# 2014 OPERATION, MAINTENANCE AND MONITORING REPORT
# LCP BRIDGE STREET SITE (OU-1)

# TOWN OF SOLVAY
# ONONDAGA COUNTY, NEW YORK

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**NOVEMBER 2015**

**LCP-OU1 2014**

**NYSDEC COMMENTS**

1. Section 2.0 Groundwater Extraction and Pre-Treatment System Operation, paragraph 2. The volume of 2014 pretreated groundwater (cited as " 1,7100,000") should be revised.

   ***Response: The text has been revised as requested.***

2. Section 4.1 Groundwater. Relative to the discussion of mercury in groundwater outside the cutoff wall, it would be helpful to cite the Class GA mercury standard (0.7 ppb) in the text. Likewise, the standard should be cited in Table 3 and exceedances highlighted.

   ***Response: The text as well as Table 3 has been revised as requested.***

3. Section 4.2 Surface Water and Section 4.3 Sediment. While the mercury data is appropriately conveyed for 2014, no context is provided with respect to trends over time. A few sentences in this regard would be helpful in portraying the bigger picture.

   ***Response: The text has been revised to include discussion of trends over time.***

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# ACRONYMS

| | |
|---|---|
| GAC | granulated activated carbon |
| gpm | gallons per minute |
| LCP | Linden Chemicals and Plastics |
| LEL | lowest effect level |
| METRO | Metropolitan Wastewater Treatment Facility |
| mg/kg | milligrams per kilogram |
| ng/L | nanograms per liter |
| NYSDEC | New York State Department of Environmental Conservation |
| OM&M | Operation Maintenance & Monitoring |
| OU | Operating Unit |
| RI | Remedial Investigation |
| ug/L | micrograms per liter |

# 2014 ANNUAL OPERATION, MAINTENANCE, AND MONITORING REPORT FOR LCP OU-1

## 1.0 INTRODUCTION

This report details the operation, maintenance, and monitoring (OM&M) activities conducted at the site in 2014. It has been prepared consistent with the Linden Chemicals and Plastics (LCP) OM&M Plan (Parsons, 2009a) and provides a summary of the collected data and status of OM&M activities.

Under direction of the New York State Department of Environmental Conservation (NYSDEC), the remediation of LCP involved a combination of sewer system closure, mercury removal from soil on the former plant property, excavation of impacted sediments in surrounding areas with relocation to the soil/sediment containment area, construction of an underground cut-off wall and low-permeability soil cover over the soil/sediment containment area, and installation of an on-site groundwater collection system. As part of the project, excavation areas were restored to provide habitats for wading birds, ducks, amphibians, fish, and mammals (Parsons, 2009b).

OM&M operations consist of site and equipment maintenance in addition to monitoring of groundwater, sediment, surface water, wetlands, and biota. Upgrades to the site systems are performed as needed, as detailed in the sections below.

## 2.0 GROUNDWATER EXTRACTION AND PRE-TREATMENT SYSTEM OPERATION

Groundwater extracted by the 15 pumping wells within the soil/sediment containment area was pumped to two 10,000-gallon tanks in the on-site extraction building (Figure 1). The pre-treatment system consists of a filter feed pump, two 5-micron bag filters, two fiberglass-reinforced plastic granular activated carbon vessels and a flow meter. The design pumping rate is approximately 5 to 25 gallons per minute (gpm). Pre-treated groundwater is discharged to the Onondaga County West Side Trunk Sewer from which it flows to the Onondaga County Metropolitan Wastewater Treatment Facility (METRO).

In 2014, approximately 17,100,000 gallons were pre-treated on-site and sent to METRO. Monthly summaries are provided in Table 1 of this report.

## 3.0 GROUNDWATER EXTRACTION AND PRE-TREATMENT SYSTEM MAINTENANCE

The OM&M contractor providing maintenance activities for the specified period was CH2M HILL OMI. Maintenance conducted included system equipment maintenance, mowing, and snow removal. Equipment maintenance activities included:

- Periodic replacement of granulated activated carbon (GAC) for the water collection system throughout the year as necessary

- Repaired or replaced three well pumps

Maintenance conducted to system equipment was described in the weekly inspection, operation, and monitoring reports generated by OMI and submitted to the NYSDEC and associated distribution list with the monthly reports for the LCP Operating Unit (OU)-1 site.

## 4.0 MONITORING

### 4.1 Groundwater

Containment of impacted sediments in the soil/sediment containment area is monitored both hydraulically and analytically using the piezometer and monitoring well network shown in Figure 1. The piezometer monitoring system will be updated during final closure of the site.

The static water level elevations presented in each monthly report for 2014 have been consolidated and provided in Table 2 of this report. During the time period covered by this report, water levels measured by the piezometers have remained generally consistent and below the elevation of the top of the cut-off wall. An inward gradient will be achieved when the interior shallow, intermediate, and deep piezometer readings are less than the corresponding exterior shallow, intermediate, and deep piezometer readings. It is anticipated that it will take several years after the final low-permeability cap is constructed to fully achieve an inward and upward gradient at the site.

The piezometers outside of the cut-off wall along the north side of the containment area (PZ 1B: shallow, intermediate and deep through PZ 4B: shallow, intermediate and deep) were sampled quarterly by CH2M HILL OMI and analyzed for total mercury by SW 846 Method 7470. The analytical results are provided in Table 3 of this report.

The analytical results for the exterior piezometer sampling are predominantly non-detect and generally within the same range or lower than the pre-remediation mercury results presented in the Remedial Investigation (RI) Report for the LCP OU-1 site. While there are some expected minor exceedances of the New York Code of Rules and Regulations Part 703 Class GA groundwater standard for mercury (0.7 µg/L) in the shallow zone outside of the cut-off wall (particularly PZ-2B-S), consistent with prior results, the outboard groundwater in the intermediate and deep zones are below the Class GA standard. The exterior shallow piezometer data ranges from non-detect to 1.8 micrograms per liter (µg/L). The exterior intermediate piezometer data ranges from non-detect to 0.076 µg/L. Results from all exterior deep piezometer were non-detect.

As part of OM&M monitoring, wells 34D, 35D, and 36D located within the containment area are sampled quarterly by CH2M HILL OMI and analyzed for total mercury by SW 846 Method 7470. During 2014, none of the wells were sampled due to ongoing construction activities.

### 4.2 Surface Water

Surface water monitoring locations (Figure 2) were modified for 2014. NYSDEC agreed that routine monitoring in Wetland B could be discontinued after several years of low mercury concentrations in both sediment and surface water. Three new monitoring locations were

established in Wetland C which was completed in 2012 to monitor remedial activities completed in 2012. No changes were made to the Wetland A or West Flume monitoring locations. Surface water samples were analyzed for total mercury, methylmercury, and dissolved mercury consistent with the OM&M Plan. In 2014, the data range for dissolved mercury was 0.09 nanograms per liter (ng/L) to 0.21 ng/L from the West Flume (including the upstream sample location (LCP1-SW-63)) , and 0.13 ng/L to 0.30 ng/L for Wetland C. Dissolved mercury was not detected in Wetland A. Individual sample results are provided in Table 4 of this report. The dissolved mercury values observed in 2014 were within or below the normal range of historical values for their respective areas. Dissolved mercury values are below the Wildlife Protection limit of 2.6 ng/L at all West Flume and Wetland A sample locations. In Wetland C, concentrations at location LCP1-SW-69 are below the Wildlife Protection standard with concentrations at LCP1-SW-70 (0.3 ng/L) and at LCP1-SW-71 (0.32/0.29 ng/L) just above the Wildlife Protection standard.

### 4.3 Sediment

Sediment monitoring was conducted at all locations where surface water sampling was conducted including the new locations in Wetland C. The total mercury data ranges were 0.42 milligrams per kilogram (mg/kg) to 0.97 mg/kg for the West Flume (excluding the upstream sample location (LCP1-SW-63)), 0.23 to 1.6 mg/kg for Wetland A, and 0.14 mg/kg to 0.31 mg/kg for Wetland C. Individual sample results are provided in Table 5 of this report.

Total mercury concentrations in the 2014 West Flume sediment samples are consistent with the range of total mercury values observed since 2008 (0.12 to 3.1 mg/kg, with an average concentration of 0.53 mg/kg). Similarly, 2014 total mercury concentrations in Wetland A remain consistent with concentration ranges observed since 2008 (0.23 to 4.2 mg/kg, average concentration of 1.14 mg/kg). Total mercury concentrations in Wetland C are generally below (LCP-SW-64 and LCP-SW-65) or slightly above (LCP1-SW-66) 0.2 mg/kg.

### 4.4 Biota

Baseline sampling was conducted in 2005 to establish body burden at the site prior to remediation. The OM&M Plan established a long-term monitoring program that analyzes mercury concentrations in forage fish, benthic macroinvertebrates, small mammals, and earthworms. The OM&M Plan specifies that monitoring should continue regularly (every two to three years) until results indicate that the remedy has been effective and the contaminant concentrations have stabilized. To date, five sampling events (post remediation) have been conducted since completion of initial remedial activities in 2007. As planned, no biota samples were collected in 2014 and the next biota sampling event is scheduled for 2015.

### 4.5 Wetlands Monitoring

The wetlands at LCP were originally dominated by a monoculture of the invasive grass common reed and had very limited habitat value. Following the removal of impacted sediments. Wetlands A and B were restored in 2007 using a diverse assemblage of wetland plant species. The restoration design placed an emphasis on the development of aquatic bed and deep emergent marsh habitat types in order to limit invasive species (EPA, 2009). The OM&M Plan indicates

that restored wetlands would be monitored for five consecutive years following restoration at which point the program would be evaluated (Parsons, 2009a). Restoration of these wetland habitats was highly successful and routine monitoring in the original restoration areas was ended after the fifth year of monitoring in 2012. However, new removals occurred in 2011 in a section of SYW-14 that contained dredge spoils (now called Wetland C) and in a small portion of previously restored Wetland A (Figure 3). Restoration of both areas occurred in 2012. Monitoring of these restored wetlands will be conducted for five consecutive years as indicated in the OM&M Plan at which point data will be evaluated to determine if restored conditions have been met and if they can be maintained in the future. The first year of monitoring for these newly restored areas was completed in 2013.

The parameters monitored include:

- Vegetation (type, percent cover, and frequency)
- Hydrology
- Encroachment of invasive species into restored areas will be monitored (species, location, and approximate size of patch)
- Wildlife usage

Wetland monitoring and control of invasive species is intended to facilitate restoration success by ensuring that newly created habitats are allowed to establish, mature, and diversify to a point that they can naturally defend against invasive species, disease, and weather extremes (Parsons 2009a). Habitat types in the newly restored wetlands were primarily emergent wetland, aquatic/open water, and wet meadow. A total of 122 plant species were documented, most of which were wetland species. Hydrologic conditions were maintained throughout the summer and are expected to be maintained indefinitely.

Wildlife usage of the restored wetlands was extensive. Green and Northern Leopard frogs (*Rana clamitans* and *Rana pipiens* respectively) were particularly abundant, with Bullfrogs (*Lithobates catesbeianus)* being noted as well. Numerous wetland birds were observed in the area during the year such as Great Blue Heron (*Ardea herodias*), Green Heron (*Butorides virescens*), and Red-Winged Blackbird (*Agelaius phoeniceus*). Mammals such as white tailed deer (*Odocoileus virginianus*) and Eastern coyote (*Canis latrans* var.) were identified at the site.

Overall, the newly restored areas were found to be very successful in 2014 and minimal maintenance was required. Common reed occurs in several locations around the restored areas. Control measures including herbicide application and hand pulling were implemented in late spring and again in fall 2014. Additional treatment will be conducted in 2015 as necessary.

## 5.0 MONITORING AND MAINTENANCE PROGRAM RECOMMENDATIONS FOR 2015

To date, the monitoring and maintenance program being implemented at the LCP site has been effective. A five-year monitoring review report entitled *2008-2013 Operation, Maintenance, and Monitoring Report LCP Bridge Street Site (OU-1)* was submitted in July 2014 (Parsons, 2014). This report recommended that:

- No changes are recommended for the containment area and cap.
- No changes are recommended for the sediment, surface water, and wetland monitoring and maintenance program. Completion of enhancement planting and seeding in areas of Wetland A where soil removals were completed in 2011. It is recommended that approximately 300 native herbaceous plantings be installed in Spring 2015 to further enhance native vegetation already present.
- Conduct sampling of forage fish in the West Flume for total mercury analysis in 2015.

## 6.0 REFERENCES

EPA. 2009. *First Five Year Review Report, LCP Bridge Street Subsite (OU5) Onondaga Lake Site Village of Solvay, Town of Geddes Onondaga County New York*. Prepared by the U.S. Environmental Protection Agency Region 2, October 2009.

Mozdzer, T.J., Hutto, C.J., Clarke, P.A., and Field, D.P. 2008. *Efficacy of Imazapyr and Glyphosate in the Control of Non-Native Phragmites Australis. Restoration Ecology* Vol. 16, No. 2, pp. 221–224.

Parsons. 2009a. *Operation, Maintenance, and Monitoring Plan for the LCP Bridge Street Site.* Prepared for Honeywell, Syracuse, New York. September 2009.

Parsons. 2009b. *Operation, Maintenance and, Monitoring Sampling Data Report and Supplemental Sampling Plan*. Prepared for Honeywell.

Parsons. 2014. *2008-2013 Operations, Maintenance, And Monitoring Report. LCP Bridge Street Site (OU-1).* Prepared for Honeywell, Syracuse, New York.

# TABLES

| TABLE 1: MONTHLY PUMPING SUMMARY | | |
|---|---|---|
| **Month** | **Pre-Treatment System - METRO** | **Trucked to Willis Avenue Treatment Plant** |
| January | 134,347 | 0 |
| February | 137,983 | 0 |
| March | 163,686 | 0 |
| April | 198,511 | 0 |
| May | 172,966 | 0 |
| June | 82,419 | 0 |
| July | 83,945 | 0 |
| August | 136,126 | 0 |
| September | 106,084 | 0 |
| October | 141,108 | 0 |
| November | 136,413 | 0 |
| December | 215,619 | 0 |
| Sub-Totals | 1,709,207 | 0 |
| Total | **1,709,207** | |
| Average Pumping Rate | **3.25 gpm** | |

| | PZ-1 Wall Top | PZ-1A-Shallow | PZ-1A-Mid | PZ-1A-Deep | PZ-1B-Shallow | PZ-1B-Mid | PZ-1B-Deep | | PZ-2 Wall Top | PZ-2A-Shallow | PZ-2A-Mid | PZ-2A-Deep | PZ-2B-Shallow | PZ-2B-Mid | PZ-2B-Deep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/10/14 | 393.3 | 389.10 | 374.68 | 374.69 | 384.39 | 374.40 | 374.45 | | 392.5 | 383.81 | 374.78 | 374.28 | 378.10 | 374.22 | 374.31 |
| 1/20/14 | 393.3 | 389.47 | 374.79 | 374.81 | 384.47 | 374.49 | 374.56 | | 392.5 | 383.54 | 374.87 | 374.38 | 378.04 | 374.24 | 374.41 |
| 2/3/14 | 393.3 | 388.96 | 374.37 | 374.40 | 384.33 | 374.14 | 374.21 | | 392.5 | 382.93 | 374.45 | 374.00 | 377.69 | 373.86 | 374.03 |
| 2/17/14 | 393.3 | 388.87 | 374.13 | 374.13 | 384.18 | 373.82 | 373.88 | | 392.5 | 382.84 | 374.22 | 373.70 | 377.48 | 373.62 | 373.76 |
| 3/3/14 | 393.3 | 388.95 | 374.47 | 374.54 | 384.38 | 374.25 | 374.28 | | 392.5 | 383.18 | 374.60 | 374.07 | 377.97 | 373.95 | 374.11 |
| 3/21/14 | 393.3 | 389.32 | 374.96 | 374.94 | 384.45 | 374.64 | 374.75 | | 392.5 | 383.24 | 375.03 | 374.55 | 378.36 | 374.44 | 374.62 |
| 4/1/14 | 393.3 | 389.52 | 375.58 | 374.64 | 384.56 | 375.34 | 375.41 | | 392.5 | 383.76 | 375.70 | 375.13 | 378.74 | 375.06 | 375.22 |
| 4/16/14 | 393.3 | 389.27 | 375.40 | 375.43 | 384.60 | 375.12 | 375.18 | | 392.5 | 383.50 | 375.46 | 374.98 | 378.66 | 374.86 | 375.04 |
| 4/28/14 | 393.3 | 389.52 | 375.11 | 375.12 | 384.48 | 374.82 | 374.94 | | 392.5 | 383.31 | 375.16 | 374.70 | 378.21 | 374.56 | 374.76 |
| 5/12/14 | 393.3 | 389.40 | 375.04 | 375.10 | 384.34 | 374.77 | 374.88 | | 392.5 | 383.35 | 375.12 | 374.67 | 378.37 | 374.56 | 374.71 |
| 5/28/14 | 393.3 | 389.40 | 375.03 | 375.08 | 384.30 | 374.77 | 374.82 | | 392.5 | 383.62 | 375.16 | 374.66 | 378.39 | 374.51 | 374.68 |
| 6/13/14 | 393.3 | 389.12 | 374.56 | 374.58 | 384.07 | 374.26 | 374.35 | | 392.5 | 382.94 | 374.60 | 374.04 | 377.79 | 373.91 | 374.09 |
| 6/23/14 | 393.3 | 389.14 | 374.20 | 374.18 | 384.11 | 373.99 | 374.33 | | 392.5 | 382.92 | 374.42 | 373.94 | 377.52 | 373.86 | 371.35 |
| 7/9/14 | 393.3 | 388.92 | 374.11 | 374.18 | 384.24 | 373.84 | 373.96 | | 392.5 | 382.82 | 374.25 | 373.44 | 377.65 | 373.63 | 371.45 |
| 7/23/14 | 393.3 | 389.13 | 373.99 | 374.03 | 384.27 | 373.72 | 373.83 | | 392.5 | 382.90 | 374.07 | 373.63 | 377.50 | 373.49 | 373.66 |
| 8/11/14 | 393.3 | 388.98 | 374.08 | 373.96 | 384.32 | 373.69 | 373.78 | | 392.5 | 382.99 | 373.97 | 373.59 | 377.65 | 373.46 | 373.64 |
| 8/26/14 | 393.3 | 388.95 | 373.98 | 374.03 | 384.30 | 373.73 | 373.87 | | 392.5 | 382.60 | 374.04 | 373.67 | 377.80 | 373.52 | 373.70 |
| 9/2/14 | 393.3 | 389.02 | 373.85 | 373.88 | 384.26 | 373.66 | 374.34 | | 392.5 | 382.60 | 373.91 | 373.54 | 377.60 | 373.43 | 373.58 |
| 9/15/14 | 393.3 | 388.90 | 373.77 | 373.78 | 384.31 | 373.53 | 373.67 | | 392.5 | 382.53 | 373.81 | 373.45 | 377.42 | 373.38 | 373.52 |
| 10/9/14 | 393.3 | 388.86 | 373.65 | 373.73 | 384.38 | 373.42 | 373.55 | | 392.5 | 382.39 | 373.70 | 373.39 | 377.36 | 373.24 | 373.39 |
| 10/21/14 | 393.3 | 389.11 | 373.79 | 373.83 | 384.38 | 373.57 | 373.68 | | 392.5 | 382.57 | 373.86 | 373.48 | 377.71 | 373.38 | 373.49 |
| 11/10/14 | 393.3 | 388.95 | 373.85 | 373.90 | 384.37 | 373.60 | 373.72 | | 392.5 | 382.80 | 373.97 | 373.49 | 377.89 | 373.40 | 373.54 |
| 11/24/14 | 393.3 | 389.68 | 374.00 | 374.06 | 384.48 | 373.80 | 373.85 | | 392.5 | 382.92 | 374.15 | 373.64 | 378.07 | 373.61 | 373.69 |
| 12/3/14 | 393.3 | 389.55 | 373.92 | 374.01 | 384.45 | 373.66 | 373.88 | | 392.5 | 382.65 | 374.08 | 373.69 | 378.12 | 373.58 | 373.74 |
| 12/15/14 | 393.3 | 389.35 | 374.02 | 374.12 | 384.74 | 373.89 | 373.93 | | 392.5 | 382.77 | 374.16 | 373.74 | 379.04 | 373.67 | 373.79 |

| | PZ-3 Wall Top | PZ-3A-Shallow | PZ-3A-Mid | PZ-3A-Deep | PZ-3B-Shallow | PZ-3B-Mid | PZ-3B-Deep | | PZ-4 Wall Top | PZ-4A-Shallow | PZ-4A-Mid | PZ-4A-Deep | PZ-4B-Shallow | PZ-4B-Mid | PZ-4B-Deep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/10/14 | 393.0 | 389.04 | 374.78 | 374.31 | 386.36 | 374.14 | 374.28 | | 393.5 | 389.21 | 374.96 | 376.27 | 384.27 | 374.70 | 376.26 |
| 1/20/14 | 393.0 | 389.28 | 374.91 | 374.39 | 386.83 | 374.20 | 374.38 | | 393.5 | 389.51 | 375.10 | 376.41 | 384.46 | 374.80 | 376.39 |
| 2/3/14 | 393.0 | 388.84 | 374.47 | 374.02 | 387.13 | 373.80 | 373.99 | | 393.5 | 389.00 | 374.69 | 376.03 | 383.70 | 374.42 | 376.01 |
| 2/17/14 | 393.0 | 388.74 | 374.33 | 373.74 | 385.89 | 373.54 | 373.71 | | 393.5 | 388.82 | 374.52 | 375.70 | 383.48 | 374.13 | 375.67 |
| 3/3/14 | 393.0 | 388.95 | 374.68 | 374.06 | 389.86 | 373.85 | 374.02 | | 393.5 | 389.18 | 374.82 | 376.06 | 383.98 | 374.44 | 376.05 |
| 3/21/14 | 393.0 | 389.30 | 375.09 | 374.60 | 389.86 | 374.41 | 374.57 | | 393.5 | 389.65 | 375.34 | 376.55 | 384.13 | 375.01 | 376.56 |
| 4/1/14 | 393.0 | 389.44 | 375.71 | 375.20 | 389.59 | 375.01 | 375.18 | | 393.5 | 389.68 | 375.93 | 377.19 | 384.58 | 375.58 | 377.16 |
| 4/16/14 | 393.0 | 389.04 | 375.56 | 375.02 | 389.22 | 374.81 | 374.98 | | 393.5 | 389.07 | 375.72 | 377.00 | 384.24 | 375.37 | 376.97 |
| 4/28/14 | 393.0 | 389.21 | 375.21 | 374.70 | 387.29 | 374.54 | 374.66 | | 393.5 | 389.35 | 375.25 | 376.84 | 384.33 | 375.09 | 376.77 |
| 5/12/14 | 393.0 | 389.26 | 375.16 | 374.64 | 387.93 | 374.46 | 374.63 | | 393.5 | 389.35 | 375.20 | 376.79 | 384.25 | 375.02 | 376.72 |
| 5/28/14 | 393.0 | 389.29 | 375.24 | 374.62 | 387.51 | 374.41 | 374.61 | | 393.5 | 389.42 | 375.24 | 376.83 | 384.34 | 375.03 | 376.75 |
| 6/13/14 | 393.0 | 388.94 | 374.68 | 374.10 | 385.33 | 373.91 | 374.08 | | 393.5 | 387.05 | 374.72 | 376.21 | 383.84 | 374.46 | 376.18 |
| 6/23/14 | 393.0 | 388.91 | 374.50 | 373.99 | 385.31 | 373.67 | 373.88 | | 393.5 | 389.00 | 374.57 | 375.97 | 383.87 | 374.31 | 375.94 |
| 7/9/14 | 393.0 | 388.67 | 374.32 | 373.76 | 387.96 | 373.54 | 373.74 | | 393.5 | 388.71 | 374.37 | 375.77 | 383.68 | 374.12 | 375.71 |
| 7/23/14 | 393.0 | 388.89 | 374.14 | 373.57 | 385.95 | 373.37 | 373.54 | | 393.5 | 388.99 | 374.20 | 375.53 | 383.95 | 373.91 | 375.51 |
| 8/11/14 | 393.0 | 387.79 | 374.03 | 373.62 | 383.80 | 373.41 | 373.58 | | 393.5 | 388.86 | 374.07 | 375.59 | 384.05 | 373.99 | 375.57 |
| 8/26/14 | 393.0 | 388.78 | 374.05 | 373.68 | 386.38 | 373.22 | 373.65 | | 393.5 | 388.86 | 374.14 | 375.62 | 383.58 | 374.06 | 375.59 |
| 9/2/14 | 393.0 | 388.77 | 373.90 | 373.52 | 387.50 | 373.32 | 373.53 | | 393.5 | 388.83 | 373.98 | 375.45 | 384.12 | 373.85 | 373.42 |
| 9/15/14 | 393.0 | 388.79 | 373.86 | 373.49 | 387.77 | 373.29 | 373.45 | | 393.5 | 388.81 | 373.95 | 375.39 | 383.94 | 373.86 | 375.34 |
| 10/9/14 | 393.0 | 388.62 | 373.72 | 373.39 | 387.96 | 373.19 | 373.33 | | 393.5 | 388.64 | 373.78 | 375.25 | 384.41 | 373.75 | 375.24 |
| 10/21/14 | 393.0 | 388.83 | 373.88 | 373.53 | 389.30 | 373.32 | 373.48 | | 393.5 | 388.85 | 373.92 | 375.38 | 384.05 | 373.89 | 375.35 |
| 11/10/14 | 393.0 | 389.02 | 374.03 | 373.55 | 389.15 | 373.34 | 373.48 | | 393.5 | 388.92 | 374.03 | 375.38 | 383.99 | 373.94 | 375.35 |
| 11/24/14 | 393.0 | 389.22 | 374.13 | 373.75 | 390.61 | 373.52 | 373.66 | | 393.5 | 389.51 | 374.19 | 375.49 | 384.55 | 374.07 | 375.49 |
| 12/3/14 | 393.0 | 389.30 | 374.08 | 373.66 | 389.71 | 373.47 | 373.66 | | 393.5 | 389.31 | 374.19 | 375.51 | 384.42 | 374.15 | 375.49 |
| 12/15/14 | 393.0 | 389.15 | 374.20 | 373.81 | 389.92 | 373.62 | 373.78 | | 393.5 | 389.27 | 374.24 | 375.55 | 384.25 | 374.17 | 375.54 |

| | PZ-5 Wall Top | PZ-5A-Shallow | PZ-5A-Mid | PZ-5A-Deep | PZ-5B-Shallow | PZ-5B-Mid | PZ-5B-Deep | | PZ-6 Wall Top | PZ-6A-Shallow | PZ-6A-Mid | PZ-6A-Deep | PZ-6B-Shallow | PZ-6B-Mid | PZ-6B-Deep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/10/14 | 394.8 | 389.03 | 375.10 | 383.12 | 388.65 | 378.23 | 381.03 | | 393.4 | 389.61 | 375.42 | 383.55 | 390.51 | 378.00 | 391.79 |
| 1/20/14 | 394.8 | 389.76 | 375.21 | 383.09 | 388.74 | 378.28 | 381.01 | | 393.4 | 389.76 | 375.61 | 383.59 | 390.79 | 378.09 | 391.52 |
| 2/3/14 | 394.8 | 388.99 | 374.84 | 382.50 | 388.61 | 377.87 | 380.75 | | 393.4 | 389.38 | 375.20 | 382.92 | 390.79 | 377.69 | 390.50 |
| 2/17/14 | 394.8 | 388.75 | 374.62 | 382.19 | 388.55 | 377.54 | 380.43 | | 393.4 | 389.38 | 374.93 | 382.66 | 390.52 | 377.39 | 390.01 |
| 3/3/14 | 394.8 | 389.53 | 374.98 | 382.96 | 388.77 | 378.02 | 380.63 | | 393.4 | 389.54 | 375.31 | 383.60 | 390.63 | 377.80 | 391.47 |
| 3/21/14 | 394.8 | 391.12 | 375.40 | 383.07 | 389.30 | 378.36 | 380.77 | | 393.4 | 389.77 | 375.79 | 384.05 | 390.89 | 378.27 | 392.72 |
| 4/1/14 | 394.8 | 390.40 | 376.06 | 384.68 | 389.73 | 378.98 | 381.42 | | 393.4 | 389.88 | 376.42 | 384.97 | 391.00 | 378.94 | 393.92 |
| 4/16/14 | 394.8 | 389.53 | 375.80 | 384.41 | 389.66 | 378.82 | 382.27 | | 393.4 | 389.44 | 376.22 | 384.76 | 390.92 | 378.71 | 393.02 |
| 4/28/14 | 394.8 | 389.08 | 375.39 | 383.88 | 388.87 | 378.47 | 381.89 | | 393.4 | 389.74 | 375.92 | 375.36 | 390.65 | 378.44 | 391.94 |
| 5/12/14 | 394.8 | 389.31 | 375.35 | 383.63 | 388.82 | 378.46 | 381.58 | | 393.4 | 389.73 | 375.87 | 384.50 | 385.61 | 378.41 | 392.38 |
| 5/28/14 | 394.8 | 389.24 | 375.46 | 383.84 | 388.60 | 378.42 | 381.63 | | 393.4 | 389.75 | 375.90 | 384.78 | 390.43 | 378.40 | 392.32 |
| 6/13/14 | 394.8 | 388.76 | 374.82 | 383.18 | 388.47 | 377.87 | 381.16 | | 393.4 | 389.45 | 375.30 | 383.86 | 390.31 | 377.84 | 391.08 |
| 6/23/14 | 394.8 | 388.58 | 374.64 | 382.73 | 388.25 | 377.67 | 380.68 | | 393.4 | 389.42 | 375.08 | 383.64 | 390.05 | 377.54 | 390.77 |
| 7/9/14 | 394.8 | 388.54 | 374.53 | 382.48 | 389.18 | 377.53 | 380.50 | | 393.4 | 389.27 | 374.98 | 383.48 | 390.05 | 377.42 | 391.04 |
| 7/23/14 | 394.8 | 388.46 | 374.42 | 382.51 | 388.24 | 377.36 | 380.31 | | 393.4 | 389.33 | 374.87 | 383.08 | 389.98 | 377.24 | 390.44 |
| 8/11/14 | 394.8 | 391.58 | 374.27 | 382.37 | 388.43 | 377.40 | 380.25 | | 393.4 | 389.28 | 374.72 | 383.24 | 390.11 | 377.27 | 390.91 |
| 8/26/14 | 394.8 | 388.63 | 374.34 | 382.24 | 388.71 | 377.50 | 380.20 | | 393.4 | 389.29 | 374.78 | 383.19 | 390.26 | 377.33 | 391.05 |
| 9/2/14 | 394.8 | 388.53 | 374.16 | 382.02 | 388.48 | 377.36 | 380.11 | | 393.4 | 389.25 | 374.61 | 382.73 | 390.08 | 377.15 | 390.42 |
| 9/15/14 | 394.8 | 388.38 | 374.17 | 382.21 | 389.33 | 377.24 | 380.00 | | 393.4 | 389.23 | 374.57 | 382.56 | 389.18 | 377.04 | 390.19 |
| 10/9/14 | 394.8 | 388.19 | 373.99 | 381.47 | 389.33 | 377.12 | 379.62 | | 393.4 | 389.16 | 374.43 | 382.29 | 390.57 | 377.79 | 390.21 |
| 10/21/14 | 394.8 | 388.58 | 374.13 | 381.72 | 389.37 | 377.35 | 379.64 | | 393.4 | 389.20 | 374.56 | 382.86 | 390.64 | 377.09 | 390.85 |
| 11/10/14 | 394.8 | 388.88 | 374.21 | 381.78 | 389.20 | 377.42 | 379.78 | | 393.4 | 389.24 | 374.68 | 382.89 | 390.48 | 376.13 | 390.77 |
| 11/24/14 | 394.8 | 389.48 | 374.82 | 381.84 | 389.46 | 377.52 | 379.77 | | 393.4 | 389.51 | 374.72 | 382.90 | 390.75 | 377.29 | 390.84 |
| 12/3/14 | 394.8 | 389.53 | 374.27 | 381.74 | 389.68 | 377.43 | 379.80 | | 393.4 | 389.30 | 374.66 | 382.94 | 390.75 | 377.29 | 390.87 |
| 12/15/14 | 394.8 | 390.37 | 374.34 | 382.87 | 390.24 | 377.61 | 379.90 | | 393.4 | 389.46 | 374.87 | 383.84 | 390.98 | 377.36 | 391.07 |

| | PZ-7 Wall Top | PZ-7A-Shallow | PZ-7A-Mid | PZ-7A-Deep | PZ-7B-Shallow | PZ-7B-Mid | PZ-7B-Deep |
|---|---|---|---|---|---|---|---|
| 1/10/14 | 394.4 | 389.85 | 374.97 | 378.52 | 388.28 | 374.82 | 378.42 |
| 1/20/14 | 394.4 | 390.20 | 375.05 | 378.67 | 388.35 | 374.94 | 378.56 |
| 2/3/14 | 394.4 | 389.48 | 374.68 | 378.39 | 387.60 | 374.56 | 378.29 |
| 2/17/14 | 394.4 | 389.26 | 374.44 | 378.11 | 387.36 | 374.26 | 378.09 |
| 3/3/14 | 394.4 | 389.70 | 374.81 | 378.51 | 388.26 | 374.66 | 378.46 |
| 3/21/14 | 394.4 | 390.07 | 375.24 | 378.81 | 389.00 | 375.07 | 378.79 |
| 4/1/14 | 394.4 | 390.37 | 375.90 | 379.46 | 389.38 | 375.78 | 379.42 |
| 4/16/14 | 394.4 | 389.97 | 375.69 | 379.42 | 389.25 | 375.67 | 379.34 |
| 4/28/14 | 394.4 | 390.26 | 375.41 | 379.37 | 388.78 | 375.31 | 379.35 |
| 5/12/14 | 394.4 | 390.31 | 375.35 | 379.39 | 388.87 | 375.25 | 379.44 |
| 5/28/14 | 394.4 | 390.13 | 375.37 | 379.38 | 388.45 | 375.26 | 379.44 |
| 6/13/14 | 394.4 | 389.63 | 374.83 | 378.86 | 387.54 | 374.73 | 378.95 |
| 6/23/14 | 394.4 | 389.72 | 374.58 | 378.50 | 388.06 | 374.44 | 378.58 |
| 7/9/14 | 394.4 | 389.69 | 374.44 | 378.21 | 388.50 | 374.28 | 378.24 |
| 7/23/14 | 394.4 | 389.59 | 374.32 | 378.05 | 387.94 | 374.14 | 378.16 |
| 8/11/14 | 394.4 | 389.52 | 374.31 | 377.89 | 388.14 | 374.11 | 377.99 |
| 8/26/14 | 394.4 | 389.49 | 374.25 | 377.84 | 388.63 | 374.25 | 377.94 |
| 9/2/14 | 394.4 | 389.55 | 374.12 | 377.78 | 387.88 | 373.99 | 377.79 |
| 9/15/14 | 394.4 | 389.53 | 374.07 | 377.61 | 388.88 | 373.98 | 377.69 |
| 10/9/14 | 394.4 | 389.45 | 373.95 | 377.44 | 389.46 | 373.86 | 377.52 |
| 10/21/14 | 394.4 | 389.71 | 374.07 | 377.49 | 389.41 | 373.98 | 377.64 |
| 11/10/14 | 394.4 | 389.86 | 374.07 | 377.47 | 388.57 | 373.99 | 377.62 |
| 11/24/14 | 394.4 | 390.29 | 374.17 | 377.61 | 389.48 | 374.16 | 377.74 |
| 12/3/14 | 394.4 | 390.06 | 374.22 | 377.59 | 389.45 | 374.13 | 376.65 |
| 12/15/14 | 394.4 | 389.90 | 374.29 | 377.67 | 389.75 | 374.18 | 377.78 |

## TABLE 3: PIEZOMETER ANALYTICAL RESULTS

| | 1st Quarter (March) 2014 | | 2nd Quarter (April) 2014 | | 3rd Quarter (September) 2014 | | 4th Quarter (November) 2014 | |
|---|---|---|---|---|---|---|---|---|
| | Mercury | | Mercury | | Mercury | | Mercury | |
| | Result ug/L | Qualifier | Result ug/L | Qualifier | Result ug/L | Qualifier | Result ug/L | Qualifier |
| PZ-1B-S | Note 1 | | Note 1 | | ND (0.038) | U | 0.038 | J |
| PZ-1B-I | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U |
| PZ-1B-D | ND (0.038/0.038) | U | ND (0.038/0.038) | U | ND (0.038/0.038) | U | ND (0.038/0.038) | U |
| | | | | | | | | |
| PZ-2B-S | 1.8 | | 1.7 | | 1.4 | | 1.5 | |
| PZ-2B-I | 0.063 | J | ND (0.038) | U | ND (0.038) | U | 0.076 | J |
| PZ-2B-D | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U |
| | | | | | | | | |
| PZ-3B-S | Note 1 | | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U |
| PZ-3B-I | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U | 0.041 | J |
| PZ-3B-D | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U |
| | | | | | | | | |
| PZ-4B-S | Note 1 | | Note 1 | | ND (0.038) | U | Note 1 | |
| PZ-4B-I | ND (0.038) | U | 0.043 | J | ND (0.038) | U | ND (0.038) | U |
| PZ-4B-D | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U | ND (0.038) | U |

**Table Notes:**
ND: Non-Detect, method detection limit shown in paranthesis.
U: Not detected.
J: Result is considered an estimate.
Note 1: Not sampled due to low water level.
Highlighted cells indicate an exceedence of the NYCRR Part 703 Class GA groundwatre standard for mercury (0.7 ug/L)

**TABLE 4: SURFACE WATER ANALYTICAL RESULTS**

| | October 2014 | | | | | |
|---|---|---|---|---|---|---|
| | Total Mercury | | Methyl Mercury | | Dissolved Mercury | |
| | Result ng/L | Qualifier | Result ng/L | Qualifier | Result ng/L | Qualifier |
| *West Flume* | | | | | | |
| LCP1-SW-60 | 6.9 | | 0.251 | J | 0.16 | |
| LCP1-SW-61 | 3.1 | | 3.2 | | 0.09 | J |
| LCP1-SW-62 | 3.5 | | 1.90 | | 0.21 | |
| LCP1-SW-63 | 3.5 | | 2 | | 0.1 | J |
| *Wetland A* | | | | | | |
| LCP1-SW-67 | 1.2 | | 0.56 | J | ND (0.03) | U |
| LCP1-SW-68 | 2.8 | | 1.40 | | ND (0.03) | U |
| *Wetland C* | | | | | | |
| LCP1-SW-69 | 1.4 | | 0.419 | J | 0.13 | |
| LCP1-SW-70 | 6 | | 1.5 | | 0.3 | |
| LCP1-SW-71 | 12.8/7.6 | J | 2.0/1.5 | | 0.32/0.29 | |

**Table Notes:**
J: Result is considered an estimate.
U: Not dectected.
ND: Non-Detect, method dectection limit shown in paranthesis.

| TABLE 5: SEDIMENT ANALYTICAL RESULTS | | | | |
|---|---|---|---|---|
| Location ID | October 2014 | | | |
| | Mercury | | Methyl Mercury | |
| | Result mg/kg | Qualifier | Result ng/g | Qualifier |
| *West Flume* | | | | |
| LCP1-SW-60 | 0.968 | J | 0.49 | J |
| LCP1-SW-61 | 0.418 | | 1.62 | |
| LCP1-SW-62 | 0.424 | J | 1.46 | J |
| LCP1-SW-63 | 0.116 | | 0.36 | J |
| *Wetland A* | | | | |
| LCP1-SW-67 | 0.232 | | 1.24 | |
| LCP1-SW-68 | 1.6 | | 1.75 | |
| *Wetland C* | | | | |
| LCP1-SW-64 | 0.117 | | 1.3 | |
| LCP1-SW-65 | 0.14 | | 1.71 | |
| LCP1-SW-66 | 0.257/0.309 | | 0.87/1.16 | |

**Table Notes:**
J: Result is considered an estimate.

# FIGURES

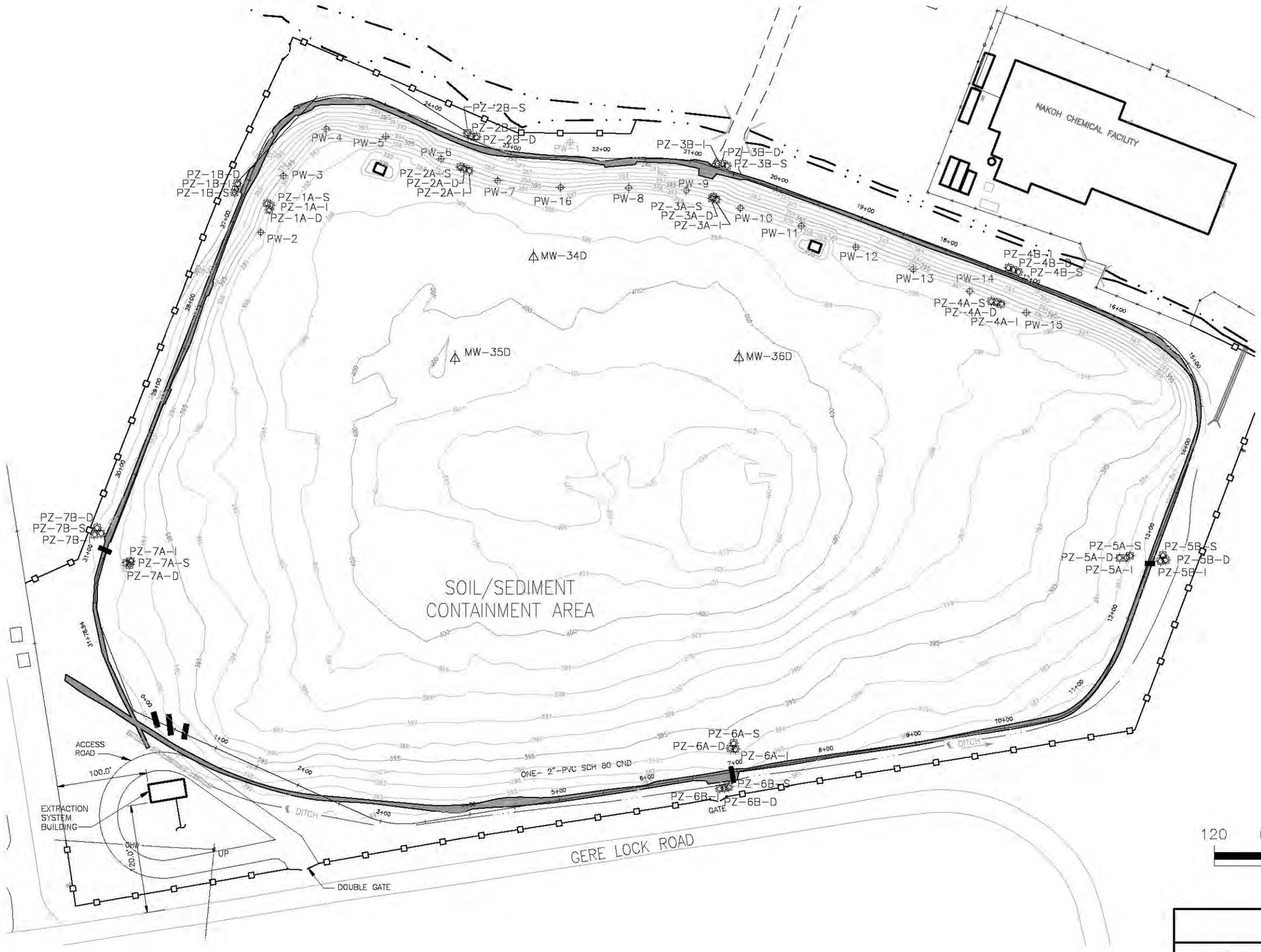
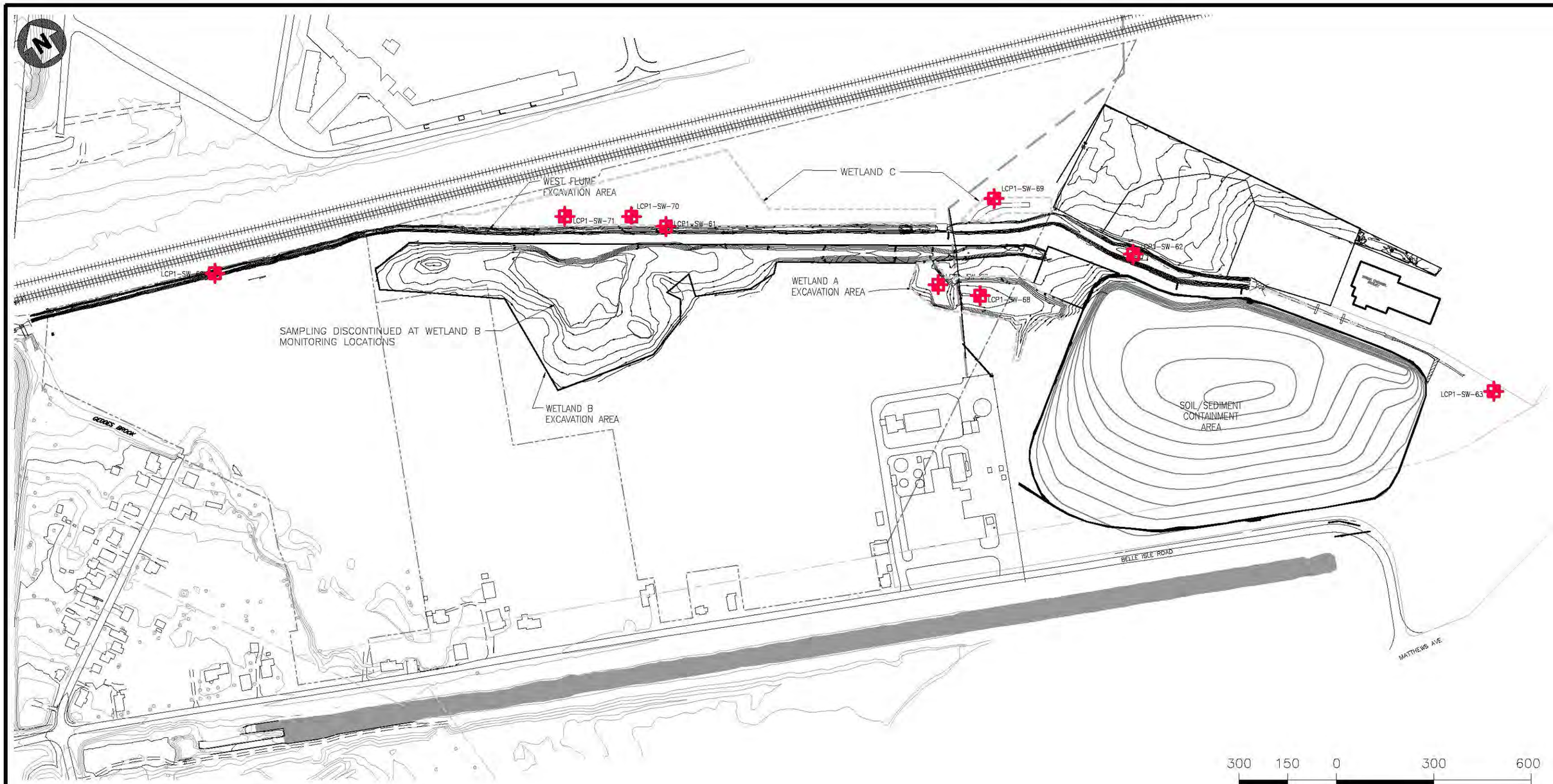



FIGURE 1

**Honeywell** FORMER LINDEN CHEMICAL PLANT
SOLVAY, NEW YORK

PIEZOMETER/MONITORING
WELL LOCATIONS

**PARSONS**
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560




LEGEND

- RESTORATION AREA LIMIT
- EXISTING CONTOURS
- SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS

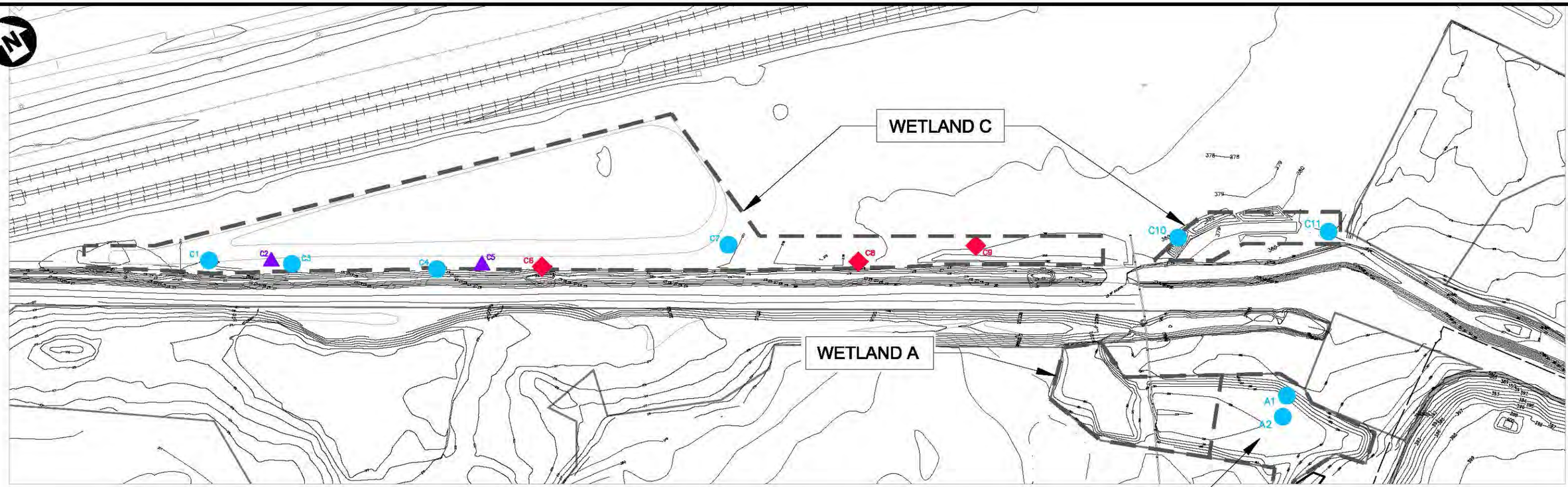
FIGURE 2

Honeywell FORMER LINDEN CHEMICAL PLANT SOLVAY, NEW YORK

2014 ANNUAL SURFACE WATER/SEDIMENT SAMPLING LOCATION

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, N.Y. 13212, PHONE: 315-451-9560

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\444224-RPT002.DWG
PLOT DATE: 3/3/2015 2:14 PM PLOTTED BY: CAGIDE-FLMER, NATALIA




LEGEND

- RESTORATION AREA LIMIT
- EXISTING CONTOURS
- C8 MONITORING LOCATIONS FOR WETLAND EDGE & SIDE SLOPE ZONES (3)
- C7 MONITORING LOCATIONS FOR SHALLOW EMERGENT ZONES (8)
- C2 MONITORING LOCATIONS FOR DEEP EMERGENT ZONES (2)

150 0 150 300

SCALE: 1"=150'

FIGURE 3

Honeywell

# 2014 WETLAND OM&M VEGETATION MONITORING LOCATIONS

PARSONS
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\448308-SK003.DWG
PLOT DATE: 2/23/2015 4:02 PM PLOTTED BY: PICKERING, KELLY

# APPENDIX A

# WETLANDS MONITORING REPORT YEAR 6 - 2014

# 2014 WETLAND MONITORING REPORT
# LCP BRIDGE STREET SITE (OU-1)

# TOWN OF SOLVAY
# ONONDAGA COUNTY, NEW YORK

*Prepared For:*

Honeywell

301 Plainfield Road
Suite 330
Syracuse, NY 13212

*Prepared By:*

PARSONS
301 Plainfield Road
Suite 350
Syracuse, NY 13212

**MARCH 2015**

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## LIST OF ATTACHMENTS

# WETLAND MONITORING REPORT (2014)
# LCP OU-1 BRIDGE STREET SITE

## 1.0 INTRODUCTION

The wetland restoration sites are located in the Town of Geddes, Onondaga County, New York (Figure 1). Remediation at the LCP Bridge Street site required the excavation of portions of NYSDEC wetland SYW-14. The remediation design was presented in the *Final (100%) Design Report for the LCP Bridge Street (OU-1) Site* (Parsons 2004). Details about the wetland restoration plans and monitoring program can be found in the *Wetland Monitoring Reports – Years 1 through 5* (TES 2009, 2010, 2011, 2012, 2013). Restoration of wetland habitat was highly successful and routine monitoring in the original restoration areas was ended after 2012. However, new removals occurred in 2011 in a section of SYW-14 that contained dredge spoils from the West Flume and in a small portion of previously restored Wetland A (Figure 2). Restoration of both areas occurred in 2012; the portion of Wetland A where additional removals occurred was restored as shallow emergent wetland and the dredge spoil area, now referred to as Wetland C, was restored as deeper aquatic habitat surrounded by emergent wetland, wet meadow, and riparian edges. The OM&M Plan calls for monitoring of restored wetlands for five years after restoration at which point data are to be evaluated to determine if restored conditions have been met and if they can be maintained in the future (Parsons, 2009a). This report presents the findings of the 2014 monitoring effort that is the second of five years of monitoring at Wetland C and the portion of Wetland A where additional removals occurred.

## 2.0 MONITORING METHODS

Methods used to monitor the restored wetland areas are provided in Parsons (2009a). The parameters to be monitored included: vegetation, hydrology, wildlife usage, and invasive species.

### 2.1 Vegetation

Vegetation monitoring included field reconnaissance surveys, qualitative assessments, and quantitative sampling. Field reconnaissance surveys occurred several times from May to October, 2014 and tracked plant and wildlife species encountered. More detailed qualitative assessments were performed in August and September 2014, to more systematically identify plant species and finalize locations for invasive species control.

Quantitative vegetation sampling was conducted at 13 permanent stations throughout the portion of Wetland A, where additional removals occurred, and Wetland C. At each station, a 100 $ft^2$ sample plot was established to evaluate herbaceous vegetation and a 400 $ft^2$ sample plot was established to evaluate woody vegetation. Plot locations are shown on Figure 3.

Vegetation data collected in each sample plot consisted of the following:

1. Vegetation cover type present

2. Total percent areal cover of vegetation
3. Plant species observed
4. The percent areal cover of each species
5. Approximate water depth

The sample plot monitoring data sheets used are presented in Attachment 1. Photographs were taken at each of the vegetation monitoring plots (Photographs 1 to 13), and at permanent photograph locations (Photographs 14 to 18). The location and direction of the photograph locations are indicated in Figure 3, together with the location of the vegetation monitoring plots. All photographs are presented in Attachment 2.

## 2.2 Hydrology

Staff gauge readings were collected in the portion of Wetland A being monitored and in Wetland C. Both of these staff gauges were installed in the spring of 2014. Data from staff gauges are presented in Table 6.

## 2.3 Wildlife

During field reconnaissance visits, all observed wildlife species or their signs were documented and photographs taken when possible. In addition, a trail camera was deployed on a trial basis in December 2014 to document wildlife usage during periods when site visits are not occurring (night, winter etc.).

# 3.0 MONITORING RESULTS

## 3.1 Vegetation

Vegetation growth in newly restored areas of Wetlands A and C is generally dense and diverse with a total of 122 plant species recorded in 2014, the second year following restoration (Table 1). The total number of species documented since monitoring began in 2013 is 219.

### Wetland A

Plant species observed in the recently restored section of Wetland A are presented in Table 1. Vegetation plot data for Wetland A are provided in Attachment 1, with a summary of the data presented in Table 2.

Wetland A contains a primarily emergent wetland cover type around the perimeter and a small section (~0.1 acre) in the center alternates between a sparsely vegetated shallow aquatic bed and a mudflat depending on water levels (Figure 4). The edges quickly transition into upland meadow habitat.

A total of 58 species were identified during all monitoring activities in 2014, up from 18 in 2013 (Table 1). Twelve species were identified during quantitative plot sampling, most of which were obligate wetland species (65 percent), and facultative wetland species at (19 percent) (Tables 2 and 4). Rice cutgrass (*Leersia oryzoides*) was the overall dominant species documented throughout the plots, accounting for about 30.8% of the overall relative cover (Table 2).

### Wetland C

Plant species observed in Wetland C in 2014 are presented in Table 1. Vegetation plot data for Wetland C are provided in Attachment 1, with a summary of the data presented in Table 3.

Four vegetation cover types were identified in 2014; aquatic bed, emergent wetland, wet meadow, and wetland slopes (Figure 4). The deeper aquatic pool and associated perimeter emergent wetlands and wet meadow are the dominant habitat types in this area.

A total of 106 species were identified during all monitoring activities in 2014, up from 64 in 2013 (Table 1). During quantitative sampling, a total of 82 species were identified, most of which were obligate (49 percent) or facultative wetland species (16 percent) (Table 4). Cattails, both broad-leaf (*Typha latifolia*), and narrow-leaf (*Typha angustifolia*) were the dominant species in the quantitative sampling throughout Wetland C, accounting for a combined 26 percent of the overall relative cover (Table 3).

## 3.2 Hydrology

Hydrologic conditions were maintained throughout the monitoring period based on the water elevation data collected at monitored locations in 2014. All the data recorded during the bi-weekly monitoring are presented in Table 5.

## 3.3 Wildlife

Wildlife observations from the restoration areas are presented in Table 6. These observations were made at various times during the 2014 season, mostly during the vegetation reconnaissance and quantitative plot sampling. Additionally some observations where made with the use of a trail camera in December, and periodic site visits were made throughout the fall to identify migratory birds.

### Birds

Table 6 lists the bird species seen or heard in the vicinity of the restoration areas. Species observed included several wetland species, such as Canada Goose (*Branta canadensis*), Mallard (*Anas platyrhynchos*), Great Blue Heron (*Ardea herodias*), Spotted Sandpiper (*Actitis macularius*), Green Heron (*Butorides virescens*), and Red-Winged Blackbird (*Agelaius phoeniceus*). The Red-Winged Blackbird is a common nesting species in the restored wetland areas. Canada Geese and Mallards were common in the open water habitat of Wetland C. Wild turkey (*Meleagris gallopavo)* were also documented on several occasions. Although Wetland B is no longer part of the monitoring program, observations made in this area during site visits to the other wetlands indicated that the State threatened Pied-billed Grebe was present for the eighth consecutive year in 2014.

### Amphibians and Reptiles

Northern Leopard Frogs (*Lithobates pipiens*) were observed throughout both Wetlands A and C, whereas Bull Frogs (*Lithobates catebeianus)* and American Toad (*Anaxyrus americanus*) were only observed in Wetland C. Species identification was determined by both direct

observations and calls. Additionally, both the Water Snake (*Nerodia sipedon*) and Garter Snake (*Thamnophis sirtalis*) were observed in Wetland C.

**Mammals**

White-tailed deer (*Odocoileus virginianus*) and their signs were commonly observed in and around the wetlands. Eastern coyote (*Canis latrans* var.) and their signs were also observed on the road separating Wetland C and the West Flume from Wetlands A and B. Coyotes, eastern cottontail (*Sylvilagus floridanus)*, and white-tail deer were recorded on the trail camera in Wetland C. Finally, a large tree (present prior to restoration efforts) was found cut down by a North American beaver (*Castor canadensis*) on the bank of Wetland C.

**Macroinvertebrates**

Table 6 also lists the macroinvertebrates that were observed in both Wetlands A and C. Some of the noteworthy species observed were green darner (*Anax junius*), twelve spot skimmer (*Libellula pulchella*), and common whitetail (*Plathemis lydia*).

## 4.0 WETLAND RESTORATION SUCCESS AND MAINTENANCE

The second year of monitoring of the newly restored areas of Wetland A and Wetland C at the LCP OU-1 site indicates that restoration has been largely successful. Areas that were previously dominated by a monoculture of the invasive common reed with little aquatic habitat component, are now diverse wetlands, supporting a mix of plant and animal species and containing an interspersion of aquatic habitat. The improvement in habitat value of these areas is significant. While the restoration of the newly restored areas is considered successful based on the second year of monitoring, maintenance of the areas is considered necessary to maintain the habitat value through the five-year monitoring program. Two areas that were addressed in 2014 are:

1) The encroachment of common reed grass into the restored areas

2) Eroded channel between the West Flume and Wetland C.

### 4.1 Invasive Species Control

Common reed grass occurs in various locations around the site. Most of the common reed is in adjacent areas or along the fringes of wetlands. Measures were implemented during two periods in 2014, one in late June and early July, and the other in September to control common reed grass. These measures included hand pulling of young plants in sensitive areas and application of the herbicide glyphosate directly to common reed grass in and also adjacent to the restoration sites (Figure 5). Areas outside the wetland restoration footprint were treated to reduce the likelihood of them serving as colonization sources. Post-treatment inspections indicate that the application appears to have been highly successful. Use of herbicides over water is restricted; therefore, when individual plants and/or stolons (above ground rhizomes) of common reed grass were present in standing water, they were pulled by hand to the extent practical.

## 4.2 Eroded Channel

During periods of high water, the West Flume has occasionally flowed out of its channel and into the SE corner of Wetland C (Figure 6). Over time this has created a shallow channel between the West Flume and the Wetland C pool which has little vegetated cover. Phragmites were noted colonizing this area and after Phragmites control efforts were completed in the early fall of 2014, measures were implemented to stabilize the channel and establish native vegetation. The area was first seeded with a custom seed mix (see below), 100 percent natural fiber, biodegradable erosion control fabric was installed to keep the seed in place and stabilize the channel, and then a series of coir logs were installed across the channel to reduce flow velocity during plant establishment. Finally, five potted speckled alder (*Alnus incana*) and ten black willow (*Salix nigra*) were planted along the edges of the channel, and fifty peach-leaf willow (*Salix amygdaloides*) live stakes were installed within and along the same edges (Photo 19).

**Seed mix used in Wetland C channel:**

| | |
|---|---|
| 23.66% | Indian grass (*Sorghastrum nutans*) |
| 11.98% | Switchgrass (*Panicum virgatum)* |
| 11.12% | Little bluestem (*Schizachyrium scoparium)* |
| 4.81% | Canada wild rye (*Elymus canadensis)* |
| 4.00% | Black eyed Susan (*Rudbeckia hirta)* |
| 3.99% | Autumn bentgrass (*Agrostis perennans)* |
| 3.39% | New England aster (*Symphyotrichum novae-angliae)* |
| 2.82% | Tall white beardtongue *(Penstemon digitalis)* |
| 2.00% | Carolina rose (*Rosa carolina)* |
| 2.00% | Common milkweed *(Asclepias syriaca)* |
| 1.99% | Purpletop (*Tridens flavus)* |
| 1.97% | Indian hemp (*Apocynum cannabinum)* |
| 1.96% | Wild bergamot (*Monarda fistulosa)* |
| 1.95% | Heath aster (*Symphyotrichum ericoides)* |
| 1.93% | Grass-leaved goldenrod (*Euthamia graminifolia)* |
| 1.93% | Monkey flower (*Mimulus ringens)* |
| 1.91% | Ticklegrass (*Agrostis scabra)* |
| 1.79% | Big bluestem *(Andropogon gerardii)* |
| 1.64% | Path rush (*Juncus tenuis)* |
| 1.36% | Early goldenrod (*Solidago juncea)* |
| 1.00% | Purple bergamot (*Monarda media)* |
| 0.98% | Fowl bluegrass (*Poa palustris)* |
| 0.96% | Large-leaved aster (*Eurybia macrophylla)* |
| 0.64% | Canada goldenrod (*Solidago canadensis)* |
| 0.50% | Ox-eye sunflower (*Heliopsis helianthoides)* |
| 0.50% | Cutleaf coneflower (*Rudbeckia laciniata)* |
| 0.47% | Wrinkled goldenrod (*Solidago rugosa)* |

## 5.0 SUMMARY

The wetland areas at LCP were originally dominated by a monoculture of the invasive grass common reed and had limited aquatic habitat. Design for the restoration targeted a wetter wetland system to diversify the habitats, provide areas unsuitable for common reed, and increase the aquatic habitat component. Monitoring of the restored areas was required and is described in the Operation, Maintenance and Monitoring Plan (Parsons 2009). Monitoring that occurred from 2008 to 2012 in areas initially restored in 2007 was completed in 2012. Monitoring began in 2013 in areas restored in 2011 and 2012. Results of the second year of monitoring (2014) for these restored areas are presented in the current report.

Vegetation and wildlife usage were monitored during 2014 in the restored wetlands. A vegetation cover map of the restored areas is provided (Figure 4). Vegetation in the restored wetlands was primarily emergent and aquatic bed. A total of 122 plant species were observed in the area up from 67 in 2013, most of which were wetland species. Hydrologic conditions were maintained throughout the summer and are expected to be maintained indefinitely.

Wildlife usage of the restored wetlands was extensive. Northern Leopard Frogs were particularly abundant and Bull Frogs were noted as well. Numerous wetland birds were observed in the area during the year including the Red Winged Blackbird, which is commonly known for nesting in restored wetland areas and Pied-Billed Grebe (a state threatened species). White tailed deer were common and eastern coyote and beaver were noted.

Overall, the restored areas were found to be very successful during their second year of monitoring. An area between the West Flume and Wetland C developed a shallow eroded channel due to overland flows. This area was stabilized with RECP and coir logs, seeded, and planted with trees. Common reed occurred in several locations around the restored areas. Control measures of herbicide application and hand pulling were implemented in both early summer and early fall. Additional treatment is planned, as necessary, in 2015.

## 6.0 REFERENCES

Parsons. 2004. *Final (100%) Design Report for the LCP Bridge Street (OU-1) Site*. Prepared for Honeywell, Inc. Parsons, Liverpool, NY. \

Parsons. 2009. *Operation, Maintenance, and Monitoring Plan for the LCP Bridge Street Site, Solvay, New York*. Prepared for Honeywell. Parsons, Liverpool, NY. September 2009

Parsons. 2014. *2013 Annual Operation, Maintenance and Monitoring Report. LCP Bridge Street Site (OU-1).* Prepared for Honeywell, Syracuse, New York.

TES. 2009. *Wetland Monitoring Report – Year 1 (2008) LCP Bridge Street Site*. Terrestrial Environmental Specialists, Inc., Phoenix, NY.

TES. 2010. *Wetland Monitoring Report – Year 2 (2009) LCP Bridge Street Site*. Terrestrial Environmental Specialists, Inc., Phoenix, NY.

TES. 2011. *Wetland Monitoring Report – Year 2 (2010) LCP Bridge Street Site*. Terrestrial Environmental Specialists, Inc., Phoenix, NY.

TES. 2012. *Wetland Monitoring Report – Year 2 (2011) LCP Bridge Street Site*. Terrestrial Environmental Specialists, Inc., Phoenix, NY.

TES. 2013. *Wetland Monitoring Report – Year 2 (2012) LCP Bridge Street Site*. Terrestrial Environmental Specialists, Inc., Phoenix, NY.

# TABLES

# TABLE 1
## Plant Species Observed in 2014
## LCP Bridge Street Restoration Area

### TREES

| Scientific Name[1] | Common Name | Wetland Indicator Status[2,3] | Wetland A | Wetland C |
|---|---|---|---|---|
| *Acer negundo* | Boxelder | FAC | ✓ | ✓ |
| *Acer rubrum* | Red maple | FAC | | ✓ |
| *Elaeagnus umbellata* | Autumn olive | FACU | ✓ | |
| *Fraxinus* spp. | Ash | FACW | | ✓ |
| *Populus deltoides* | Eastern cottonwood | FAC | ✓ | ✓ |
| *Rhus typhina* | Staghorn sumac | UPL | ✓ | ✓ |
| *Salix discolor* | Pussy willow | FACW | | ✓ |
| *Salix lucida* | Shining willow | FACW | | ✓ |
| *Salix* spp. | Willow | FACW | ✓ | ✓ |
| *Sambucus canadensis* | Elderberry | FACW | | ✓ |

### SHRUBS

| Scientific Name | Common Name | Wetland Indicator Status | Wetland A | Wetland C |
|---|---|---|---|---|
| *Cornus amomum* | Silky dogwood | FACW | | ✓ |
| *Cornus racemosa* | Gray Stemmed dogwood | FAC | ✓ | ✓ |
| *Cornus sericea* | Red osier dogwood | FACW | | ✓ |
| *Cornus* spp. | Dogwood | FAC | ✓ | |
| *Lonicera canadensis* | Honeysuckle | FACU | | ✓ |
| *Rhamnus cathartica* | Common buckthorn | FACU | | ✓ |

[1] **Botanical nomenclature follows Mitchell and Tucker (1997)**
[2] **Wetland Indicator Status nomenclature:**
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%). Facultative Upland (FACU): usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).
Obligate Upland (UPL): occur almost always (estimated probability >99%) in non-wetlands.
[3] References for Wetland Statuses throughout document from the following:
http://plants.usda.gov
https://gobotany.newenglandwild.org
www.wiplants.org

**TABLE 1 (CONTINUED)**
**Plant Species Observed in 2014**
**LCP Bridge Street Restoration Area**

**HERBACEOUS**

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Wetland A* | *Wetland C* |
|---|---|---|---|---|
| *Agrostis alba* | Redtop | FACW | | ✓ |
| *Agrostis capillaris* | Colonial bentgrass | FAC | | ✓ |
| *Alisma subcordatum* | American water plantain | OBL | ✓ | ✓ |
| *Ambrosia artemisiifolia* | Ragweed | FACU | ✓ | ✓ |
| *Andropogon gerardii* | Big blue stem | FACU | ✓ | |
| *Anthoxanthum odoratum* | Sweet vernal grass | FACU | | ✓ |
| *Apocynum cannabinum* | Indian hemp | FAC | ✓ | ✓ |
| *Arctium* spp. | Burdock | FACU | ✓ | |
| *Artemisia vulgaris* | Mugwort | UPL | ✓ | ✓ |
| *Asclepias incarnata* | Swamp milkweed | OBL | | ✓ |
| *Asclepias syriaca* | Common milkweed | UPL | ✓ | ✓ |
| *Astragalus* spp. | Milkvetch | FAC | ✓ | |
| *Bidens connata* | Purplestem beggartick | FACW | | ✓ |
| *Carex comosa* | Longhair sedge | OBL | ✓ | ✓ |
| *Carex scoparia* | Broom sedge | FACW | | ✓ |
| *Carex vulpinoidea* | Fox sedge | OBL | | ✓ |
| *Centaurea* spp. | Knapweed | FACU | ✓ | ✓ |
| *Cerastium arvense* | Field chickweed | FACU | | ✓ |
| *Cerastium vulgatum* | Mouse-ear chickweed | FACU | | ✓ |
| *Chenopodium album* | Lambsquarters | FACU | | ✓ |
| *Chenopodium glaucum* | Oakleaf goosefoot | FACW | ✓ | ✓ |
| *Chichorium intybus* | Chicory | FACU | ✓ | |
| *Cirsium arvense* | Canada thistle | FACU | ✓ | |
| *Cirsium vulgare* | Bull thistle | FACU | ✓ | |
| *Convolvulus arvensis* | Field bindweed | FAC | | ✓ |
| *Dactylis glomerata* | Orchard grass | FACU | | ✓ |
| *Daucus carota* | Queen Ann's lace | UPL | ✓ | ✓ |
| *Dipsacus* spp. | Teasel | FACU | ✓ | |
| *Echinochloa* spp. | Barnyard grass | FAC | | ✓ |
| *Eleocharis obtusa* | Creeping spikerush | OBL | | ✓ |

## TABLE 1 (CONTINUED)
## Plant Species Observed in 2014
## LCP Bridge Street Restoration Area

### HERBACEOUS (CONTINUED)

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Wetland A* | *Wetland C* |
|---|---|---|---|---|
| *Elymus virginicus* | Virginia wildrye | FACW | | ✓ |
| *Epilobium coloratum* | Purple-leaf willowherb | OBL | | ✓ |
| *Equisetum arvense* | Field horsetail | FAC | | ✓ |
| *Erigeron annuus* | Daisy fleabane | FACU | | ✓ |
| *Erigeron philadelphicus* | Philadelphia fleabane | FAC | ✓ | ✓ |
| *Euthamia graminifolia* | Flat-top goldenrod | FAC | | ✓ |
| *Fragaria virginiana* | Common strawberry | FACU | | ✓ |
| *Galium palustre* | Common marsh bedstraw | OBL | ✓ | |
| *Galium* spp. | Bedstraw | FAC | ✓ | ✓ |
| *Geum* spp. | Avens | FACU | | ✓ |
| *Hieracium* spp. | Hawkweed | FACU | | ✓ |
| *Hieracium vulgatum* | Common hawkweed | FACU | | ✓ |
| *Hypericum perforatum* | Common St. John's wort | UPL | ✓ | ✓ |
| *Impatiens capensis* | Jewelweed | FACW | | ✓ |
| *Juncus gerardii* | Blackgrass | OBL | | ✓ |
| *Juncus tenuis* | Poverty rush | FAC | | ✓ |
| *Lathyrus latifolius* | Everlasting pea | FACU | ✓ | |
| *Lathyrus sylvestris* | Flat pea | FACU | ✓ | |
| *Leersia oryzoides* | Rice cutgrass | OBL | ✓ | ✓ |
| *Lemna minor* | Common duckweed | OBL | | ✓ |
| *Lepidium campestre* | Field peppergrass | FACU | | ✓ |
| *Lepidium virginicum* | Virginia pepperweed | FACU | ✓ | |
| *Leucanthemum vulgare* | Ox-eye daisy | UPL | ✓ | ✓ |
| *Lotus corniculatus* | Bird's foot trefoil | FACU | ✓ | ✓ |
| *Ludwigia palustris* | Water purslane | OBL | | ✓ |
| *Lythrum salicaria* | Purple loosestrife | OBL | ✓ | ✓ |
| *Medicago lupulina* | Black medic | FACU | | ✓ |
| *Melilotus indicus* | Yellow sweet clover | FACU | ✓ | |
| *Melilotus officinalis* | White sweet clover | FACU | ✓ | ✓ |
| *Nymphaea odorata* | Water lilies | OBL | | ✓ |

## TABLE 1 (CONTINUED)
## Plant Species Observed in 2014
## LCP Bridge Street Restoration Area

### HERBACEOUS (CONTINUED)

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Wetland A* | *Wetland C* |
|---|---|---|---|---|
| *Oenothera biennis* | Common evening primrose | FACU | | ✓ |
| *Onoclea sensibilis* | Sensitive fern | FACW | | ✓ |
| *Oxalis stricta* | Yellow wood sorrel | FACU | | ✓ |
| *Panicum capillare* | Witchgrass | FAC | ✓ | ✓ |
| *Panicum virgatum* | Switchgrass | FAC | ✓ | ✓ |
| *Parthenocissus quinquefolia* | Virginia creeper | FACU | | ✓ |
| *Phalaris arundinacea* | Reed canary grass | FACW | ✓ | ✓ |
| *Phleum pretense* | Timothy | FACU | ✓ | ✓ |
| *Phragmites australis* | Common reed | FACW | ✓ | ✓ |
| *Plantago lanceolata* | Narrow-leaf plantain | FACU | | ✓ |
| *Plantago major* | Common plantain | FACU | ✓ | ✓ |
| *Poa pratensis* | Kentucky bluegrass | FACU | ✓ | |
| *Polygonum* spp. | Smartweed | FACW | ✓ | ✓ |
| *Potamogeton* spp. | Pondweed | OBL | | ✓ |
| *Potentilla canadensis* | Canadian dwarf cinquefoil | FACU | ✓ | ✓ |
| *Potentilla simplex* | Common cinquefoil | FACU | | ✓ |
| *Prunella vulgaris* | Common self-heal | FAC | | ✓ |
| *Rubus allegheniensis* | Alleghany blackberry | FACU | ✓ | |
| *Rubus* spp. | Raspberry | FAC | | ✓ |
| *Rudbeckia hirta* | Black eyed Susan | FACU | | ✓ |
| *Rumex crispus* | Curly dock | FAC | ✓ | ✓ |
| *Schoenoplectus acutus* | Hardstem bulrush | OBL | | ✓ |
| *Schoenoplectus tabernaemontani* | Softstem bulrush | OBL | ✓ | ✓ |
| *Silene vulgaris* | Bladder campion | FAC | | ✓ |
| *Solanum carolinense* | Carolina nightshade | FACU | ✓ | ✓ |
| *Solidago canadensis* | Canada goldenrod | FACU | ✓ | ✓ |
| *Sonchus arvensis* | Field sow thistle | FACU | | ✓ |
| *Sonchus oleraceus* | Common sow thistle | FACU | | ✓ |
| *Stuckenia pectinata* | Sago pondweed | OBL | ✓ | ✓ |
| *Symphyotrichum novae-angliae* | New England aster | FACW | | ✓ |
| *Symphyotrichum novi-belgii* | New York aster | FACW | | ✓ |

## TABLE 1 (CONTINUED)
## Plant Species Observed in 2014
## LCP Bridge Street Restoration Area

**HERBACEOUS (CONTINUED)**

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Wetland A* | *Wetland C* |
|---|---|---|---|---|
| *Symphyotrichum puniceum* | Purple-stemmed American aster | OBL | | ✓ |
| *Taraxacum officianale* | Dandelion | FACU | ✓ | |
| *Toxicodendron radicans* | Poison ivy | FAC | | ✓ |
| *Trifolium campestre* | Hop clover | FACU | | ✓ |
| *Trifolium hybridum* | Alsike clover | FACU | ✓ | ✓ |
| *Trifolium pratense* | Red clover | FACU | ✓ | ✓ |
| *Trifolium repens* | White clover | FACU | | ✓ |
| *Tussilago farfara* | Coltsfoot | FACU | ✓ | ✓ |
| *Typha angustifolia* | Narrowleaf cattail | OBL | | ✓ |
| *Typha latifolia* | Broadleaf cattail | OBL | ✓ | ✓ |
| *Typha* spp. | Cattail | OBL | ✓ | ✓ |
| *Utricularia vulgaris* | Bladderwort | OBL | | ✓ |
| *Verbascum thapsus* | Mullein | UPL | | ✓ |
| *Verbena hastata* | Blue vervain | FACW | | ✓ |
| *Vicia cracca* | Bird vetch | FACU | ✓ | ✓ |
| *Vitis* spp. | Grape | FACU | | ✓ |

**TABLE 2**
**Vegetation Data Summary, Wetland A, Vegetation Cover Types in 2014**
**LCP Bridge Street Restoration Area**

| ***Scientific Name*** | ***Common Name*** | ***Wetland Indicator Status*** | ***Relative Cover*** |
|---|---|---|---|
| *Alisma subcordatum* | American water plantain | OBL | 3.8 |
| *Chenopodium glaucum* | Oakleaf goosefoot | FACW | 3.8 |
| *Leersia oryzoides* | Rice cutgrass | OBL | 30.8 |
| *Panicum capillare* | Witchgrass | FAC | 3.8 |
| *Panicum virgatum* | Switchgrass | FAC | 3.8 |
| *Phalaris arundinacea* | Reed canary grass | FACW | 11.5 |
| *Phragmites australis* | Common reed | OBL | 7.7 |
| *Polygonum* spp. | Smartweed | FACW | 3.8 |
| *Populus deltoides* | Eastern cottonwood | FAC | 3.8 |
| *Stukenia pectinata* | Sago pondweed | OBL | 11.5 |
| *Trifolium hybridum* | Alsike clover | FACU | 3.8 |
| *Typha latifolia* | Broadleaf cattail | OBL | 11.5 |
| | | **TOTAL:** | **100%** |

**TABLE 3**
**Vegetation Data Summary, Wetland C, Cover Types in 2014**
**LCP Bridge Street Restoration Area**

## HERBACEOUS

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Relative Cover* |
|---|---|---|---|
| *Acer negundo* | Boxelder | FAC | 0.2 |
| *Acer rubrum* | Red maple | FAC | 0.1 |
| *Agrostis alba* | Redtop | FACW | 8.7 |
| *Agrostis capillaris* | Colonial bentgrass | FAC | 0.8 |
| *Alisma subcordatum* | American water plantain | OBL | 0.4 |
| *Ambrosia artemisiifolia* | Ragweed | FACU | 0.8 |
| *Apocynum cannabinum* | Indian hemp | FAC | 0.1 |
| *Artemesia vulgaris* | Mugwort | UPL | 1.4 |
| *Asclepias incarnata* | Swamp milkweed | FACU | 0.2 |
| *Asclepias syriaca* | Common milkweed | UPL | 0.5 |
| *Bidens connata* | Purplestem beggartick | FACW | 0.4 |
| *Carex comosa* | Longhair sedge | OBL | 0.6 |
| *Carex scoparia* | Broom sedge | FACW | 0.1 |
| *Carex vulpinoidea* | Fox sedge | OBL | 4.5 |
| *Cerastium vulgatum* | Mouse-ear chickweed | FACU | 0.2 |
| *Chenopodium album* | Lambsquarters | FACU | 0.2 |
| *Chenopodium glaucum* | Oakleaf goosefoot | FACW | 0.1 |
| *Cirsium vulgare* | Bull thistle | FACU | 0.2 |
| *Cornus racemosa* | Grey stemmed dogwood | FAC | 0.2 |
| *Daucus carota* | Queen Ann's lace | FACU | 4.3 |
| *Echinochloa* spp. | Barnyard grass | FAC | 2.3 |
| *Eleocharis obtusa* | Creeping spikerush | FACW | 1.2 |
| *Elymus virginicus* | Virginia wildrye | FACW | 0.2 |
| *Epiloium coloratum* | Purple-leaf willowherb | OBL | 0.4 |
| *Equisetum arvense* | Field horsetail | FAC | 0.9 |
| *Erigeron annuus* | Daisy fleabane | FACU | 1.8 |
| *Euthamia graminifolia* | Flat-top goldenrod | FAC | 0.9 |
| *Galium* spp. | Bedstraw | FAC | 0.4 |
| *Geum* spp. | Avens | FACU | 0.6 |
| *Hieracium vulgatum* | Common hawkweed | FACU | 0.8 |
| *Hypericum perforatum* | Common St. John's wort | UPL | 0.1 |
| *Impatiens capensis* | Jewelweed | FACW | 0.3 |

**TABLE 3 (CONTINUED)**
**Vegetation Data Summary, Wetland C, Cover Types in 2014**
**LCP Bridge Street Restoration Area**

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Relative Cover* |
|---|---|---|---|
| *Juncus gerardii* | Blackgrass | OBL | 0.4 |
| *Juncus tenuis* | Poverty rush | FAC | 0.5 |
| *Leersia oryzoides* | Rice cutgrass | OBL | 1.6 |
| *Lemna minor* | Common duckweed | OBL | 0.1 |
| *Lepidium campestre* | Field peppergrass | FACU | 0.2 |
| *Leucanthemum vulgare* | Ox-eye daisy | UPL | 0.5 |
| *Lotus corniculatus* | Birds foot trefoil | FACU | 3.1 |
| *Ludwigia palustris* | Water purslane | OBL | 0.1 |
| *Lythrum salicaria* | Purple loosestrife | OBL | 3.0 |
| *Melilotus* spp. | Sweet clover | FACU | 0.2 |
| *Oenothera biennis* | Common evening primrose | FACU | 1.8 |
| *Onoclea sensibilis* | Sensitive fern | FACW | 0.2 |
| *Oxalis stricta* | Yellow wood sorrel | FACU | 0.2 |
| *Panicum capillare* | Witchgrass | FAC | 0.1 |
| *Panicum virgatum* | Switchgrass | FAC | 0.2 |
| *Phalaris arundinacea* | Reed canary grass | FACW | 0.4 |
| *Phleum pratense* | Timothy | FACU | 0.1 |
| *Phragmites australis* | Common reed | FACW | 1.4 |
| *Plantago lanceolata* | Narrow-leaf plantain | FACU | 0.2 |
| *Plantago major* | Plantain | FACU | 0.4 |
| *Polygonum* spp. | Smartweed | FACW | 0.4 |
| *Populus deltoides* | Eastern cottonwood | FAC | 1.7 |
| *Potamogeton* spp. | Pondweed | OBL | 0.5 |
| *Potentilla simplex* | Common cinquefoil | FACU | 0.2 |
| *Prunella vulgaris* | Common self-heal | FAC | 0.1 |
| *Rudbeckia hirta* | Black eyed Susan | FACU | 0.2 |
| *Rumex crispus* | Curly dock | FAC | 0.3 |
| *Salix discolor* | Pussy willow | FACW | 0.3 |
| *Salix lucida* | Shining willow | FACW | 0.4 |
| *Schoenoplectus acutus* | Hardstem bulrush | OBL | 1.5 |
| *Schoenoplectus tabernaemontani* | Softstem bulrush | OBL | 1.8 |
| *Solanum carolinense* | Carolina nightshade | FACU | 0.1 |
| *Solidago canadensis* | Canada goldenrod | FACU | 4.0 |

**TABLE 3 (CONTINUED)**
**Vegetation Data Summary, Wetland C, Cover Types in 2014**
**LCP Bridge Street Restoration Area**

| *Scientific Name* | *Common Name* | *Wetland Indicator Status* | *Relative Cover* |
|---|---|---|---|
| *Sonchus arvensis* | Field sow thistle | FACU | 0.6 |
| *Sonchus oleraceus* | Common sow thistle | FACU | 1.3 |
| *Stukenia pectinata* | Sago pondweed | OBL | 0.4 |
| *Symphiotrichum novae-angliae* | New England aster | FACW | 0.2 |
| *Symphiotrichum puniceum* | Purple-stemmed aster | OBL | 0.2 |
| *Symphyotrichum novi-belgii* | New York aster | FACW | 0.2 |
| *Trifolium campestre* | Hop clover | FACU | 0.1 |
| *Trifolium hybridum* | Alsike clover | FACU | 0.4 |
| *Trifolium pratense* | Red clover | FACU | 0.2 |
| *Trifolium repens* | White clover | FACU | 0.1 |
| *Tussilago farfara* | Colts foot | FACU | 0.2 |
| *Typha angustifolia* | Narrowleaf cattail | OBL | 5.8 |
| *Typha latifolia* | Broadleaf cattail | OBL | 20.3 |
| *Utricularia vulgaris* | Bladderwort | OBL | 7.9 |
| *Verbascum thapsus* | Mullein | UPL | 0.2 |
| *Verbena hastate* | Blue vervain | FACW | 1.6 |
| *Viccia cracca* | Bird vetch | FACU | 1.0 |
| | | **TOTAL:** | **100%** |

**TABLE 4**
**Relative Percent Cover of Different Wetland Indicator Status Vegetation Types in 2014**
**LCP Bridge Street Restoration Area**

| *Wetland Indicator Status* | *Wetland A* | *Wetland C* |
|---|---|---|
| OBL | 65.4% | 49.4% |
| FACW | 19.2% | 16.0% |
| FAC | 11.5% | 8.6% |
| FACU | 3.9% | 23.5% |
| UPL | - | 2.5% |

**TABLE 5**
**Staff Gauge Readings taken in 2014**
**LCP Bridge Street Restoration Area**

**WETLAND A**

| Date | Reading on Gauge (feet) | Water Elevation (feet) |
|---|---|---|
| 6/17/2014 | 0 | 379.82 |
| 6/27/2014 | 1.3 | 381.12 |
| 7/9/2014 | 2.58 | 382.40 |
| 7/10/2014 | 0.86 | 380.68 |
| 7/22/2014 | 0.48 | 380.30 |
| 8/6/2014 | 1.38 | 381.20 |
| 8/19/2014 | 1.32 | 381.14 |
| 9/4/2014 | 0.88 | 380.70 |
| 9/23/2014 | 0.39 | 380.21 |
| 10/2/2014 | 0 | 379.82 |
| 10/16/2014 | 1.59 | 381.41 |
| 10/30/2014 | 1.3 | 381.12 |

**WETLAND C**

| Date | Reading on Gauge (feet) | Water Elevation (feet) |
|---|---|---|
| 8/6/2014 | 1.18 | 374.65 |
| 8/19/2014 | 1.06 | 374.53 |
| 9/4/2014 | 1.1 | 374.57 |
| 9/23/2014 | 0.92 | 374.39 |
| 10/2/2014 | 0.88 | 374.35 |
| 10/16/2014 | 1.56 | 375.03 |
| 10/30/2014 | 1.06 | 374.53 |

**TABLE 6**
**Wildlife Observed in 2014**
**LCP Bridge Street Restoration Area**

**BIRDS**

| *Scientific Name* | *Common Name* | *Wetland A* | *Wetland C* |
|---|---|---|---|
| *Actitis macularius* | Spotted Sandpiper | ✓ | |
| *Agelaius phoeniceus* | Red Winged Blackbird | | ✓ |
| *Anas platyrhynchos* | Mallard | ✓ | ✓ |
| *Ardea herodias* | Great Blue Heron | | ✓ |
| *Branta canadensis* | Canada Goose | | ✓ |
| *Butorides virescens* | Green Heron | | ✓ |
| *Calidris* spp. | Sandpiper | ✓ | |
| *Charadrius vociferus* | Killdeer | ✓ | |
| *Hirundo rustica* | Barn Swallow | | ✓ |
| *Meleagris gallopavo* | Wild Turkey | | ✓ |
| *Spinus tristis* | Gold Finch | ✓ | |
| *Zenaida macroura* | Mourning Dove | | ✓ |

**AMPHIBIANS AND REPTILES**

| *Scientific Name* | *Common Name* | *Wetland A* | *Wetland C* |
|---|---|---|---|
| *Anaxyrus americanus* | American toad | | ✓ |
| *Lithobates catesbeianus* | Bull frog | | ✓ |
| *Nerodia sipedon* | Water snake | | ✓ |
| *Rana pipiens* | Northern leopard frog | ✓ | ✓ |
| *Thamnophis sirtalis* | Garter snake | | ✓ |

**MAMMALS**

| *Scientific Name* | *Common Name* | *Wetland A* | *Wetland C* |
|---|---|---|---|
| *Canis latrans* var. | Eastern coyote | ✓ | ✓ |
| *Castor canadensis* | North American Beaver | | ✓ |
| *Odocoileus virginianus* | White tailed deer | ✓ | |
| *Sylvilagus floridanus* | Eastern Cottontail | | ✓ |

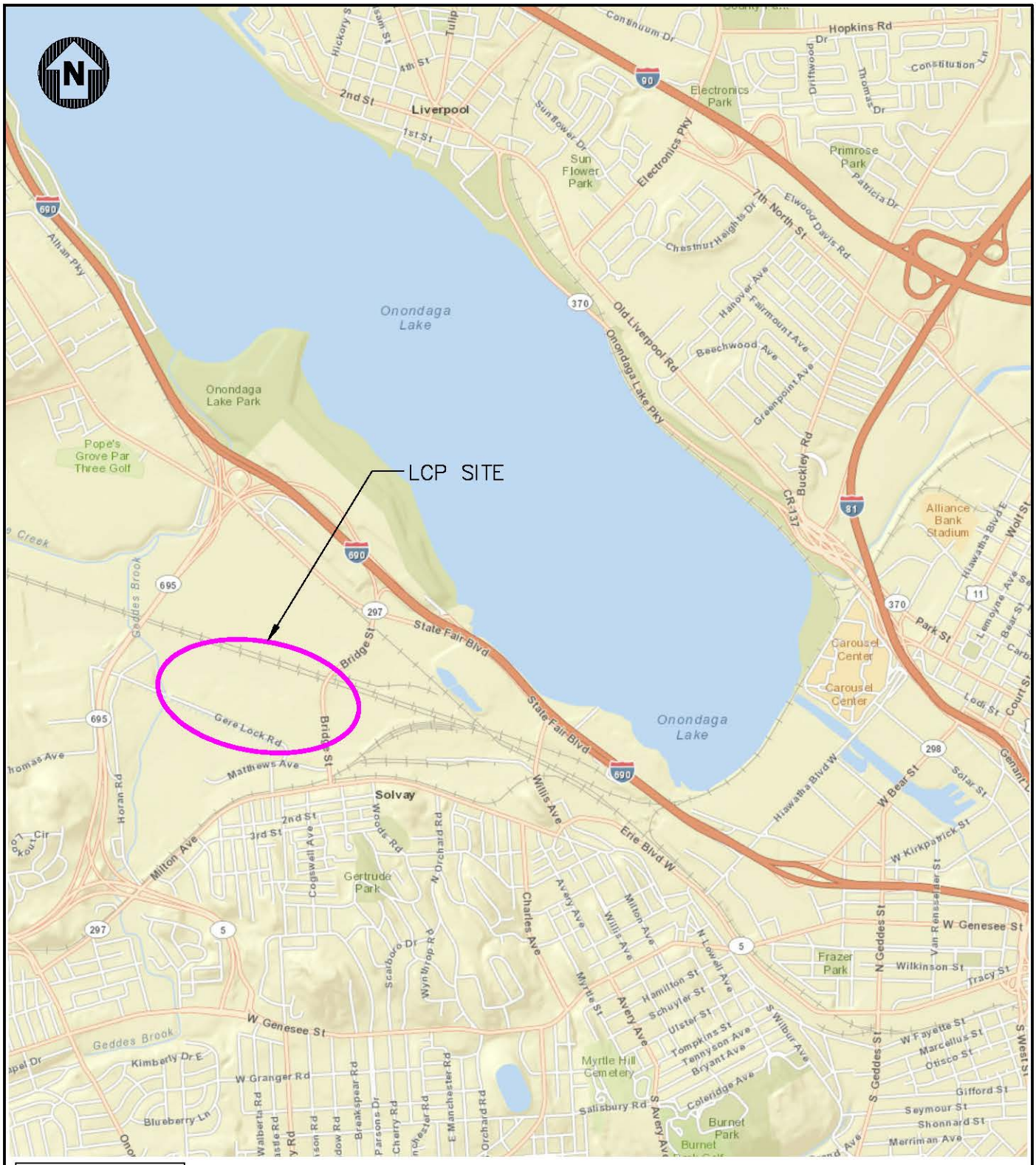
## TABLE 6 (CONTINUED)
## Wildlife Observed in 2014
## LCP Bridge Street Restoration Area

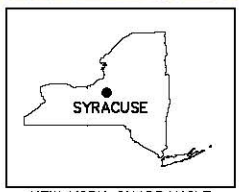
**MACROINVERTEBRATES**

| *Scientific Name* | *Common Name* | *Wetland A* | *Wetland C* |
|---|---|---|---|
| *Anax junius* | Green darner* | | |
| Epiprocta (Sub Order) | Dragonfly | ✓ | ✓ |
| *Libellula pulchella* | Twelve spot skimmer | | ✓ |
| *Plathemis lydia* | Common whitetail* | | |
| Zygoptera (Sub Order) | Damselfly | ✓ | ✓ |

*Location not specified

# FIGURES




NEW YORK QUADRANGLE

LATITUDE: N43° 04' 30"
LONGITUDE: W76° 13' 56"

SOURCE ARCVIEW GIS– WORLD STREET MAP

FIGURE 1

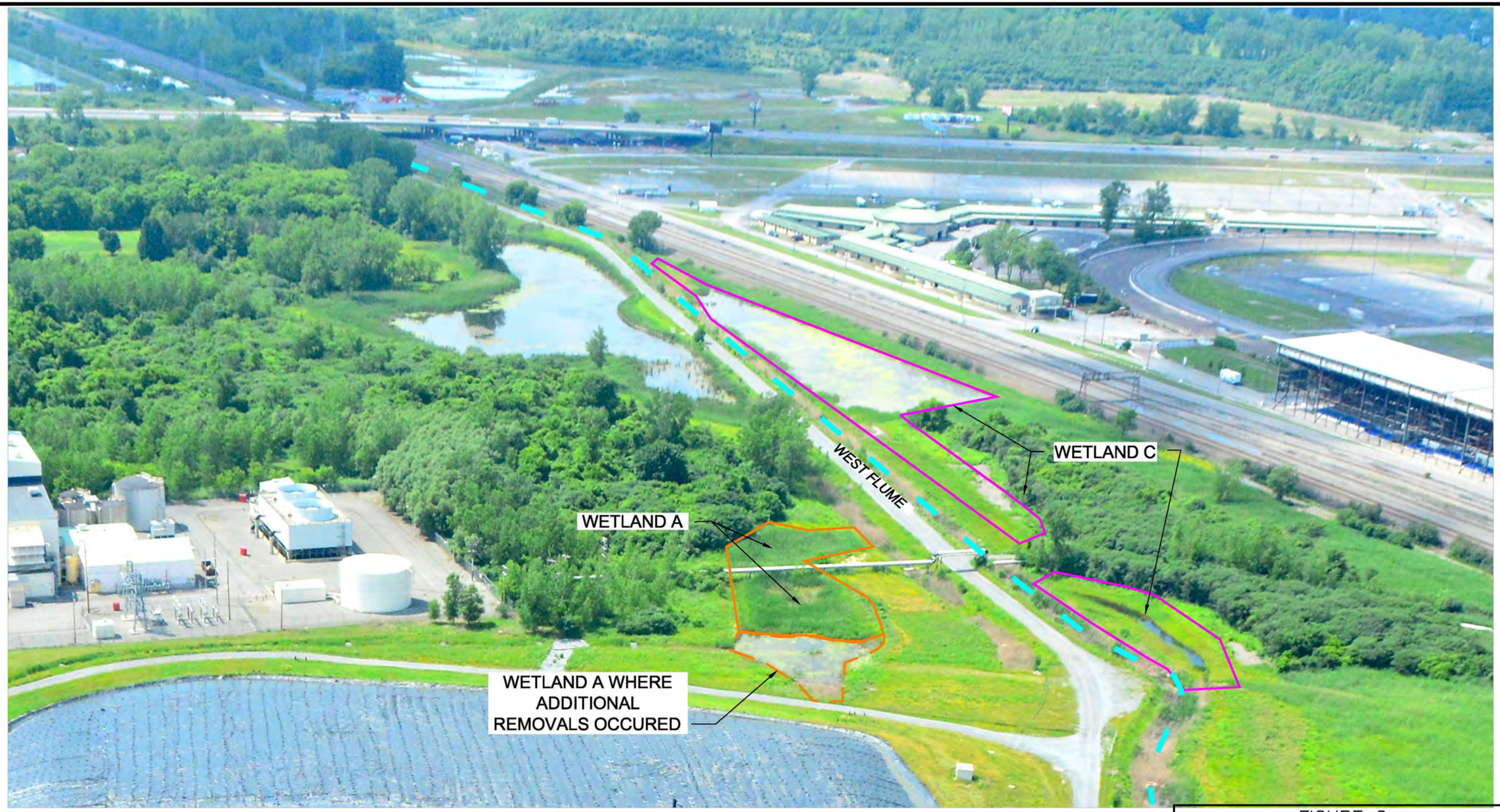
**Honeywell**

LCP BRIDGE STREET
SOLVAY, NEW YORK

LCP SITE LOCATION MAP

**PARSONS**
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL –SYR\448308 – LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\APPENDIX A FIGURES\448308–SLM–001.DWG
PLOT DATE: 8/2/2010 1:51 PM PLOTTED BY: HAWLEY, JOSHUA




NOT TO SCALE
PHOTO DATED: 6/26/2013

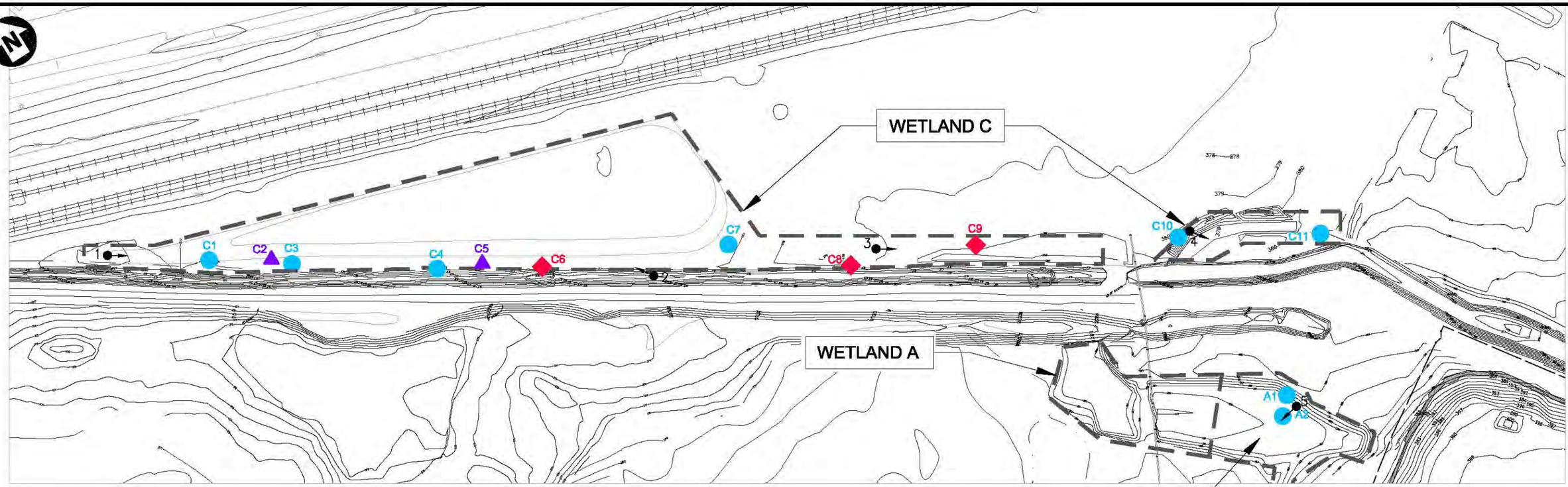
FIGURE 2

**Honeywell**
LCP BRIDGE STREET RESTORATION AREA

AERIAL PHOTOGRAPH OF
LCP WETLANDS

**PARSONS**
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\APPENDIX A FIGURES\448308-VEG-002.DWG
PLOT DATE: 2/24/2015 8:42 AM PLOTTED BY: PICKERING, KELLY




LEGEND

- RESTORATION AREA LIMIT
- EXISTING CONTOURS
- C8 MONITORING PLOT LOCATIONS FOR WETLAND EDGE & SIDE SLOPE ZONES (3)
- C7 MONITORING PLOT LOCATIONS FOR SHALLOW EMERGENT ZONES (8)
- C2 MONITORING PLOT LOCATIONS FOR DEEP EMERGENT ZONES (2)
- 1 PHOTO LOCATION

150 0 150 300

SCALE: 1"=150'

FIGURE 3

**Honeywell**

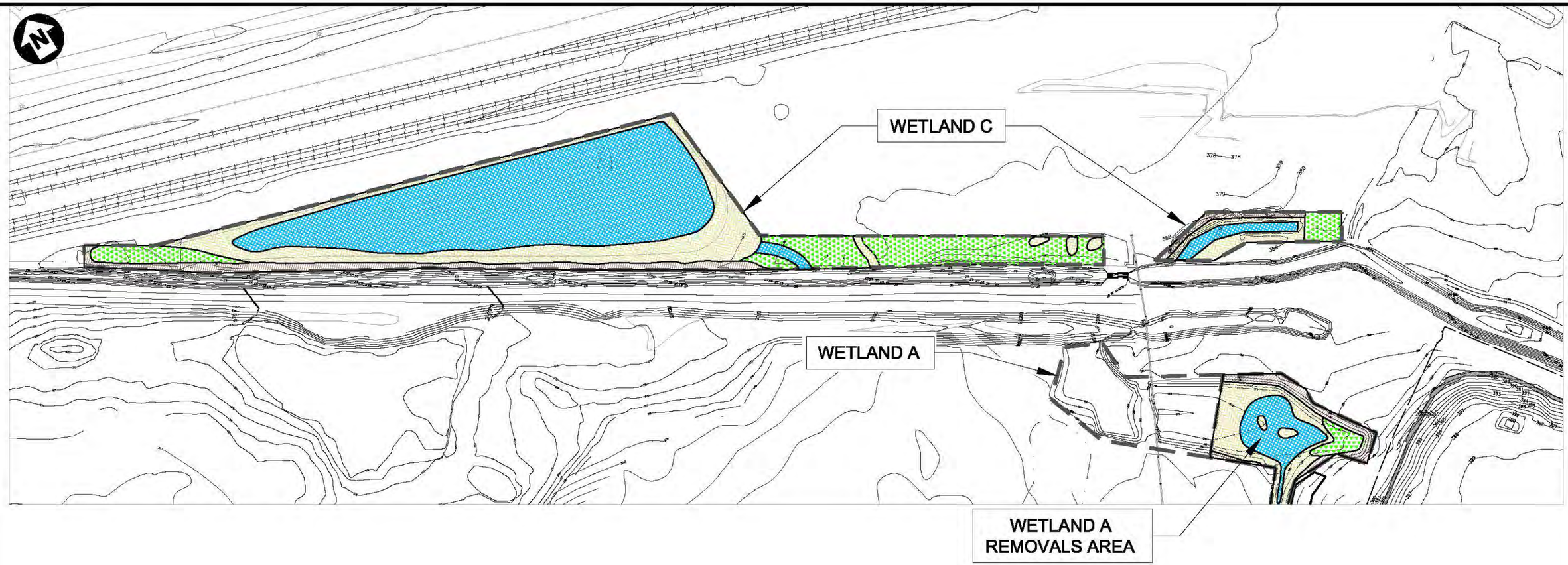
LCP OM&M

# 2014 VEGETATION MONITORING PLOT & PHOTO LOCATIONS

LCP BRIDGE STREET RESTORATION AREA

**PARSONS**
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\APPENDIX A FIGURES\448308-VEG-004.DWG
PLOT DATE: 2/24/2015 8:59 AM PLOTTED BY: PICKERING, KELLY




LEGEND

- EXISTING CONTOURS
- REMEDIATION AREA LIMITS
- WETLAND MEADOW
- EMERGENT WETLAND
- AQUATIC BED
- WETLAND SLOPES

150 0 150 300

SCALE: 1"=150'

FIGURE 4

**Honeywell**
LCP OM&M

VEGETATIVE COVER TYPES IN 2014

LCP BRIDGE STREET RESTORATION AREA

**PARSONS**
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\APPENDIX A FIGURES\448308-VEG-001.DWG
PLOT DATE: 3/3/2015 4:16 PM PLOTTED BY: CAGIDE-ELMER, NATALIA


LEGEND

COMMON REED GRASS (*PHRAGMITES AUSTRALIS*) AREAS TREATED 6/23/14

COMMON REED GRASS (*PHRAGMITES AUSTRALIS*) AREAS TREATED 9/9/14

NOTE:

FIGURE ONLY DEPICTS AREAS WHERE INVASIVE SPECIES WERE PRESENT AND SHOULD NOT BE USED TO DETERMINE ABUNDANCE OR DENSITY OF INVASIVE SPECIES.

300 150 0 300 600

SCALE: 1"=300'

FIGURE 5

**Honeywell**

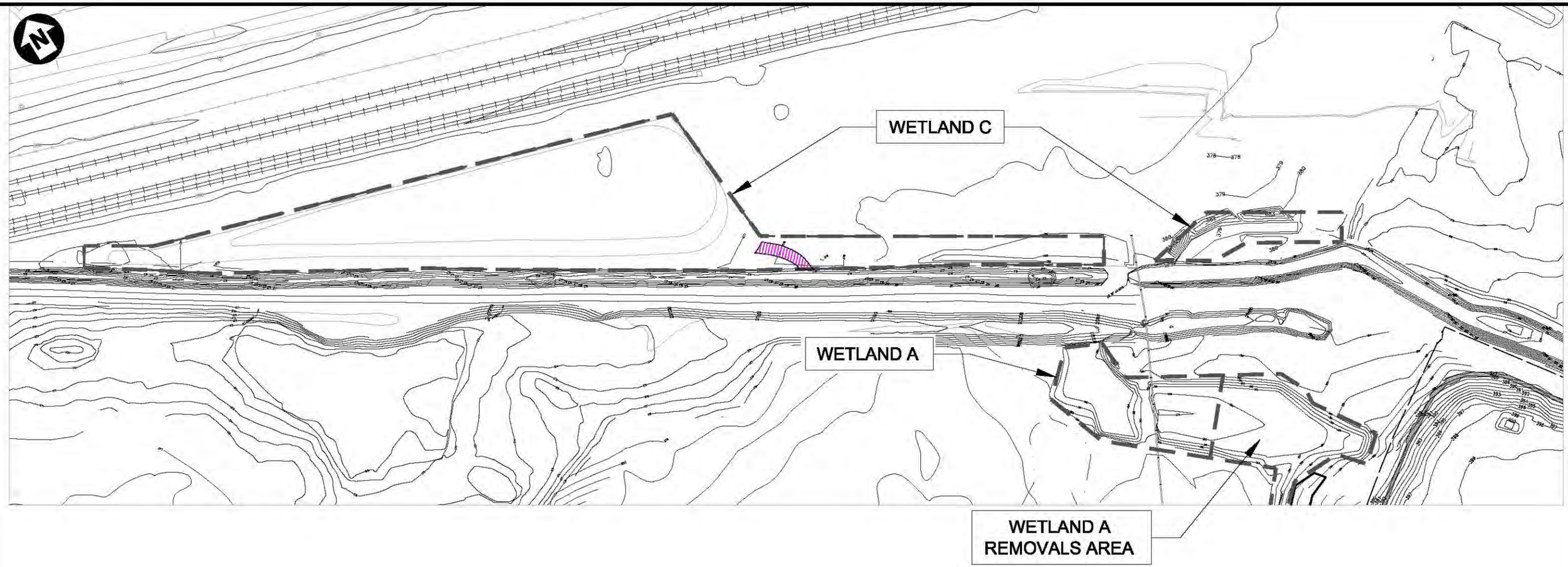
LCP OM&M

# 2014 INVASIVE SPECIES CONTROL

LCP BRIDGE STREET RESTORATION AREA

**PARSONS**
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\APPENDIX A FIGURES\448308-VEG-004.DWG
PLOT DATE: 2/25/2015 11:31 AM PLOTTED BY: PICKERING, KELLY




150 0 150 300

SCALE: 1"=150'

LEGEND

EROSION CONTROL MEASURES

FIGURE 6

**Honeywell**
LCP OM&M

LCP FOCUS AREAS FOR 2014 RESTORATION AREA
LCP BRIDGE STREET RESTORATION AREA

**PARSONS**
310 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\448308 - LCP OU1 2013\10.0 TECHNICAL CATEGORIES\10.2 CAD\FIGURES\2014\APPENDIX A FIGURES\448308-VEG-001.DWG
PLOT DATE: 3/3/2015 2:35 PM PLOTTED BY: CAGIDE-ELMER, NATALIA

# ATTACHMENT 1

# MONITORING DATA SHEETS

**Vegetation Monitoring Data Sheet**
**LCP Wetland A, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Aquatic Bed
Water Depth: 3 inches

Photo no. & Direction: 1N
Plot number: A1
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Rice cutgrass (*Leersia oryzoides* ) | OBL | 8 |
| 2. | Reed Canarygrass (*Phalaris arundinacea* ) | FACW | 3 |
| 3. | Smartweed (*Polygonum* sp.) | FACW | 1 |
| 4. | Alsike clover (*Trifolium hybridum* ) | FACU | 1 |
| 5. | Witchgrass (*Panicum capillare* ) | FAC | 1 |
| 6. | Switchgrass (*Panicum virgatum* ) | FAC | 1 |
| 7. | American water plantain (*Alisma subcordatum* ) | OBL | 1 |
| 8. | Oakleaf goosefoot (*Chenopodium glaucum* ) | FACW | 1 |
| 9. | Eastern cottonwood (*Populus deltoides* ) x1 | FAC | 1 |
| 10. | | | |
| 11. | | | |
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| 20. | | | |

**TOTAL PERCENT AREAL COVER: 18%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Algae also present
A small portion of the plot was Wetland Slope.

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland A, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Aquatic Bed
Water Depth: 1.3ft

Photo no. & Direction: 2S
Plot number: A2
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Common reed (*Phragmites australis* ) | OBL | 2 |
| 2. | Broadleaf cattail (*Typha latifolia* ) | OBL | 3 |
| 3. | Sago pondweed (*Stuckenia pectinata* ) | OBL | 3 |
| 4. | | | |
| 5. | | | |
| 6. | | | |
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| 20. | | | |

**TOTAL PERCENT AREAL COVER: 8%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Algae also present

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Emergent Wetland
Water Depth: 1 inch

Photo no. & Direction: 4S
Plot number: C2
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | American water plantain (*Alisma subcordatum* ) | OBL | 3 |
| 2. | Broadleaf cattail (*Typha latifolia* ) | OBL | 55 |
| 3. | Creeping spikerush (*Eleocharis obtusa* ) | FACW | 15 |
| 4. | Rice cutgrass (*Leersia oryzoides* ) | OBL | 1 |
| 5. | Smartweed (*Polygonum* sp.) | FACW | 1 |
| 6. | Common duckweed (*Lemna minor* ) | OBL | 1 |
| 7. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 2 |
| 8. | Pondweed (*Potamogeton spp.* ) | OBL | 7 |
| 9. | Eastern cottonwood (*Populus deltoides* ) x5 | FAC | 1 |
| 10. | | | |
| 11. | | | |
| 12. | | | |
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| 19. | | | |
| 20. | | | |

**TOTAL PERCENT AREAL COVER: 86%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Emergent Wetland/Wetland Slope
Water Depth: 0 inches

Photo no. & Direction: 5N
Plot number: C3
Data Sheet Number: 1 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Blue vervain (*Verbena hastata* ) | FACW | 5 |
| 2. | Redtop (*Agrostis alba* ) | FACW | 6 |
| 3. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 15 |
| 4. | Broadleaf cattail (*Typha latifolia* ) | OBL | 15 |
| 5. | Narrowleaf cattail (*Typha angustifolia* ) | OBL | 5 |
| 6. | Daisy fleabane (*Erigeron annuus* ) | FACU | 2 |
| 7. | Flat-top goldenrod (*Euthamia graminifolia* ) | FAC | 1 |
| 8. | Mugwort (*Artemisia vulgaris* ) | UPL | 2 |
| 9. | Queen Anne's lace (*Daucus carota* ) | FACU | 1 |
| 10. | Plantain (*Plantago major* ) | FACU | 2 |
| 11. | Common self-heal (*Prunella vulgaris* ) | FAC | 1 |
| 12. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 1 |
| 13. | Canada goldenrod (*Solidago canadensis* ) | FACU | 1 |
| 14. | Broom sedge (*Carex scoparia* ) | FACW | 1 |
| 15. | Jewelweed (*Impatiens capensis* ) | FACW | 1 |
| 16. | Blackgrass (*Juncus gerardii* ) | OBL | 5 |
| 17. | Colts foot (*Tussilago farfara* ) | FACU | 1 |
| 18. | Red maple (*Acer rubrum* ) seedlings x1 | FAC | 1 |
| 19. | Longhair sedge (*Carex comosa* ) | OBL | 8 |
| 20. | Swamp milkweed (*Asclepias incarnata* ) | FACU | 3 |

**TOTAL PERCENT AREAL COVER: 96%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 78% with cover from page 2

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Emergent Wetland
Water Depth: 0 inches

Photo no. & Direction: 5N
Plot number: C3
Data Sheet Number: 2 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Softstem bulrush (*Scirpus tabernaemontani* ) | OBL | 5 |
| 2. | White clover (*Trifolium repens* ) | FACU | 1 |
| 3. | Common sow thistle (*Sonchus oleraceus* ) | FACU | 1 |
| 4. | Rice cutgrass (*Leersia oryzoides* ) | OBL | 5 |
| 5. | Fox sedge (*Carex vulpinoidea* ) | OBL | 5 |
| 6. | Purplestem beggartick (*Bidens connata* ) | FACW | 2 |
| 7. | | | |
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| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |

**TOTAL PERCENT AREAL COVER: 96%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 78% with cover from page 1

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Emergent Wetland/Wetland Slope/Aqua
Water Depth: 0 inches

Photo no. & Direction: 6N
Plot number: C4
Data Sheet Number: 1 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Field sow thistle (*Sonchus arvensis* ) | FACU | 8 |
| 2. | Common reed (*Phragmites australis* ) | FACW | 8 |
| 3. | Common milkweed (*Asclepias syriaca* ) | UPL | 6 |
| 4. | Ox-eye daisy (*Leucanthemum vulgare* ) | UPL | 2 |
| 5. | Queen Anne's lace (*Daucus carota* ) | FACU | 2 |
| 6. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 1 |
| 7. | Jewelweed (*Impatiens capensis* ) | FACW | 3 |
| 8. | Broadleaf cattail (*Typha latifolia* ) | OBL | 20 |
| 9. | Water purslane (*Ludwigia palustris* ) | OBL | 1 |
| 10. | Blue vervain (*Verbena hastata* ) | FACW | 1 |
| 11. | Mugwort (*Artemisia vulgaris* ) | UPL | 2 |
| 12. | Field horsetail (*Equisetum arvense* ) | FAC | 10 |
| 13. | Birds foot trefoil (*Lotus corniculatus* ) | FACU | 1 |
| 14. | Purple-leaf willowherb (*Epilobium coloratum* ) | OBL | 5 |
| 15. | Redtop (*Agrostis alba* ) | FACW | 1 |
| 16. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 2 |
| 17. | Smartweed (*Polygonum* sp.) | FACW | 2 |
| 18. | Curly dock (*Rumex crispus* ) | FAC | 2 |
| 19. | Avens (*Geum* spp.) | FACU | 1 |
| 20. | Alsike clover (*Trifolium hybridum* ) | FACU | 1 |

**TOTAL PERCENT AREAL COVER: 96%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 96% with cover from page 2

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
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Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Emergent Wetland/Wetland Slope
Water Depth: 0 inches

Photo no. & Direction: 6N
Plot number: C4
Data Sheet Number: 2 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Canada goldenrod (*Solidago canadensis* ) | FACU | 2 |
| 2. | Common duckweed (*Lemna minor* ) | OBL | 0.2 |
| 3. | Bladderwort (*Utricularia vulgaris* ) | OBL | 20 |
| 4. | Eastern cottonwood (*Populus deltoides* ) x1 | FAC | 5 |
| 5. | | | |
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| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |

**TOTAL PERCENT AREAL COVER: 96%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 96% with cover from page 1
A small portion of the plot was Aquatic Bed.

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Wetland Slope
Water Depth: 5 inches

Photo no. & Direction: 7N
Plot number: C5
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Broadleaf cattail (*Typha latifolia* ) | OBL | 30 |
| 2. | Narrowleaf cattail (*Typha angustifolia* ) | OBL | 10 |
| 3. | American water plantain (*Alisma subcordatum* ) | OBL | 1.0 |
| 4. | Bladderwort (*Utricularia vulgaris* ) | OBL | 80 |
| 5. | Common duckweed (*Lemna minor* ) | OBL | 0.2 |
| 6. | | | |
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| 19. | | | |
| 20. | | | |

**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
A small portion of the plot was Aquatic Bed.

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
Obligate Wetland (OBL): occur almost always (estimated probability >99%) in wetlands.
Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 9/23/2014
Cover type: Emergent Wetland/Wetland Slope
Water Depth: 0-2 inches

Photo no. & Direction: 8N
Plot number: C6
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Queen Anne's lace (*Daucus carota* ) | FACU | 5 |
| 2. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 3 |
| 3. | Field peppergrass (*Lepidium campestre* ) | FACU | 2 |
| 4. | Common evening primrose (*Oenothera biennis* ) | FACU | 14 |
| 5. | Mugwort (*Artemisia vulgaris* ) | UPL | 3 |
| 6. | Switchgrass (*Panicum virgatum* ) | FAC | 2 |
| 7. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 7 |
| 8. | Common hawkweed (*Hieracium vulgatum* ) | FACU | 10 |
| 9. | Avens (Geum spp.) | FACU | 7 |
| 10. | Bird vetch (*Vicia cracca* ) | FACU | 10 |
| 11. | Mullein (*Verbascum thapsus* ) | UPL | 2 |
| 12. | Bedstraw (*Galium spp.* ) | FAC | 5 |
| 13. | Yellow wood sorrel (*Oxalis stricta* ) | FACU | 2 |
| 14. | Mouse-ear chickweed (*Cerastium vulgatum* ) | FACU | 2 |
| 15. | Narrowleaf cattail (*Typha angustifolia* ) | OBL | 25 |
| 16. | Ox-eye daisy (*Leucanthemum vulgare* ) | UPL | 2 |
| 17. | Common reed (*Phragmites australis* ) | FACW | 10 |
| 18. | Canada goldenrod (*Solidago canadensis* ) | FACU | 2 |
| 19. | Lambsquarters (*Chenopodium album* ) | FACU | 2 |
| 20. | Broadleaf cattail (*Typha latifolia* ) | OBL | 7 |
| 21. | Sago pondweed (*Stuckenia pectinata* ) | OBL | 5 |

**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
A small portion of the plot was Aquatic Bed.

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland
Water Depth: 0 inches

Photo no. & Direction: 9N
Plot number: C7
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Broadleaf cattail (*Typha latifolia* ) | OBL | 65 |
| 2. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 1 |
| 3. | Smartweed (*Polygonum* sp.) | FACW | 1 |
| 4. | Carolina nightshade (*Solanum carolinense* ) | FACU | 1 |
| 5. | Plantain (*Plantago major* ) | FACU | 1 |
| 6. | Curly dock (*Rumex crispus* ) | FAC | 1 |
| 7. | Mugwort (*Artemisia vulgaris* ) | UPL | 1 |
| 8. | Alsike clover (*Trifolium hybridum* ) | FACU | 1 |
| 9. | American water plantain (*Alisma subcordatum* ) | OBL | 1 |
| 10. | Softstem bulrush (*Scirpus tabernaemontani* ) | OBL | 1 |
| 11. | Purplestem beggartick (*Bidens connata* ) | FACW | 1 |
| 12. | Queen Anne's lace (*Daucus carota* ) | FACU | 1 |
| 13. | Poverty rush (*Juncus tenuis* ) | FAC | 2 |
| 14. | Witchgrass (*Panicum capillare* ) | FAC | 1 |
| 15. | Oakleaf goosefoot (*Chenopodium glaucum* ) | FACW | 1 |
| 16. | Boxelder (*Acer negundo* ) x10 | FAC | 1 |
| 17. | Eastern cottonwood (*Populus deltoides* ) x5 | FAC | 1 |
| 18. | Narrowleaf cattail (*Typha angustifolia* ) | OBL | 20 |
| 19. | | | |
| 20. | | | |

**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Wet Meadow
Water Depth: 0 inches

Photo no. & Direction: 10E
Plot number: C8
Data Sheet Number: 1 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Birds foot trefoil (*Lotus corniculatus* ) | FACU | 15 |
| 2. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 6 |
| 3. | Queen Anne's lace (*Daucus carota* ) | FACU | 15 |
| 4. | Daisy fleabane (*Erigeron annuus* ) | FACU | 14 |
| 5. | New York aster (*Symphyotrichum novi-belgii* ) | FACW | 3 |
| 6. | Canada goldenrod (*Solidago canadensis* ) | FACU | 12 |
| 7. | Virginia wildrye (*Elymus virginicus* ) | FACW | 1 |
| 8. | Redtop (*Agrostis alba* ) | FACW | 1 |
| 9. | Alsike clover (*Trifolium hybridum* ) | FACU | 2 |
| 10. | Poverty rush (*Juncus tenuis* ) | FAC | 1 |
| 11. | Red clover (*Trifolium pratense* ) | FACU | 1 |
| 12. | Purplestem beggartick (*Bidens connata* ) | FACW | 2 |
| 13. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 1 |
| 14. | Smartweed (*Polygonum* sp.) | FACW | 1 |
| 15. | Narrow-leaf plantain (*Plantago lanceolata* ) | FACU | 1 |
| 16. | Plantain (*Plantago major* ) | FACU | 1 |
| 17. | Field peppergrass (*Lepidium campestre* ) | FACU | 1 |
| 18. | Indian hemp (*Apocynum cannabinum* ) | FAC | 1 |
| 19. | Eastern cottonwood (*Populus deltoides* ) x1 | FAC | 5 |
| 20. | Curly dock (*Rumex crispus* ) | FAC | 1 |

**TOTAL PERCENT AREAL COVER: 97%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
75% including cover from page 2
Leopard Frog

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/6/2014
Cover type: Wet Meadow
Water Depth: 0 inches

Photo no. & Direction: 10E
Plot number: C8
Data Sheet Number: 2 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Flat-top goldenrod (*Euthamia graminifolia* ) | FAC | 5 |
| 2. | Mugwort (*Artemisia vulgaris* ) | UPL | 5 |
| 3. | Pussy willow (*Salix discolor* ) x1 | FACW | 2 |
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**TOTAL PERCENT AREAL COVER: 97%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
75% including cover from page 1

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Wet Meadow
Water Depth: 0 inches

Photo no. & Direction: 11E
Plot number: C9
Data Sheet Number: 1 of 1

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Canada goldenrod (*Solidago canadensis* ) | FACU | 30 |
| 2. | Birds foot trefoil (*Lotus corniculatus* ) | FACU | 10 |
| 3. | Redtop (*Agrostis alba* ) | FACW | 35 |
| 4. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 2 |
| 5. | Mugwort (*Artemisia vulgaris* ) | UPL | 4 |
| 6. | Daisy fleabane (*Erigeron annuus* ) | FACU | 1 |
| 7. | Common cinquefoil (*Potentilla simplex* ) | FACU | 1 |
| 8. | Flat-top goldenrod (*Euthamia graminifolia* ) | FAC | 3 |
| 9. | Timothy (*Phleum pratense* ) | FACU | 1 |
| 10. | Queen Anne's lace (*Daucus carota* ) | FACU | 9 |
| 11. | Blackeyed Susan (*Rudbeckia hirta* ) | FACU | 1 |
| 12. | Virginia wildrye (*Elymus virginicus* ) | FACW | 1 |
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**TOTAL PERCENT AREAL COVER: 62%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative Wetland (FACW): usually occur in wetlands (est. prob. 67%-99%), but occasionally found in non-wetlands.
Facultative (FAC): equally likely to occur in wetlands or non-wetlands (est. prob. 34%-66%).
Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Wetland Slope
Water Depth: 1 inch

Photo no. & Direction: 12E
Plot number: C10
Data Sheet Number: 1 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Canada goldenrod (*Solidago canadensis* ) | FACU | 3 |
| 2. | Redtop (*Agrostis alba* ) | FACW | 35 |
| 3. | Daisy fleabane (*Erigeron annuus* ) | FACU | 1 |
| 4. | Purple-stemmed aster (*Symphiotrichum puniceum* ) | OBL | 1 |
| 5. | Sweet clover (*Melilotus* spp.) | FACU | 1 |
| 6. | Birds foot trefoil (*Lotus corniculatus* ) | FACU | 4 |
| 7. | Blue vervain (*Verbena hastata* ) | FACW | 5 |
| 8. | Fox sedge (*Carex vulpinoidea* ) | OBL | 15 |
| 9. | Softstem bulrush (*Scirpus tabernaemontani* ) | OBL | 10 |
| 10. | Broadleaf cattail (*Typha latifolia* ) | OBL | 50 |
| 11. | Bird vetch (*Vicia cracca* ) | FACU | 1 |
| 12. | Blackeyed Susan (*Rudbeckia hirta* ) | FACU | 1 |
| 13. | Queen Anne's lace (*Daucus carota* ) | FACU | 3 |
| 14. | Common sow thistle (*Sonchus oleraceus* ) | FACU | 1 |
| 15. | Purple loosestrife (*Lythrum salicaria* ) | OBL | 1 |
| 16. | Flat-top goldenrod (*Euthamia graminifolia* ) | FAC | 2 |
| 17. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 1 |
| 18. | Narrow-leaf plantain (*Plantago lanceolata* ) | FACU | 1 |
| 19. | Colts foot (*Tussilago farfara* ) | FACU | 1 |
| 20. | Common duckweed (*Lemna minor* ) | OBL | 0.2 |

**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 100% with cover from page 2

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Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Wetland Slope
Water Depth: 1 inch

Photo no. & Direction: 12E
Plot number: C10
Data Sheet Number: 2 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Eastern cottonwood (*Populus deltoides* ) x5 | FAC | 10 |
| 2. | Grey stemmed dogwood (*Cornus racemosa* ) x1 | FAC | 2 |
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**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 100% with cover from page 1

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Wet Meadow
Water Depth: 0 inches

Photo no. & Direction: 13W
Plot number: C11
Data Sheet Number: 1 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Canada goldenrod (*Solidago canadensis* ) | FACU | 2 |
| 2. | Birds foot trefoil (*Lotus corniculatus* ) | FACU | 8 |
| 3. | Daisy fleabane (*Erigeron annuus* ) | FACU | 1 |
| 4. | Redtop (*Agrostis alba* ) | FACW | 20 |
| 5. | Narrow-leaf plantain (*Plantago lanceolata* ) | FACU | 1 |
| 6. | Barnyard grass (*Echinochloa* sp.) | FACU | 30 |
| 7. | Ragweed (*Ambrosia artemisiifolia* ) | FACU | 1 |
| 8. | Queen Anne's lace (*Daucus carota* ) | FACU | 5 |
| 9. | Red clover (*Trifolium pratense* ) | FACU | 1 |
| 10. | Alsike clover (*Trifolium hybridum* ) | FACU | 1 |
| 11. | Colonial bentgrass (*Agrostis capillaris* ) | FAC | 10 |
| 12. | Hop clover (*Trifolium campestre* ) | FACU | 1 |
| 13. | Common cinquefoil (*Potentilla simplex* ) | FACU | 1 |
| 14. | Mugwort (*Artemisia vulgaris* ) | UPL | 1 |
| 15. | Plantain (*Plantago major* ) | FACU | 1 |
| 16. | Broadleaf cattail (*Typha latifolia* ) | OBL | 15 |
| 17. | Common St. John's wort (*Hypericum perforatum* ) | UPL | 1 |
| 18. | Poverty rush (*Juncus tenuis* ) | FAC | 3 |
| 19. | Sensitive fern (*Onoclea sensibilis* ) | FACW | 2 |
| 20. | Sweet clover (*Melilotus* spp.) | FACU | 1.0 |

**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 100% with cover from page 2

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Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

**Vegetation Monitoring Data Sheet**
**LCP Wetland C, Town of Geddes, Onondaga County, New York**

Date: 8/7/2014
Cover type: Emergent Wetland/Wet Meadow
Water Depth: 0 inches

Photo no. & Direction: 13W
Plot number: C11
Data Sheet Number: 2 of 2

| nº | SPECIES (Scientific & Common Name) | Indicator Status | Species Areal Cover (%) |
|---|---|---|---|
| 1. | Field horsetail (*Equisetum arvense* ) | FAC | 2 |
| 2. | Purple-stemmed aster (*Symphiotrichum puniceum* ) | OBL | 1 |
| 3. | Softstem bulrush (*Scirpus tabernaemontani* ) | OBL | 8 |
| 4. | Flat-top goldenrod (*Euthamia graminifolia* ) | FAC | 1 |
| 5. | Fox sedge (*Carex vulpinoidea* ) | OBL | 5 |
| 6. | Pussy willow (*Salix discolor* ) x1 | FACW | 2 |
| 7. | Shining willow (*Salix lucida* ) x1 | FACW | 5 |
| 8. | Boxelder (*Acer negundo* ) x1 | FAC | 1 |
| 9. | Bladderwort (*Utricularia vulgaris* ) | OBL | 2 |
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**TOTAL PERCENT AREAL COVER: 100%**

**COMMENTS - ADDITIONAL PLANT/WILDLIFE SPECIES:**
Total 100% with cover from page 1

**INDICATOR STATUS NOTATIONS:** *(Relative to New York, Region 1 - http://plants.usda.gov/java/)*
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Facultative Upland (FACU): usually occur in non-wetlands (est. prob. 67%-99%), occasionally in wetlands (prob. 1%-33%).
Obligate Upland (UPL): occur almost always (est. prob. >99%) in non-wetlands.

# ATTACHMENT 2

# REPRESENTATIVE PHOTOGRAPHS

2014 LCP OMM PHOTO LOG

PARSONS

| Photo Number | Photo ID. | Location | Description |
|---|---|---|---|
| 1 | DSCN3903.jpg | Wetland A - A-1 | Plot central stake with surrounding vegetation |
| 2 | DSCN3892.jpg | Wetland A - A-2 | Plot central stake with surrounding vegetation |
| 3 | DSCN6180.jpg | Wetland C - C-1 | Plot central stake with surrounding vegetation |
| 4 | DSCN3248.jpg | Wetland C - C-2 | Plot central stake with surrounding vegetation |
| 5 | DSCN3268.jpg | Wetland C - C-3 | Plot central stake with surrounding vegetation |
| 6 | DSCN3348.jpg | Wetland C - C-4 | Plot central stake with surrounding vegetation |
| 7 | DSCN3454.jpg | Wetland C - C-5 | Plot central stake with surrounding vegetation |
| 8 | DSCN5173.jpg | Wetland C - C-6 | Plot central stake with surrounding vegetation |
| 9 | DSCN3562.jpg | Wetland C - C-7 | Plot central stake with surrounding vegetation |
| 10 | DSCN3617.jpg | Wetland C - C-8 | Plot central stake with surrounding vegetation |
| 11 | DSCN3701.jpg | Wetland C - C-9 | Plot central stake with surrounding vegetation |
| 12 | DSCN3740.jpg | Wetland C - C-10 | Plot central stake with surrounding vegetation |
| 13 | DSCN3799.jpg | Wetland C - C-11 | Plot central stake with surrounding vegetation |
| 14 | PhotoLoc1Pan_92314.jpg | Photo Location 1 | View from Location 1 with the direction indicated in Figure 3 |
| 15 | PhotoLoc2Pan_92314.jpg | Photo Location 2 | View from Location 2 with the direction indicated in Figure 3 |
| 16 | PhotoLoc3Pan_92314.jpg | Photo Location 3 | View from Location 3 with the direction indicated in Figure 3 |
| 17 | PhotoLoc4Pan_92314.jpg | Photo Location 4 | View from Location 4 with the direction indicated in Figure 3 |
| 18 | PhotoLoc5Pan_92314.jpg | Photo Location 5 | View from Location 5 with the direction indicated in Figure 3 |
| 19 | DSCN0345.jpg | Eroded channel maintenance | View of erosion control efforts in SE corner of Wetland C |

Photo 1


Photo 2

Photo 3


Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

Photo 13

Photo 14

Photo 15

Photo 16

Photo 15

Photo 16

Photo 16