance
(see attached Ecological Survey Form)

Wetland I.D: ***SYW-10 East of Ninemile Creek***
Latitude: Longitude:
Prepared By : *RPC, KWB* Date: *9/14/04*
Wetland Impact:
Type: Area:
Evaluation based on:
Office: Field: X
Corps manual wetland delineation completed?
Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 15	X	See attached Comment Table
Floodflow Alteration	X		5, 6, 7, 8, 9, 10, 11, 13, 16, 17, 18		See attached Comment Table
Fish and Shellfish Habitat	X		4, 5,6, 11, 14, 15, 16, 17		See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 15, 16	X	See attached Comment Table
Nutrient Removal	X		2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14	X	See attached Comment Table
Production Export	X		1, 2, 4, 7, 10, 11, 13		See attached Comment Table
Sediment/Shoreline Stabilization	X		1, 2, 3, 4, 5, 7, 9, 12, 13, 15	X	See attached Comment Table
Wildlife Habitat	X		3, 4 (wastebed), 5 (wastebed),6 ,7, 8 (limited), 11, 12, 13, 16, 17, 18,19, 20, 21	X	
Recreation	X		5,9		
Education/Scientific Value	X		2, 5, 16		
Uniqueness/Heritage	X		5, 7, 17, 19, 22, 25, 27		See attached Comment Table
Visual Quality/Aesthetics	X		7, 8, 12		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-6 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: SYW-10 East of Ninemile Creek

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	4	Upper soils (0-15") = weathered waste. Below 15" = dark gray, silty clay sediment which is mixed with weathered waste and C & D. Soil has high water holding capability, but it is permeable. Strong odor of naphthalene present.
Floodflow Alteration	4	Ninemile Creek Watershed upstream of SYW-10 is predominately wastebed- previous.
	5	Yes, see response to #4 above in Groundwater Rech./Disch.
	11	Seneca River properties
	17	Seneca River properties
Fish and Shellfish Habitat	5	Ninemile Creek continues to flow and provide surface water to wetland.
	7	Onondaga Lake supports abundant fish populations though may be impacted by contamination. Fish consumption advisory currently in place.
	general comment	Minimal occurrence of shellfish, *Phragmites sp.* stand present.
Sediment/Toxicant Retention	4	Yes, see #4 above in Groundwater Rech./ Disch.
	12	Part 1 = True, Part 2 = False
Nutrient Removal	7	Yes, see #4 above in Groundwater Rech./ Disch.
	11	Abundance but no diversity.
Production Export	1	Limited due to lack of diversity.
	2	Dead vegetative material is mainly scoured into lake.
Sediment/Shoreline Stabilization	1	Deposition of waste material in wetland.
	2	Slight gradient
	general comment	Two water bodies meet at wetland and receive this function.
Uniqueness/Heritage	17	From private, controlled property only.
	19	From private, controlled property only.

Table D-7 Wetland Function - Value Evaluation Form

Total area of wetland? *0.108 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*

Adjacent land use? *Onondaga Lake, wastebed* Distance to nearby roadway or other development?

Dominant wetland systems present?*Emergent shoreline* *300 feet from I-690 and 30 feet from trail*

Is the wetland a separate hydraulic system? *No*

If not, where does the wetland lie in the drainage basin? *Onondaga Lake basin*

How many tributaries contribute to the wetland? 1 (*Lake)*

Wildlife & vegetation diversity/abundance (see attached list) Continguous undeveloped buffer zone present? *Yes, lower grass recreation present.*

Wetland ID: ***BR4***

Latitude: Longitude:

Prepared By :*RPC, SEM* Date: *9/21/04*

Wetland Impact:

Type: Area:

Evaluation based on:

Office: Field: X

Corps manual wetland delineation completed?

Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 9, 15		
Floodflow Alteration	X		7, 9, 10, 11, 13, 18		See attached Comment Table
Fish and Shellfish Habitat	X		4, 7,8, 9, 12, 14, 15,16		See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 4, 7, 8, 9, 10, 15, 16	X	
Nutrient Removal	X		3, 4, 5, 8, 9, 10, 11, 13		See attached Comment Table
Production Export	X		1 (minimal), 2 (minimal), 4, 5, 6, 7, 10, 11, 13		See attached Comment Table
Sediment/Shoreline Stabilization	X		1, 2, 3, 4, 6, 10, 11, 12, 13, 14, 15	X	See attached Comment Table
Wildlife Habitat	X		2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 17,18, 19, 21	X	See attached Comment Table
Recreation	X		1, 4, 5, 7, 8, 9, 10, 11, 12	X	See attached Comment Table
Education/Scientific Value	X		2, 4, 5, 8, 9, 10, 12, 16		
Uniqueness/Heritage	X		5, 6, 8, 9, 11, 12, 13, 14, 17, 19, 22, 25, 27		
Visual Quality/Aesthetics	X		1, 2, 3, 5, 6, 8, 9, 12		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-7 Wetland Function - Value Evaluation Form
Comment Table

Wetland ID: BR4

Function/Value	Rationale (Reference #)	Comments
Floodflow Alteration	10	Limited because of small size of wetland.
Fish and Shellfish Habitat	9	Limited, some submerged vegetation observed along lakeshore near wetland.
	12	Small fish observed near *Phragmites sp* . in lake. Fish consumption advisory currently in place.
Nutrient Removal	7	Some fine grained materials present; however, substrate predominantly course sand and gravel.
Production Export	11	Limited by small size of wetland.
Sediment/Shoreline Stabilization	11	Within adjacent lake.
	14	Some willow, ash, and box-elder present.
Wildlife Habitat	4	Grass recreational trail and dredge spoil area present nearby.
Recreation	4	Nearby recreational trail.

Table D-8 Wetland Function - Value Evaluation Form

Total area of wetland: *5.50 acres* Human Made? *No*
Adjacent land use: *Lake, rec. trail, mixed undeveloped wetland*
Dominant wetland systems present: *Forested*
Is the wetland a separate hydraulic system? *No*
If not, where does the wetland lie in the drainage basin? *Lower watershed*
How many tributaries contribute to the wetland? *Onondaga Lake*
Wildlife & vegetation diversity/abundance (see attached Ecological Survey Form)

Is wetland part of corridor? *Yes* Or a "habitat island"? *No*
Distance to nearby roadway or other development? *Longbranch Dr., I-90, I-690*
Continguous undeveloped buffer zone present? *Yes (shoreline wetlands separated by paved trail from other wetlands in SYW-6 area)*

Wetland I.D: **BR7** (***S111)***
Latitude: Longitude:
Prepared By: *RPC, KWB* Date: *9/13/04*
Wetland Impact:
Type: *Forested floodplain* Area:
Evaluation based on:
Office: Field: X
Corps manual wetland delineation completed?
Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 8, 15		See attached Comment Table
Floodflow Alteration	X		5, 6, 7, 8, 10, 11, 13, 17, 18		See attached Comment Table
Fish and Shellfish Habitat	X		2, 4, 7, 14, 15, 16		See attached Comment Table
Sediment/Toxicant Retention	X		1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15, 16	X	See attached Comment Table
Nutrient Removal	X		2, 3, 4, 5, 8, 9, 10, 11, 12, 14	X	See attached Comment Table
Production Export	X		1, 2, 4, 5, 7, 8, 11, 12, 13		
Sediment/Shoreline Stabilization	X		1, 2 (slight to high), 3, 4, 6, 7, 9, 12, 13, 14, 15	X	See attached Comment Table
Wildlife Habitat	X		3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23	X	See attached Comment Table
Recreation	X		1, 2, 4, 5, 7, 8, 9, 10, 11, 12	X	
Education/Scientific Value	X		2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15, 16		See attached Comment Table
Uniqueness/Heritage	X		4, 5, 6, 8, 9, 11, 12, 13, 14, 17, 19, 22, 25, 27	X	See attached Comment Table
Visual Quality/Aesthetics	X		1, 2, 3, 5, 8, 9, 10, 11	X	
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-8 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: BR7 (S111)

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	8	Due to presence of sandy soil with high permeability.
	15	Water marks on trees, sediment deposits, adventitious roots, etc.
Floodflow Alteration	5	Water is ponded - soils are not clay like so water is detained.
	9	Minor runoff from paved bike path.
	10	Both Onondaga Lake and upstream wetland.
	11	Seneca River properties
	17	Seneca River properties
Fish and Shellfish Habitat	1	High adjacent; low in upper portions of watershed.
	2	Yes, though open water is limited within the wetland.
	7	Onondaga Lake supports abundant fish populations though possibly impacted by contamination. Fish consumption advisory currently in place.
Sediment/Toxicant Retention	11	Yes, culverted flows
	14	Flow is due to rising and falling of lake water flow.
	15	During high lake water level periods.
Nutrient Removal	2	During periods of high lake water levels.
	6	5-6 inches of organic material over sandy/fill soils.
	10	No internal water courses.
	12	Minimal, primarily due to changes of lake water levels.
Sediment/Shoreline Stabilization	5	No, areas of sharp drop-off, distinct shoreline.
	6	Yes, in some areas along lake shore.
	7	Yes, in some areas.
Wildlife Habitat	4	Bike trail, park, roadways
	23	Observed bird houses affixed to trees.
Education/Scientific Value	4	Some areas disturbed by dredge spoil disposal and fill associated with trail.
	14	Motor vehicle access prohibited along trail.
Uniqueness/Heritage	6	During periods of high lake water levels.
	17	From bike trail

Table D-9 Wetland Function - Value Evaluation Form

Total area of wetland: *0.32 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*

Adjacent land use: *Lake, wastebed* Distance to nearby roadway or other development? *>500 feet*

Dominant wetland systems present: *Emergent* Continguous undeveloped buffer zone present? *Yes, lake*

Is the wetland a separate hydraulic system? *No*

If not, where does the wetland lie in the drainage basin? *Low*

How many tributaries contribute to the wetland? *None*

Wildlife & vegetation diversity/abundance
(see attached Ecological Survey Form)

Wetland I.D: ***Wastebeds 1-8 Wetland A***

Latitude: Longitude:

Prepared By: *RPC* Date: *9/8/08*

Wetland Impact:

Type: Area:

Evaluation based on:

Office: Field: *X*

Corps manual wetland delineation completed?

Yes *X* No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		5, 7, 15		See attached Comment Table
Floodflow Alteration	X		5, 6, 7, 8, 9, 10, 11, 13, 17, 18	X	See attached Comment Table
Fish and Shellfish Habitat		X	7, 15, 16		See attached Comment Table
Sediment/Toxicant Retention	X		2, 3, 4, 7, 9, 10, 12, 13, 15, 16	X	See attached Comment Table
Nutrient Removal	X		3, 4, 7, 8, 9, 10, 11, 14	X	See attached Comment Table
Production Export	X		1, 2, 4, 7		See attached Comment Table
Sediment/Shoreline Stabilization	X		3, 4, 9, 15		
Wildlife Habitat	X		3, 4 (wastebed), 5 (wastebed), 7, 8 (limited), 11, 13, 16, 17, 19,		
Recreation		X	9		
Education/Scientific Value	X		2, 16		
Uniqueness/Heritage		X	5, 6, 17, 22, 25		See attached Comment Table
Visual Quality/Aesthetics		X	7, 12		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-9 Wetland Function - Value Evaluation Form

Comment Table

Wetland I.D: Wastebeds 1-8 Wetland A

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	7	Wetland located within 100 feet of Onondaga Lake
Floodflow Alteration	5	Wetland soils are predominantly Solvay waste (fine material) which is able is absord and detain water
	11	Seneca River properties
	13	Associated with Onondaga Lake
	17	Seneca River properties
Fish and Shellfish Habitat	7	Onondaga Lake supports abundant fish populations. Fish consumption advisory currently in place.
	general comment	Minimal occurrence of shellfish or potential for occurrence due to presence of dense *Phragmites* sp. stand.
Sediment/Toxicant Retention	4	Yes, see #4 above in Floodflow Alteration
	12	Part 1 = True, Part 2 = False
	15	True during high water level periods. High water levels were not observed during field activities.
Nutrient Removal	7	Yes, see #4 above in Floodflow Alteration.
	11	Abundance but no diversity.
Production Export	1, 7	Limited due to lack of diversity - wetland is dense *Phragmites* stand..
	4	Some song bird nesting observed.
Uniqueness/Heritage	6	True during high water level periods. High water levels were not observed during field activities.
	17	From private, controlled property only.
	19	From private, controlled property only.

Table D-10 Wetland Function - Value Evaluation Form

Total area of wetland: *0.40 acres* Human Made? *No* Is wetland part of corridor? *Yes* Or a "habitat island"? *No*
Adjacent land use: *Lake, wastebed* Distance to nearby roadway or other development? *>500 feet*
Dominant wetland systems present: *Emergent* Continguous undeveloped buffer zone present? *Yes, lake*
Is the wetland a separate hydraulic system? *No*
If not, where does the wetland lie in the drainage basin? *Low*
How many tributaries contribute to the wetland? *None*
Wildlife & vegetation diversity/abundance
(see attached Ecological Survey Form)

Wetland I.D: ***Wastebeds 1-8 Wetland B***
Latitude: Longitude:
Prepared By: *RPC* Date: *9/8/08*
Wetland Impact:
Type: Area:
Evaluation based on:
Office: Field: *X*
Corps manual wetland delineation completed?
Yes X No

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		5, 7, 15		See attached Comment Table
Floodflow Alteration	X		5, 6, 7, 8, 9, 10, 11, 13, 17, 18	X	See attached Comment Table
Fish and Shellfish Habitat		X	7, 15, 16		See attached Comment Table
Sediment/Toxicant Retention	X		2, 3, 4, 7, 9, 10, 12, 13, 15, 16	X	See attached Comment Table
Nutrient Removal	X		3, 4, 7, 8, 9, 10, 11, 14	X	See attached Comment Table
Production Export	X		1, 2, 4, 7		See attached Comment Table
Sediment/Shoreline Stabilization	X		3, 4, 9, 15		
Wildlife Habitat	X		3, 4 (wastebed), 5 (wastebed), 7, 8 (limited), 11, 13, 16, 17, 19,		
Recreation		X	9		
Education/Scientific Value	X		2, 16		
Uniqueness/Heritage		X	5, 6, 17, 22, 25		See attached Comment Table
Visual Quality/Aesthetics		X	7, 12		
Endangered Species Habitat		X			
Other					

* Refer to backup list of numbered considerations.

Table D-10 Wetland Function - Value Evaluation Form
Comment Table

Wetland I.D: Wastebeds 1-8 Wetland B

Function/Value	Rationale (Reference #)	Comments
Groundwater Recharge/Discharge	7	Wetland located within 100 feet of Onondaga Lake
Floodflow Alteration	5	Wetland soils are predominantly Solvay waste (fine material) which is able is absord and detain water
	11	Seneca River properties
	13	Associated with Onondaga Lake
	17	Seneca River properties
Fish and Shellfish Habitat	7	Onondaga Lake supports abundant fish populations. Fish consumption advisory currently in place.
	general comment	Minimal occurrence of shellfish or potential for occurrence due to presence of dense *Phragmites* sp. stand.
Sediment/Toxicant Retention	4	Yes, see #4 above in Floodflow Alteration
	12	Part 1 = True, Part 2 = False
	15	True during high water level periods. High water levels were not observed during field activities.
Nutrient Removal	7	Yes, see #4 above in Floodflow Alteration.
	11	Abundance but no diversity.
Production Export	1, 7	Limited due to lack of diversity - wetland is dense *Phragmites* stand..
	4	Some song bird nesting observed.
Uniqueness/Heritage	6	True during high water level periods. High water levels were not observed during field activities.
	17	From private, controlled property only.
	19	From private, controlled property only.

Table D-11 Wetland Function - Value Evaluation Form

Total area of wetland?	***0.26 acres***	Human Made?	**No**	Wetland ID:	**SYW-19 (OBG WL5)**
Adjacent land use?	**Onondaga Lake, wastebed, highway**	Is wetland part of corridor?	**Yes**	Latitude:	Longitude:
Dominant wetland systems present?	**emergent/wooded**	Or a "habitat island"?	**No**	Prepared By:	**RPC/AJV** Date: **7/18/2000**
Is the wetland a separate hydraulic system?	**No**	Distance to nearby roadway or other development?	**adjacent to site**	Wetland Impact:	**unknown**
If not, where does the wetland lie in the drainage basin?	**lower basin along lake**		**access road**	Type:	Area:
How many tributaries contribute to the wetland?	**0**	Continguous undeveloped buffer zone present?	**No**	Evaluation based on:	
Wildlife & vegetation diversity/abundance	**See attached Ecological Survey Form**			Office:	Field: **X**
				Corps manual wetland delineation completed? (Y/N)	**Y**

Function/Value	Suitability Yes	Suitability No	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge		X	5, 8		
Floodflow Alteration		X	4, 5, 6, 8, 9		
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention		X	2, 4, 9		
Nutrient Removal		X	3, 7, 8, 9		see attached comment table
Production Export		X	2, 4, 7		
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X		7, 8, 13, 17	X	
Recreation		X			
Education/Scientific Value		X			
Uniqueness/Heritage		X	1, 22		
Visual Quality/Aesthetics		X			
Endangered Species Habitat		X			
Other		X			

* Refer to backup list of numbered considerations.

Table D-11 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: **SYW-19 (OBG WL5)**

Function/Value	Rationale (Reference #)	Comments
Nutrient Removal	8	dense *Phragmites* present

Table D-12 Wetland Function - Value Evaluation Form

Total area of wetland?	***0.35 acres***	Human Made?	**Yes**	Wetland ID:	**SYW-19 (OBG WL6)**
Adjacent land use?	**Onondaga Lake, wastebed, highway**	Is wetland part of corridor?	**Yes**	Latitude:	Longitude:
Dominant wetland systems present?	**emergent**	Or a "habitat island"?	**No**	Prepared By:	**RPC/AJV** Date: **9/22/2000**
Is the wetland a separate hydraulic system?	**No**	Distance to nearby roadway or other development?	**20'**	Wetland Impact:	**unknown**
If not, where does the wetland lie in the drainage basin?	**lower basin along lake**	Continguous undeveloped buffer zone present?	**No**	Type:	Area:
How many tributaries contribute to the wetland?	**0**			Evaluation based on:	
Wildlife & vegetation diversity/abundance	**See attached Ecological Survey Form**			Office:	Field: **X**
				Corps manual wetland delineation completed? (Y/N)	**Y**

Function/Value	Suitability Yes	Suitability No	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge		X	4, 5, 7		
Floodflow Alteration	X		4, 9, 10, 13, 18	X	see attached comment table
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention	X		1, 2, 10, 13, 16	X	see attached comment table
Nutrient Removal	X		3, 8, 9, 13, 14		see attached comment table
Production Export		X	4, 7		
Sediment/Shoreline Stabilization		X	3, 4, 5		
Wildlife Habitat	X		5, 6, 7, 8, 13, 17		
Recreation		X			
Education/Scientific Value		X			
Uniqueness/Heritage		X	1		
Visual Quality/Aesthetics		X			
Endangered Species Habitat		X			
Other		X			

* Refer to backup list of numbered considerations.

Table D-12 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: **SYW-19 (OBG WL6)**

Function/Value	Rationale (Reference #)	Comments
Floodflow Alteration	4, 9	wetland associated with Rte 690 drainage ditch
Sediment/Toxicant Retention	16	dense *Phragmites* present
Nutrient Removal	13	dense *Phragmites* present

Table D-13 Wetland Function - Value Evaluation Form

Total area of wetland?	***0.99 acres***	Human Made?	**Yes**	Wetland ID:	**SYW-19 (OBG WL7)**
Adjacent land use?	**Onondaga Lake, wastebed**	Is wetland part of corridor?	**Yes**	Latitude:	Longitude:
Dominant wetland systems present?	**emergent**	Or a "habitat island"?	**No**	Prepared By:	**RPC/AJV** Date: **7/16/2003**
Is the wetland a separate hydraulic system?	**No**	Distance to nearby roadway or other development?	**adjacent to site**	Wetland Impact:	**unknown**
If not, where does the wetland lie in the drainage basin?	**lower basin along lake**		**access road**	Type:	Area:
How many tributaries contribute to the wetland?	**upper East Flume**	Continguous undeveloped buffer zone present?	**No**	Evaluation based on:	
Wildlife & vegetation diversity/abundance	**See attached Ecological Survey Form**			Office:	Field: **X**
				Corps manual wetland delineation completed? (Y/N)	**Y**

Function/Value	Suitability Yes	Suitability No	Rationale (Reference #)*	Principal Function(s)/ Value(s)	Comments
Groundwater Recharge/Discharge	X		4, 5, 7, 15		
Floodflow Alteration	X		5, 6, 7, 9, 10, 13, 18		see attached comment table
Fish and Shellfish Habitat	X		4, 10. 12, 14, 16, 17		see attached comment table
Sediment/Toxicant Retention	X		2, 3, 6, 9, 10, 11, 12, 13, 14, 15, 16	X	see attached comment table
Nutrient Removal	X		2, 3, 5, 8, 9, 10, 12, 14		
Production Export	X		1, 6, 7		
Sediment/Shoreline Stabilization	X		3, 5, 6, 9, 10, 12, 13, 15		
Wildlife Habitat	X		6, 7, 8, 11, 13, 17, 19, 20, 21	X	
Recreation		X	9		
Education/Scientific Value		X			
Uniqueness/Heritage		X	22		
Visual Quality/Aesthetics		X			
Endangered Species Habitat		X			
Other		X			

* Refer to backup list of numbered considerations.

Table D-13 Wetland Function - Value Evaluation Form

Comment Table

Wetland ID: **SYW-19 (OBG WL7)**

Function/Value	Rationale (Reference #)	Comments
Floodflow Alteration	13	Associated with upper East Flume
Fish and Shellfish Habitat	4	Associated with upper East Flume. Dam present that seperates wetland from lower East Flume and Onondaga Lake.
Sediment/Toxicant Retention	10	Associated with upper East Flume

Wetland evaluation supporting documentation; Reproducible forms.

Below is an example list of considerations that was used for a New Hampshire highway project. Considerations are flexible, based on best professional judgment and interdisciplinary team consensus. This example provides a comprehensive base, however, and may only need slight modifications for use in other projects.

GROUNDWATER RECHARGE/DISCHARGE— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

CONSIDERATIONS/QUALIFIERS

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g., springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other

FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

CONSIDERATIONS/QUALIFIERS

1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.

8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.
19. Other

FISH AND SHELLFISH HABITAT (FRESHWATER) — This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.

CONSIDERATIONS/QUALIFIERS

1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present.

STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE

3. Size of this wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
8. Streamside vegetation provides shade for the watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
12. Evidence of fish is present.
13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.
18. Other

Although the above example refers to freshwater wetlands, it can also be adapted for marine ecosystems. The following is an example provided by the National Marine Fisheries Service (NMFS) of an adaptation for the fish and shellfish function.

FISH AND SHELLFISH HABITAT (MARINE) — This function considers the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

CONSIDERATIONS/QUALIFIERS

1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.
2. Suitable spawning habitat is present at the site or in the area.
3. Commercially or recreationally important species are present or suitable habitat exists.
4. The wetland/waterway supports prey for higher trophic level marine organisms.
5. The waterway provides migratory habitat for anadromous fish.
6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present (consultation with NMFS may be necessary).
7. Other

SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

CONSIDERATIONS/QUALIFIERS

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

10. Wetland is associated with an intermittent or perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
17. Other

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

CONSIDERATIONS/QUALIFIERS

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.
4. Potential sources of excess nutrients are present in the watershed above the wetland.
5. Wetland saturated for most of the season. Ponded water is present in the wetland.

6. Deep organic/sediment deposits are present.
7. Slowly drained fine grained mineral or organic soils are present.
8. Dense vegetation is present.
9. Emergent vegetation and/or dense woody stems are dominant.
10. Opportunity for nutrient attenuation exists.
11. Vegetation diversity/abundance sufficient to utilize nutrients.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

12. Waterflow through this wetland is diffuse.
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
14. Water moves slowly through this wetland.
15. Other

PRODUCTION EXPORT (Nutrient) — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

CONSIDERATIONS/QUALIFIERS

1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other

SEDIMENT/SHORELINE STABILIZATION — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

CONSIDERATIONS/QUALIFIERS

1. Indications of erosion or siltation are present.
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
7. Wide wetland (>10') borders watercourse, lake, or pond.
8. High flow velocities in the wetland.
9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).

15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other

WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.[1]

CONSIDERATIONS/QUALIFIERS

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species are present.
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
24. Other

[1]In March 1995, a rapid wildlife habitat assessment method was completed by a University of Massachusetts research team with funding and oversight provided by the New England Transportation Consortium. The method is called WEThings (wetland habitat indicators for non-game species). It produces a list of potential wetland-dependent mammal, reptile, and amphibian species that may be present in the wetland. The output is based on observable habitat characteristics documented on the field data form. This method may be used to generate the wildlife species list recommended as backup information to the wetland evaluation form and to

augment the considerations. Use of this method should first be coordinated with the Corps project manager. A computer program is also available to expedite this process.

RECREATION (Consumptive and Non-Consumptive) — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.

CONSIDERATIONS/QUALIFIERS

1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other

EDUCATIONAL/SCIENTIFIC VALUE — This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.
12. Direct access to pond or lake at potential educational site is available.
13. No known safety hazards exist within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.
17. Other

UNIQUENESS/HERITAGE — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites,

critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

CONSIDERATIONS/QUALIFIERS

1. Upland surrounding wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and/or open water occur in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. Two or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because it serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.
32. Other

VISUAL QUALITY/AESTHETICS — This value considers the visual and aesthetic quality or usefulness of the wetland.

CONSIDERATIONS/QUALIFIERS

1. Multiple wetland classes are visible from primary viewing locations.
2. Emergent marsh and/or open water are visible from primary viewing locations.
3. A diversity of vegetative species is visible from primary viewing locations.
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.
7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.
11. Unpleasant odors absent at primary viewing locations.
12. Relatively unobstructed sight line exists through wetland.
13. Other

ENDANGERED SPECIES HABITAT — This value considers the suitability of the wetland to support threatened or endangered species.

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened or endangered species.
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.

TABLE E-1
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-19 (OBG WL 1&2) Harbor Brook	Date/Time:	9/16/04 / 0930 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC	State:	NEW YORK

General Habitat Description	Weather Conditions
Predominant common reed stand with some intermixed canopy trees near Harbor Brook and	Sunny, 80° F
along Onodaga Lake shoreline.	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 Cottonwood	canopy	11	
3 Boxelder	canopy	12	
4 Ground ivy	herb	13	
5 Jewelweed	herb	14	
6 Buckthorn	shrub	15	
7 Grape	vine	16	
8 White vervain	herb	17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Bluejay	1
2 Flicker	2
3 Warbling vireo	3
4 Robin	4
5 Mallard duck	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

TABLE E-2
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-19 (OBG WL 3&4) Lower East Flume	Date/Time:	9/15/04 / 1500 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC	State:	NEW YORK

General Habitat Description	Weather Conditions
Common reed dominated marsh at terminus of lower east flume and along lake shoreline.	Partly cloudy, 75^{o} F, slight breeze

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10 Primrose sp.	herb
2 Cottonwood	canopy	11	
3 Boxelder	canopy, herb	12	
4 Green ash	canopy, herb, shrub	13	
5 False nettle	herb	14	
6 Jewelweed	herb	15	
7 Purple loosestrife	herb	16	
8 Bittersweet nightshade	herb	17	
9 White vervain	herb	18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Catbird	1 Bird droppings
2 Flicker	2
3 Downy woodpecker	3
4 Cedar waxwing	4
5 Osprey with fish	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

TABLE E-3
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-12 (WL 1)	Date/Time:	Week of 9/7/04
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	RPC/KWB	State:	NEW YORK

General Habitat Description	Weather Conditions
Forested emergent habitat located along Onondaga Lake north and west of railroad	Overcast, cool, mid 60° s F
and south of Ley Creek. Wooded areas best characterized as floodplain that is	
significantly impacted from past human activities (fill, development, Combined Sewer	
Overflow deposit).	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 Jewelweed	herb	11	
3 Bittersweet nightshade	vine	12	
4 Grape	vine	13	
5 Cottonwood	sapling/canopy	14	
6 Boxelder	sapling/canopy	15	
7 Pokeweed	herb	16	
8		17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species		Wildlife Indicators
1 Turkey vultures	13 Red-winged blackbird	1 deer tracks
2 Whitetailed deer	14 Black-capped chicadee	2 fox tracks
3 Starling	15 Nothern brown snake (RR bed)	3 raccoon scat
4 Catbird	16 Ring-billed gull	4 dens
5 House sparrow	17 Herring gull	5 beaver gnawings
6 Cedar waxwing	18 Great black-backed gull	6 woodchuck burrows
7 Downy woodpecker	19 House sparrow	7
8 Mourning dove	20 Spotted sandpiper	8
9 Goldfinch	21 Common yellowthroat	9
10 Cormorant	22 Ferrel cat	10
11 Garter snake	23 Belted kingfisher	11
12 Little green heron		12

TABLE E-4
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-12 (WL-2)	Date/Time:	11/4/08 / 1500
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	RPC/AJV	State:	NEW YORK

General Habitat Description	Weather Conditions
Predominant common reed stand between railroad tracks and road.	sunny, 65^{o}, light breeze

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2		11	
3		12	
4		13	
5		14	
6		15	
7		16	
8		17	
9		18	

Notes: OBG WL-3 had similar species composition (*Phragmites* monoculture); however, multi-stem black willow observed in middle of wetland

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Downy woodpecker	1 deer tracks
2 Gulls (overhead)	2 deer scat
3 Crow (overhead)	3
4 Rock dove	4
5 Hawk (accipiter spp.)	5
6 Mockingbird	6
7 Blackbirds (flock, mostly starlings)	7
8	8
9	9
10	10
11	11
12	12

TABLE E-5
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	SYW -10 West of Ninemile Creek	Date/Time:	9/15/04 / 1130 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC	State:	NEW YORK

General Habitat Description	Weather Conditions
Mature deciduous forested wetland with well developed vegetative and shrub layer.	Sunny, 70° F, light breeze
Standing water to about 6" in many areas of wetland.	
Also indicates common reed stand at mouth of Ninemile Creek.	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Silver maple	herb/canopy/shrub	10 Purple loosestrife	herb
2 American elm	herb/canopy/shrub	11 Grape	vine
3 Green ash	herb/canopy/shrub	12 Bittersweet nightshade	vine
4 Buckthorn	shrub	13	
5 False nettle	herb	14	
6 Jewelweed	herb	15	
7 Poison ivy	herb/ vine	16	
8 Common reed	herb	17	
9 Arrowhead	herb	18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Black-capped chicadee	1
2 Downy woodpecker	2
3 White-breasted nuthatch	3
4 Bluejay	4
5 Cedar waxwing	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

TABLE E-6
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-10 East of Ninemile Creek	Date/Time:	9/14/04 / 0945 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC	State:	NEW YORK

General Habitat Description	Weather Conditions
Emergent marsh along edge of Onondaga Lake.	Partly sunny, 70° F, light breeze
Monotypic stand of common reed closer to water with adjacent upland inland.	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 Paper birch	shrub	11	
3 Sweet clover	herb	12	
4 Late goldenrod	herb	13	
5		14	
6		15	
7		16	
8		17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Song sparrow	1
2 Red-winged blackbird	2
3 Gulls	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

TABLE E-7
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	BR-4	Date/Time:	9/21/04 / 1000 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	RPC/SEM	State:	NEW YORK

General Habitat Description	Weather Conditions
Lake shoreline composed of common reed and some shrubs.	Overcast, 68° F

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10 Plantain	herb
2 Goldenrod sp.	herb	11 Prickley lettuce	herb
3 Boxelder	canopy	12	
4 Ash	shrub/canopy	13	
5 Willow	shrub/canopy	14	
6 Buckthorn	shrub	15	
7 Grape	vine	16	
8 Aster	herb	17	
9 Butternut	sapling	18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Sandpiper	1
2 Belted kingfisher	2
3 Osprey	3
4 Mallard duck	4
5 Cormorant	5
6 Gull	6
7 Catbird	7
8 Cardinal	8
9 Cedar waxwing	9
10 Unidentified mouse	10
11 Green heron	11
12	12

TABLE E-8
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	BR7 (S111)	Date/Time:	9/13/04 / 1420 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC	State:	NEW YORK

General Habitat Description	Weather Conditions
Forested floodplain that extends to shoreline habitat along Onondaga Lake.	Sunny, 70° F, slight breeze

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Cottonwood	canopy	10 White avens	herb
2 American elm	canopy, shrub	11 Moneywort	herb
3 Green ash	canopy, shrub, herb	12 Common reed	herb
4 Swamp white oak	shrub	13 Grape	herb
5 Buckthorn	shrub	14 False nettle	herb
6 Silver maple	canopy	15	
7 Black willow	canopy, shrub	16	
8 Poison ivy	vine, herb	17	
9 Dogwood	shrub	18	

Notes:

OBSERVED WILDLIFE

Animal Species		Wildlife Indicators
1 Black-capped chicadee	13 Bluejay	1
2 Mourning dove	14 Gulls	2
3 Green heron		3
4 Downy woodpecker		4
5 Chipping sparrow		5
6 Song sparrow		6
7 Red-breasted nuthatch		7
8 Catbird		8
9 Grey squirrel		9
10 Unidentified frog		10
11 Belted kingfisher		11
12 Mallard duck		12

TABLE E-9
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	Wastebeds 1-8 Site - Wetland A	Date/Time:	7/1/08 / 1500 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC, SJW	State:	NEW YORK

General Habitat Description	Weather Conditions
Onondaga Lake shoreline area between lake and Wastebeds 1-8.	Sunny, 80° F, slight breeze
Monotypic stand of common reed.	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 Field sow thistle	herb	11	
3 Creeping thistle	herb	12	
4 Clasping-leaf dogbane	herb	13	
5 Hedge bindweed	herb	14	
6 Bittersweet nightshade	herb	15	
7 Common clotbur	herb	16	
8 Canada goldenrod	herb	17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Gulls	1
2 Catbird	2
3 Red-winged blackbird	3
4 Mallard duck (on Onondaga Lake)	4
5 Great blue heron (flyover)	5
6 Bald eagle (flyover)	6
7 Spotted sandpiper	7
8	8
9	9
10	10
11	11
12	12

TABLE E-10
ONONDAGA LAKE WETLANDS ASSESSMENT
ECOLOGICAL SURVEY FORM

Project/Site:	Wastebeds 1-8 Site - Wetland B	Date/Time:	7/1/08 / 1530 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	KWB, RPC, SJW	State:	NEW YORK

General Habitat Description	Weather Conditions
Onondaga Lake shoreline area between lake and Wastebeds 1-8.	Sunny, 80° F, light breeze
Monotypic stand of common reed.	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 Wild carrot	herb	11	
3 Canada goldenrod	herb	12	
4 Tartarian honeysuckle	shrub	13	
5 Teasel	herb	14	
6 Aster	herb	15	
7 Field sow thistle	herb	16	
8 Black mustard	herb	17	
9 Fox-tail barley	herb	18	

Notes:

OBSERVED WILDLIFE

Animal Species	Wildlife Indicators
1 Gulls	1
2 Catbird	2
3 Red-winged blackbird	3
4 Mallard duck (on Onondaga Lake)	4
5 Great blue heron (flyover)	5
6 Bald eagle (flyover)	6
7 Spotted sandpiper	7
8	8
9	9
10	10
11	11
12	12

TABLE E-11
ONONDAGA LAKE WETLANDS
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-19 (OBG WL 5)	Date/Time:	7/18/2000 0700 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	RPC/SEM	State:	NEW YORK

General Habitat Description	Weather Conditions
A depressional area dominated by common reed and quaking aspen	cloudy, 70^0 F

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 Quaking aspen	tree	11	
3 Purple loosestrife	herb	12	
4 Goldenrod	herb	13	
5		14	
6		15	
7		16	
8		17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species*	Wildlife Indicators
1 Song sparrow	1
2 American goldfinch	2
3 Gray catbird	3
4 Cedar waxwing	4
5 American robin	5
6 Bank swallow	6
7 Tree swallow	7
8 Red-winged blackbird	8
9 Northern cardinal	9
10 Mourning dove	10
11 Common yellowthroat	11
12 Black-capped chickadee	12
13 Yellow warbler	13
14 Belted kingfisher	14
15 Cooper's hawk	15
16 Eastern cottontail	16
17 White-tailed deer (and fawn)	17

Notes:

* wildlife observed during July, 2000 SYW-19 site visit

TABLE E-12
ONONDAGA LAKE WETLANDS
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-19 (OBG WL 6)	Date/Time:	9/22/2000/ 0715 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	SEM	State:	NEW YORK

General Habitat Description	Weather Conditions
Wetland associated with rte 690 drainage ditch	not recorded
Dominated by common reed	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2 garlic mustard	herb	11	
3 Jewelweed	herb	12	
4		13	
5		14	
6		15	
7		16	
8		17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species*	Wildlife Indicators
1 Song sparrow	1
2 American goldfinch	2
3 Gray catbird	3
4 Cedar waxwing	4
5 American robin	5
6 Bank swallow	6
7 Tree swallow	7
8 Red-winged blackbird	8
9 Northern cardinal	9
10 Mourning dove	10
11 Common yellowthroat	11
12 Black-capped chickadee	12
13 Yellow warbler	13
14 Belted kingfisher	14
15 Cooper's hawk	15
16 Eastern cottontail	16
17 White-tailed deer (and fawn)	17

Notes:

* wildlife observed during July, 2000 SYW-19 site visit

TABLE E-13
ONONDAGA LAKE WETLANDS
ECOLOGICAL SURVEY FORM

Project/Site:	SYW-19 (OBG WL 7) Upper East Flume	Date/Time:	7/16/2003 / 1400 hours
Applicant/Owner:	HONEYWELL	County:	ONONDAGA
Investigators:	SEM/RPC	State:	NEW YORK

General Habitat Description	Weather Conditions
Wetland associated with Upper East Flume	sunny, 80^0 F
Dominated by common reed	

OBSERVED VEGETATION

Dominant Plant Species	Stratum	Dominant Plant Species	Stratum
1 Common reed	herb	10	
2		11	
3		12	
4		13	
5		14	
6		15	
7		16	
8		17	
9		18	

Notes:

OBSERVED WILDLIFE

Animal Species*	Wildlife Indicators
1 Song sparrow	1
2 American goldfinch	2
3 Gray catbird	3
4 Cedar waxwing	4
5 American robin	5
6 Bank swallow	6
7 Tree swallow	7
8 Red-winged blackbird	8
9 Northern cardinal	9
10 Mourning dove	10
11 Common yellowthroat	11
12 Black-capped chickadee	12
13 Yellow warbler	13
14 Belted kingfisher	14
15 Cooper's hawk	15
16 Eastern cottontail	16
17 White-tailed deer (and fawn)	17

Notes:

* wildlife observed during July, 2000 SYW-19 site visit

Wildlife Species

Recorded from the Onondaga Lake Area (From NYSDEC/TAMS 2002)

List of Tables[1]

Note: [1] = Tables 3-1, 3-2, 3-3, and 3-8 of NYSDEC/TAMS (2002) are not applicable to this report.

Table 3-4. Phytoplankton Taxa Collected in Onondaga Lake in 1992

Species	Species
Green Algae	**Diatoms**
Chlamydomonas spp.	*Melosira granulata*
Chlorogonium sp.	*Coscinodiscus* sp.
Heteromastix angulata	*Cyclotella* spp.
Platymonas elliptica	*Stephanodiscus* spp.
Schroederia setigera	*Diatoma elongatum*
Dictyosphaerium pulchellum	*Diatoma tenue*
Pediastrum duplex	*Fragilaria crotonensis*
Coelastrum microporum	*Synedra* spp.
Chlorella vulgaris	*Asterionella formosa*
Oocystis parva	*Navicula* sp.
Ankistrodesmus falcatus	*Nitzschia palea*
Scenedesmus obliquus	**Dinoflagellates**
Scenedesmus quadricauda	*Ceratium hirundinella*
Kirchneriella elongata	**Cryptomonads**
Quadrigula lacustris	*Chroomonas* sp.
Cruciginia tetrapedia	*Chryptomonas erosa*
Cosmarium sp.	**Blue-Green Algae**
Straurastrum sp.	*Microcystis* sp.
	Anabaena spp.
	Aphanizomenon flos-aquae
	Raphidiopsis sp.

Sources: PTI (1993c); Stearns & Wheler (1994)

Table 3-5. Zooplankton Taxa Collected in Onondaga Lake Between 1986 and 1989

Species	Relative Abundance
Cladocerans	
Bosmina longirostris	C
Ceriodaphnia quadrangula	C
Daphnia galeata	C
Daphnia pulex	C
Diaphanasoma leuchtenbergianum	C
Eubosmina coregoni	R
Leptodora kindtii	R
Copepods	
Cyclops bicuspidatus	R
Cyclops vernalis	C
Diaptomus siciloides	C
Rotifers	
Brachionus angularis	C
Brachionus calyciflorus	C
Brachionus variabilis	C
Filinia longiseta	C
Filinia terminalis	C
Kellicottia bostoniensis	C
Kellicottia longispina	C
Keratella cochlearis	R
Keratella quadrata	C
Keratella robusta	C
Keratella testudo	C
Nothalca squamula	R
Ploesoma truncatum	R
Polyarthra sp.	C
Trichocerca multicrinnus	R

Source: Siegfried et al. (1996)
Note: R – rare
C - common

Table 3-6. Benthic Macroinvertebrate Taxa Collected in Onondaga Lake in 1992 and 2000

Phyllum	Class	Order	Family	Genus/Species
Nematoda				
Platyhelmenthes	Turbellaria	Seriata	Planariidae	*Dugesia*
				Dugesia tigrina
Rhynchocoela				
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	*Stylodrilus heringianus*
		Oligochaeta (Tubificida)	Naididae	*Dero*
				Dero digitata
				Nais bretscheri
				Nais communis
				Ophidonais serpentina
				Stylaria lacustris
				Vejdovskyella intermedia
			Tubificidae	*Aulodrilus pigueti*
				Ilyodrilus templetoni
				Limnodrilus
				Limnodrilus cervix
				Limnodrilus cervix variant
				Limnodrilus claparedeianus
				Limnodrilus hoffmeisteri
				Limnodrilus profundicola
				Limnodrilus udekemianus
				Potamothrix bivaricus
				Potamothrix moldaviensis
				Quistadrilus multisetosus
				Tubifex tubifex
Mollusca	Bivalvia	Heterodonta	Dreissenidae	*Dreissena polymorpha*
			Sphaeriidae	*Pisidium*
				Pisidium casertanum

Table 3-6. (cont.)

Phyllum	Class	Order	Family	Genus/Species
	Gastropoda	Basommatophora	Physidae	*Physa*
				Physa gyrina
				Physa heterostropha
				Physa sp. B
			Planorbidae	*Gyraulus*
				Gyraulus circumstriatus
		Mesogastropoda	Valvatidae	*Valvata piscinalis*
				Gyraulus parvus
	Pelecypoda	Heterodonta	Dreissenidae	*Dreissena polymorpha*
			Sphaeriidae	*Pisidium compressum*
				Pisidium dubium
				Pisidium walkeri
				Sphaerium
				Sphaerium corneum
				Sphaerium fabale
				Sphaerium nitidum
				Sphaerium patella
				Sphaerium rhomboideum
Arthropoda	Arachnida	Acarina	Sperchontidae	*Sperchon*
				Sperchon sp. B
			Unioncolidae	*Neumania*
				Neumania sp. A
		Amphipoda	Gammaridae	*Gammarus*
		Hydrachnida		
		Trombidiformes	Limnesiidae	*Limnesia*

Table 3-6. (cont.)

Phyllum	Class	Order	Family	Genus/Species
Arthropoda	Crustacea			*Gammarus fasciatus*
				Gammarus pseudolimnaeus
				Gammarus tigrinus
		Diplostraca	Macrothricidae	*Ilyocryptus*
		Isopoda	Asellidae	*Caecidotea*
				Caecidotea racovitzai
		Podocopa	Cypridae	
		Coleoptera	Elmidae	*Dubiraphia*
				Macronychus
				Stenelmis
			Staphylinidae	
		Collembola	Entomobryidae	*Entomobrya* sp. A
		Diptera	Blephariceradae	
			Ceratopogonidae	
			Chironomidae	*Chironomini-tribe*
				Chironomidae genus AM
				Chironomidae genus B
				Chironomidae genus S
				Chironomidae genus U
				Chironomus
				Chironomus cf. Riparius
				Chironomus crassicaudaus
				Chironomus decorus grp
				Chironomus plumosus
				Chironomus species A
				Cladopelma
				Cladotanytarsus
				Cricotopus
				Cricotopus sylvestris
				Cryptochironomus

Table 3-6. (cont.)

Phyllum	Class	Order	Family	Genus/Species
				Dicrotendipes
				Dicrotendipes modestus
				Einfeldia
				Endochironomus
				Glyptotendipes
				Labrundinia
				Nanocladius distinctus
				Parachironomus
				Parachironomus carinatus
				Parachironomus directus
				Paratanytarsus
				Polypedilum
				Polypedilum halterale
				Polypedilum simulans group
				Procladius
				Procladius species A
				Procladius-Holotanypus
				Psectrocladius
				Pseudochironomus
				Rheotanytarsus
				Tanypus
				Tanypus stellatus
				Tanytarsus
				Tanytarsus sp. I
			Psychodidae	*Tantarsus* sp. IV
				Pericoma
				Psychoda
			Tipulidae	*Psychoda alternata*
		Lepidoptera	Pyralidae	
		Odonata	Coenagrionidae	*Acentria*

Sources: PTI (1993c); Exponent 2001 data files.

Table 3-7. Fish Species Collected in Onondaga Lake in Selected Years Between 1927 and 1994[a]

Common Name	Species	Year Captured								
		1927	1946	1969	1980	1989	1990	1991	1993	1994
Sea lamprey	*Petromyzon marinus*							•		
Gar	*Lepisosteus* sp.				•	•	•	•	•	•
Bowfin	*Amia calva*				•	•	•	•	•	•
Alewife	*Alosa pseudoharengus*		•		•	•		•	•	•
Gizzard shad	*Dorosoma cepedianum*				•	•	•	•	•	•
Rainbow trout	*Oncorhynchus mykiss*							•	•	•
Atlantic salmon	*Salmo salar*								•	•
Brown trout	*Salmo trutta*					•	•	•	•	•
Lake trout	*Salvelinus namaycush*				•					
Brook trout	*Salvelinus fontinalis*							•		
Splake	*Salvelinus* (hybrid)[b]						•			
Trout-perch	*Percopsis omiscomaycus*									•
Rainbow smelt	*Osmerus mordax*							•		•
Central mudminnow	*Umbra limi*							•	•	•
Northern pike	*Esox lucius*		•		•	•	•	•	•	•
Grass pickerel	*Esox americanus*	•								
Chain pickerel	*Esox niger*							•		•
Muskellunge	*Esox masquinongy*[c]									
Tiger muskellunge	*Esox* (hybrid)					•	•	•	•	•
Carp	*Cyprinus carpio*	•	•	•	•	•	•	•	•	•
Golden shiner	*Notemigonus crysoleucas*	•	•		•	•	•	•	•	•
Emerald shiner	*Notropis atherinoides*		•	•		•		•	•	•
Spottail shiner	*Notropis hudsonius*								•	•
Spotfin shiner	*Notropis spilopterus*							•	•	
Redfin shiner	*Notropis umbratilus*[c]									
Bluntnose minnow	*Pimephales notatus*	•						•	•	•
Fathead minnow	*Pimephales promelas*							•	•	•
Rudd	*Scardinius erythrophthalmus*							•	•	•
Fallfish	*Semotilus corporalis*									•
Creek chub	*Semotilus atromaculatus*							•		•
White sucker	*Catostomus commersoni*	•		•	•	•	•	•	•	•

Table 3-7. (cont.)

Common Name	Species	Year Captured								
		1927	1946	1969	1980	1989	1990	1991	1993	1994
Northern hog sucker	*Hypentelium commersoni*									•
Redhorse	*Moxostoma* sp.	•	•	•	•	•	•	•	•	•
Yellow bullhead	*Ameiurus natalis*						•	•	•	•
Brown bullhead	*Ameiurus nebulosus*			•	•	•	•	•	•	•
Channel catfish	*Ictalurus punctatus*		•	•	•	•	•	•	•	•
American eel	*Anguilla rostrata*							•	•	
Banded killifish	*Fundulus diaphanus*	•	•			•	•	•	•	•
Burbot	*Lota lota*						•			
Brook silverside	*Labidesthes sicculus*					•	•	•		•
Brook stickleback	*Culaea inconstans*			•			•	•		
White perch	*Morone americana*			•	•	•	•	•	•	•
White bass	*Morone chrysops*		•			•	•	•	•	
Rock bass	*Ambloplites rupestris*					•	•	•	•	•
Green sunfish	*Lepomis cyanellus*							•		
Pumpkinseed	*Lepomis gibbosus*	•		•	•	•	•	•	•	•
Bluegill	*Lepomis macrochirus*			•	•	•	•	•	•	•
Smallmouth bass	*Micropterus dolomieui*			•	•	•	•	•	•	•
Largemouth bass	*Micropterus salmoides*	•			•	•	•	•	•	•
White crappie	*Pomoxis annularis*				•	•	•	•		•
Black crappie	*Pomoxis nigromaculatus*				•	•	•	•	•	•
Yellow perch	*Perca flavascens*	•	•	•	•	•	•	•	•	•
Walleye	*Stizostedion vitreum*		•	•	•	•	•	•	•	•
Tesselated darter	*Etheostoma nigrum*							•	•	•
Logperch	*Percina caprodes*		•				•	•	•	•
Freshwater drum	*Aplodinotus grunniens*			•	•	•	•	•	•	•

Source:Tango and Ringler (1996)

Notes: [a] Species captured using different methods as described in Tango and Ringler (1996).

[b] splake is a hybrid of brook trout (*Salvelinus fontinalis*) and lake trout (*Salvelinus namaycush*).

[c] Species reported as captured by PTI (1993c), time of capture unknown.

Table 3-9. Species of Amphibians and Reptiles Expected to be Found in Covertypes Surrounding Onondaga Lake

Common Name	Scientific name	Habitat
Amphibians – Frogs		
American toad	*Bufo americanus*	T/W
Gray treefrog	*Hyla chrysoscelis/versicolor*	T/W
Spring peeper	*Pseudoacris crucifer*	T/W
Bullfrog	*Rana catesbiana*	W/A
Green frog	*Rana clamitans*	W/A
Wood frog	*Rana sylvatica*	T/W
Northern leopard frog	*Rana pipiens*	T/W/A
Pickerel frog	*Rana plaustris*	W
Salamanders		
Spotted salamander	*Ambystoma maculatum*	T/W
Jefferson complex[a]	*Ambystoma jeffersoni x laterale*	T/W
Red-spotted newt	*Notophthalmus viridescens*	T/W/A
Northern dusky	*Desmognathus fuscus*	T/A
Alleghany dusky	*Desmognathus ochrophaeus*	T/A
Northern redback	*Plethodon cinereus*	T
Northern slimy	*Plethodon glutinosus*	T
Northern spring	*Gyrinophilus porphyriticus*	A
Two-lined	*Eurycea bisleneata*	T/A
Reptiles – Snakes		
Northern water snake	*Nerodia sipedon*	W/A
Northern brown snake	*Storeria dekayi*	T/U
Northern redbelly snake	*Storeria occipitomaculata*	T
Eastern garter snake	*Thamnophis sirtalis*	T/W/U
Northern ringneck snake	*Diadophis punctatus*	T
Black rat snake	*Elaphe obsoleta*	T
Eastern milk snake	*Lampropeltis triangulum*	T/U
Turtles		
Common snapping turtle	*Chelydra serpentina*	W/A
Painted turtle	*Chrysemys picta*	W/A
Wood turtle[a]	*Clemmys insculpta*	T/W/A
Musk turtle	*Sternotherus odoratus*	W/A

Sources: Conant and Collins (1998); NYSDEC (2001b)

Note: [a] NYS species of special concern

Habitat: Each species is assigned the habitat codes where they are most likely to be found. Species can potentially be found in other habitats. See Appendix A for covertypes included in each habitat code.

Habitat codes: T = Terrestrial, W = Wetland, A = Aquatic, U = Urban

Table 3-10. Species of Amphibians and Reptiles Found Near Onondaga Lake between 1994 and 1997

Common Name	Scientific Name	Life Stages Found
Amphibians		
American toad	*Bufo americanus*	Adults
Gray treefrog	*Hyla chrysoscelis/versicolor*	Adults
Spring peeper	*Pseudoacris crucifer*	Juveniles, adults
Green frog	*Rana clamitans*	Larvae, juveniles, adults
Northern leopard frog	*Rana pipiens*	Larvae, juveniles, adults
Spotted salamander	*Ambystoma maculatum*	Larvae, adults
Red-spotted newt	*Notophthalmus viridescens*	Adults
Reptiles		
Northern water snake	*Nerodia sipedon*	Adults
Northern brown snake	*Storeria dekayi*	Neonates, adults
Eastern garter snake	*Thamnophis sirtalis*	Neonates, adults
Common snapping turtle	*Chelydra serpentina*	Eggs, adults
Painted turtle	*Chrysemys picta*	Eggs, adults
Musk turtle	*Sternotherus odoratus*	Adults

Sources: Ducey et al. (1998); Ducey (1997); Ducey and Newman (1995)

Table 3-11. Bird Species Found in Covertypes Surrounding Onondaga Lake based on NYS Bird Breeding Atlas Data

Family	Common Name	Scientific Name	Breeding Status	Habitat
Ardeidae	Great blue heron	*Ardea herodias*	PO	W/A
	Green heron	*Butorides virescens*	C	W/A
Anatidae	American black duck	*Anas rubripes*	C	W/A
	Mallard	*Anas platyhynchos*	C	W/A
	Wood duck	*Aix sponsa*	C	W/A
	Canada goose*	*Branta canadensis*	C	W/A
Cathartidae	Turkey vulture	*Cathartes aura*	PO	T
Accipitridae	Red-tailed hawk	*Buteo jamaicensis*	C	T/U
	Sharp-shinned hawk[a]	*Accipiter striatus*	PR	T
Falconidae	American kestrel	*Falco sparverius*	C	T/U
Tetraonidae	Ruffed grouse	*Bonasa umbellus*	PO	T
Meleagrididae	Wild turkey[1]	*Meleagris gallopavo*	C	T/U
Phasianidae	Rung-necked pheasant	*Phasianus colchicus*	C	T/W
Rallidae	Sora	*Porzana carolina*	C	W
	Virginia rail	*Rallus limicola*	C	W
Charadriidae	Killdeer	*Charadrius vociferus*	C	T/U
Scolopacidae	Spotted sandpiper	*Actitis macularia*	C	W
	American woodcock	*Scolopax minor*	PR	T
Columbidae	Mourning dove	*Zenaida macroura*	C	T/U
	Rock dove	*Columba livia*	C	T/U
Cuculidae	Black-billed cuckoo*	*Coccyzus erythropthalmus*	PR	T
Strigidae	Great horned owl	*Bubo virginianus*	C	T
Caprimulgidae	Common nighthawk[a]	*Chordeiles minor*	PR	T/U
Apodidae	Chimney swift	*Chaetura pelagica*	PR	T/U
Trochilidae	Ruby-throated hummingbird	*Archilochus colubris*	PO	T
Alcedinidae	Belted kingfisher	*Ceryle alcyon*	C	W
Picidae	Red-headed woodpecker[a]	*Melanerpes erythrocephalus*	PO	T
	Red-bellied woodpecker	*Melanerpes carolinus*	PO	T
	Downy woodpecker	*Picoides pubescens*	C	T/U
	Hairy woodpecker	*Picoides villosus*	C	T/U
Tyrannidae	Eastern wood-pewee	*Contopus virens*	PR	T/U
	Common flicker	*Colaptes auratus*	C	T/U
	Pileated woodpecker*	*Dryocopus pileatus*	PO	T/W
	Alder flycatcher	*Empidonax alnorum*	PR	T

Table 3-11. (cont.)

Family	Common Name	Scientific Name	Breeding Status	Habitat
	Willow flycatcher	*Empidonax traillii*	C	T
	Least flycatcher	*Empidonax minimus*	PR	T
	Eastern Phoebe	*Sayornis phoebe*	PR	T/U
	Great crested flycatcher	*Myiarchus crinitus*	PR	T
	Eastern kingbird	*Tyrannus tyrannus*	C	T/W
Alaudidae	Horned lark[a]	*Eremophila alpestris*	C	T/U
Hirundinidae	Purple martin	*Progne subis*	PO	W
	Tree swallow	*Tachycineta bicolor*	C	W
	Northern rough-winged swallow	*Stelgidopteryx serripennis*	C	W
	Bank swallow	*Riparia riparia*	C	T/W
	Barn swallow	*Hirundo rustica*	C	T/U
Corvidae	Blue jay	*Cyanocitta cristata*	C	T/U
	American crow	*Corvus brachyrhynchos*	C	T/U
	Fish crow*	*Corvus ossifragus*	PR	W/A
Paridae	Black-capped chickadee	*Oecile atricapillus*	C	T/U
Sittidae	White-breasted nuthatch	*Sitta carolinensis*	C	T
	Red-breasted nuthatch*	*Sitta canadensis*	PR	T/U
Certiidae	Brown creeper	*Certhia americana*	PR	T/W
Troglodytidae	House wren	*Troglodytes aedon*	C	T/U
	Marsh wren	*Cistothorus palustris*	C	W
Mimidae	Gray catbird	*Dumetella carolinensis*	C	T/U
	Northern mockingbird	*Mimus polyglottos*	C	T/U
	Brown thrasher	*Toxostoma rufum*	PR	T
Turdidae	Veery	*Catharus fuscescens*	PO	T/U
	Wood thrush	*Hylocichla mustelina*	C	T/U
	American robin	*Turdus migratorius*	C	T/U
Sylviidae	Blue-gray gnatcatcher	*Polioptila caerulea*	C	T/W
Bombycillidae	Cedar waxwing	*Bombycilla cedrorum*	C	T
Sturnidae	European starling	*Sturnus vulgaris*	C	T/U
Vireonidae	Yellow-throated vireo	*Vireo flavifrons*	PR	T/U
	Warbling vireo	*Vireo gilvus*	C	T/U
	Red-eyed vireo	*Vireo olivaceus*	C	T/U
Parulidae	Yellow warbler	*Dendroica petechia*	C	T/U
	American redstart	*Setophaga ruticilla*	C	T
	Mourning warbler*	*Oporornis agilis*	PO	T

Table 3-11. (cont.)

Family	Common Name	Scientific Name	Breeding Status	Habitat
	Common yellowthroat	*Geothlypis trichas*	C	T/W
Parylidae	House sparrow	*Passer domesticus*	C	U
Ploceidae	Baltimore oriole	*Icterus galbula*	C	T/U
Icteridae	Bobolink	*Dolichonyx oryzivorus*	PR	T
	Red-winged blackbird	*Agelaius phoeniceus*	C	T/W
	Eastern meadowlark	*Sturnella magna*	C	T
	Common grackle	*Quiscalus quiscula*	C	T/U
	Brown-headed cowbird	*Molothrus ater*	C	T/U
Thraupidae	Scarlet tanager	*Piranga olivacea*	PR	T
Fringillidae	Northern cardinal	*Cardinalis cardinalis*	C	T/U
	Rose-breasted grosbeak	*Pheucticus ludovicianus*	C	T/U
	Indigo bunting	*Passerina cyanea*	PR	T
	Rufous-sided towhee	*Pipilo erythrophthalmus*	C	T
	Chipping sparrow	*Spizella passerina*	C	T/U
	Field sparrow	*Spizella pusilla*	C	T
	Savannah sparrow	*Passerculus sandwichensis*	C	T
	Song sparrow	*Melospiza melodia*	C	T/U
	Swamp sparrow	*Melospiza geargiana*	C	W
	Purple finch	*Carpodacus purpureus*	PR	T
	House finch	*Carpodacus mexicanus*	C	U
	American goldfinch	*Carduelis tristis*	C	T

Sources: Andrle and Carroll (1988); *NYS Breeding Bird Atlas Interim Data (NYSDEC, 2001a); [1]Stiles (2001)
Breeding Status: Breeding status categories are defined as in the Breeding Bird Atlas for NYS:
C = Confirmed breeding, PR = Probable breeding, PO = Possible breeding
Note: [a]NYS species of special concern
Habitat: Each species is assigned the habitat codes where they are most likely to be found. Species can potentially be found in other habitats. See Appendix A for covertypes included in each habitat code.
Habitat codes: T = Terrestrial, W = Wetland, A = Aquatic, U = Urban

Table 3-12. Additional Species of Birds Observed on Onondaga Lake and its Shoreline During the Summer of 1993, Not Listed in Table 3-11

Family (Subfamily)	Common Name	Scientific Name
Gaviidae	Common loon[a]	*Gavia immer*
Phalacrocoracidae	Double-crested cormorant	*Phalacrocorax auritus*
Anatidae		
(Anatinae)	Gadwall	*Anas strepera*
	Blue-winged teal	*Anas discors*
	American wigeon	*Anas americana*
	Northern shoveler	*Anas clypeata*
	Wood duck	*Aix sponsa*
(Anserinae)	Brant	*Branta bernicla*
(Aythyinae)	Greater scaup	*Aythya marila*
	Lesser scaup	*Aythya affinis*
(Cygninae)	Mute swan	*Cygnus olor*
(Merginae)	Common merganser	*Mergus merganser*
Pandionidae	Osprey[a]	*Pandion haliaetus*
Charadriidae	Semipalmated plover	*Charadrius semipalmatus*
Scolopacidae	Greater yellowlegs	*Tringa melanoleuca*
	Ruddy turnstone	*Arenaria interpres*
	Semipalmated sandpiper	*Calidris pusilla*
Laridae		
(Larinae)	Great black-backed gull	*Larus marinus*
	Ring-billed gull	*Larus delawarensis*
(Sterninae)	Common tern[b]	*Sterna hirundo*
	Caspian tern	*Sterna caspia*
Paridae	Tufted titmouse	*Baeolophus bicolor*

Source: Tango (1993)
Notes: [a]New York State species of special concern
[b]New York State threatened species

Table 3-13. Species of Waterfowl Observed Wintering on Onondaga Lake from 1990 to 1999

Common Name	Scientific Name	Recorded Observations									
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Horned grebe	*Podiceps auritus*	•	•		•			•		•	•
Mallard	*Anas platyrhynchos*	•	•	•	•	•	•	•	•	•	•
Black duck	*Anas rubripes*	•	•	•	•	•	•	•	•	•	•
Gadwall	*Anas strepera*	•	•	•	•	•	•	•	•	•	•
Green-winged teal	*Anas crecca*	•	•	•	•	•	•	•	•	•	
Ring-necked duck	*Aythya collaris*		•		•						•
Greater scaup	*Aythya marila*		•		•	•		•	•		•
Lesser scaup	*Aythya affinis*			•	•		•				
Common goldeneye	*Bucephala clangula*	•	•	•	•	•	•	•	•	•	•
Common merganser	*Mergus merganser*	•	•	•	•	•	•	•	•	•	•
Red-breasted merganser	*Mergus serrator*	•	•	•	•	•			•	•	•
Great blue heron	*Ardea herodias*	•	•	•	•	•	•	•	•	•	•
Belted kingfisher	*Megaceryle alcyon*	•	•	•	•	•	•	•	•	•	•
American coot	*Fulica americana*		•	•		•	•		•		•
Mute swan	*Cygnus olor*				•						

Sources: Onondaga Audobon Society (1990, 1991, 1992, 1993); Rusk (1994)
National Audobon Society; http://birdsource.tc.cornell.edu/cbcdata/ (November 20, 2001)

Table 3-14. Species of Mammals Expected to be Found in Covertypes Surrounding Onondaga Lake

Family	Common Name	Scientific Name	Habitat
Didelphidae	Virginia opossum	*Didelphis virginiana*	T/U
Soricidae	Shorttail shrew	*Blarina brevicauda*	T/U
	Masked shrew	*Sorex cinereus*	T/W/U
	Smoky shrew	*Sorex fumeus*	T/W
	Water shrew	*Sorex palustris*	W
Talpidae	Hairy-tailed mole	*Parascalops breweri*	T
	Star-nosed mole	*Condylura cristata*	W
Vespertilionidae	Little brown bat	*Myotis lucifugus*	T
	Small-footed bat[a]	*Myotis leibii*	T
	Northern long-eared bat	*Myotis septentrionalis*	T
	Indiana bat[b]	*Myotis sodalis*	T
	Big brown bat	*Eptesicus fuscus*	T
	Red bat	*Lasiurus borealis*	T
	Hoary bat	*Lasiurus cinereus*	T
	Silver-haired bat	*Lasionycteris noctivagans*	T
	Eastern pipistrelle	*Pipistrellus subflavus*	T
Leporidae	Eastern cottontail	*Sylvilagus floridanus*	T/U
Sciuridae	Eastern chipmunk	*Tamias striatus*	T
	Woodchuck	*Mormota monax*	T/U
	Gray squirrel	*Sciurus carolinensis*	T/U
	Southern flying squirrel	*Glaucomys volans*	T
	Northern flying squirrel	*Glaucomys sabrinus*	T
	Red squirrel	*Tamiasciurus hudsonicus*	T
Castoridae	Beaver	*Castor canadensis*	W
Muridae	Norway rat	*Rattus norvegicus*	U
	White-footed mouse	*Peromyscus leucopus*	T/U
	Deer mouse	*Peromyscus maniculatus*	T
	Red-backed vole	*Clethrionomys gapperi*	T/W
	Meadow vole	*Microtus pennsylvanicus*	T/W
	Woodland vole	*Microtus pinetorum*	T
	House mouse	*Mus musculus*	U

Table 3-14 (cont.)

Family	Common Name	Scientific Name	Habitat
	Muskrat	*Ondatra zibethicus*	A
	Southern bog lemming	*Synaptomys cooperi*	T/W
Dipodidae	Woodland jumping mouse	*Napaeozapus insignis*	T
	Meadow jumping mouse	*Zapus hudsonius*	T/W
Canidae	Coyote	*Canis latrans*	T
	Red fox	*Vulpes vulpes*	T
	Gray fox	*Urocyon cinereoargenteus*	T
Procyonidae	Racoon	*Procyon lotor*	T/U/W
Mustelidae	Mink	*Mustela vison*	W/A/T
	Ermine	*Mustela erminea*	T
	Long-tailed weasel	*Mustela frenata*	T
	River otter	*Lutra canadensis*	W/A
	Striped skunk	*Mephitis mephitis*	T/U
Cervidae	White-tailed deer	*Odocoileus virginianus*	T/U/W

Source: Kurta (1995)

Notes: [a]NYS species of special concern
[b]NYS endangered species

Habitat: Each species is assigned the habitat codes where they are most likely to be found. Species can potentially be found in other habitats. See Appendix A for covertypes included in each habitat code.

Habitat codes: T = Terrestrial, W = Wetland, A = Aquatic, U = Urban