Monitoring Report

OLD BAILEY WOODS

Buffalo, NY

2018

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TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1 INTRODUCTION

1.1 Background

This project is designed to restore and improve habitat at Old Bailey Woods. Ecological restoration at this site will contribute to the Buffalo Area of Concern (AOC) objective to improve Buffalo River shoreline habitat.

1.2 The Project Area and Site Description

The Old Bailey Woods site is located on the left descending bank of the Buffalo River, downstream of the confluence of the Buffalo River and Cazenovia Creek, and is accessible from land via Bailey Avenue. The project area is composed of two parcels, one owned by the City of Buffalo and one owned by the Buffalo Urban Renewal Agency. Iron Mountain, a storage and information management company, operates a large facility in the adjacent parcel, and holds an easement to the City of Buffalo parcel for access and maintenance purposes. The Old Bailey Woods site is not actively maintained, and public access is not encouraged.

Restoration at Old Bailey Woods is intended to provide 807 linear feet of shoreline habitat and 3.25 acres of upland and riparian buffer habitat restoration and enhancements, representing approximately 4% of the shoreline restoration goal for the AOC. Prior to restoration, Buffalo Niagara Waterkeeper (Waterkeeper) the understory of the forest was dominated by non-native Japanese knotweed (*Reynoutria japonica,* also called *Fallopia japonica*). Other invasive species such as tree of heaven (*Ailanthus altissima*), garlic mustard (*Alliaria petiolata*), and dame's rocket (*Hesperis matronalis*) were also present. Cottonwood (*Populus deltoides*) was the dominant canopy tree. Witch-hazel (*Hamamelis virginiana*), dogwoods (*Cornus spp*.), and box elder (*Acer negundo*) were common understory trees. Other species noted include snake root (*Eupatorium rugosum*), stinging nettle (*Urtica dioica*), asters (*Symphotrichum* spp.), waterleaf (*Hydrophyllum virginianum*), iris (*Iris* spp.), goldenrods (*Solidago* spp.), and jewelweed (*Impatiens* sp.) were abundant in the understory.

1.3 Habitat Restoration

The goals for this project were to improve ecological function and resiliency of upland and riparian forest along the Buffalo River as well as protect a severely eroding shoreline.

The full project plans are shown in Appendix A. Restoration design plans called for the treatment and removal of several non-native, invasive tree, shrub, and herbaceous species. Methods for treatment and removal were determined by the treatment contractor and approved by Waterkeeper. The invasive species treatment plan has not been made available.

The project plans included instructions for plant installation and maintenance. Revisions were made to the planting plan based on plant availability and field conditions. Appendix A Plate A.1 shows these revisions, as reported by the planting contractor, Applied Ecological Services. Twelve species of native trees, seventeen species of native shrubs, two species of woody vines, nineteen species of riparian and upland herbaceous plants as plugs, seven species of emergent herbs, and a seed mix were installed at the site. The specified seed mix consisted of twenty-five native herbaceous species. Three of these species were unavailable and two species were added, therefore the seed mix consisted of twenty-four species.

Herbivory protection was specified for trees and shrubs; however, this was revised by Waterkeeper from five-foot fencing around each tree and shrub to shorter fencing (appeared to be approximately 2 to 3 feet

tall) around each tree. Stakes were specified for trees and shrubs; however, this requirement was eliminated by Waterkeeper, so no plants were staked.

Changes were made to the planting plan due to unavailability of some species. Waterwillow (Decadon verticilatus), highbush cranberry (*Viburnum opulus*), and purple milkweed (*Asclepias purpescens*) plugs, and seeds for enchanter's nightshade (*Circaea lutetiana*), grassleaved goldenrod (*Euthamia gramnifolia*), and thin-leaved sunflower (*Helianthus decapetalus*) were also unavailable. Finally, approximately half the shagbark hickory (*Carya ovata*) trees were substituted by white oak (*Quercus alba*).

Restoration activities at Old Bailey Woods began with invasive species mechanical removal and chemical treatments in 2017 and have continued in 2018. The most recent invasive species treatment prior to the monitoring visit took place on June 5, 2018. Earthwork construction took place in fall 2017 and planting began in 2018. At the time of the monitoring visit on June 21, 2018, trees, shrubs, and livestakes had been planted. The woody vines, and herbaceous plants had not yet been installed, but were scheduled to be in place by the end of June.

2 ECOLOGICAL AND GENERAL SITE CONDITION DATA COLLECTION METHODS

A complete description of the ecological sampling methods is given in the Quality Assurance Project Plan for the project (Gomez and Sullivan 2016). Gomez and Sullivan staff performed a qualitative assessment of riparian and emergent plant communities at the Old Bailey Woods site. Cover was initially classified into two broad cover types, anthropogenic and natural. Field ecologists then further defined cover into categories, which are shown below in Tables 2-1 and 2-2.

Table 2-1. Anthropogenic Cover Categories

Categories	Description
Roads and Parking	Paved and gravel covered access roads and parking area.
Trails and Paths	Paved, gravel or woodchip covered trails, or mowed trails through grassy areas.
Shoreline Armoring and Boat Launch	Shoreline areas protected by rip-rap, sheet pile, concrete bulkheads or other hard cover, and areas created to launch canoes, kayaks, and small boats.
Structures	Buildings, kiosks, and other structures.

Table 2-2. Natural Cover Categories

Categories	Plant Communities	Description
Wooded Areas	Upland Woods	Areas where the dominant cover is comprised of upland tree species, more than 25 feet inland from the top of the stream bank (measured along a horizontal plane).
	Riparian Woods	Areas dominated by trees common to streambank areas, within 25 feet of the top of the bank (measured along a horizontal plane).
Shrub Areas	NA	Areas dominated by shrubs.
Herb Dominated Areas	Grasses and Lawns	Areas dominated by native or cultivated lawn grasses and herbaceous plants, often mowed.
	Upland Herbaceous Areas	Areas dominated by upland herbaceous plants, both native and non-native species.
	Wetland Herbaceous Areas	Areas dominated by wetland herbaceous species, both emergent and submerged listed plants.

Polygons were drawn to delimit the boundaries of each distinct cover category area and the boundaries of each plant community. Each polygon was given a unique number for identification.

Dominant plants were identified to species when possible in each plant community polygon. Some grasses and other species could not be identified due to the time of year and recent mowing. The abundance of each species was described using the following categories:

> **Dominant**: A species that is the most common plant by far (in terms of numbers of individuals), or which occupies by far the most space in the community. A dominant species would cover roughly three quarters of the community, and be represented by either very many or very large individuals. Dominant plants should be present throughout the community.
>
> **Abundant**: A species that is very common in the community. An abundant species would occupy roughly half of the community, and be represented by many or moderately large individuals. Abundant plants would generally be present throughout the area (though in

fewer numbers or smaller sizes than dominant species), or in large numbers in smaller, discrete patches.

Frequent: A species that is found in several places throughout the community, in fewer numbers than abundant species or at smaller sizes, and generally not distributed throughout the community. A species that would occupy roughly 25% of the space in the community.

Occasional: A species that is found in some places throughout the community, in fewer numbers than abundant or frequent species or at smaller sizes, and generally not distributed throughout the community. An occasional species would occupy roughly 10% of the space in the community.

Rare: A species that represented by very few individuals throughout the community. A rare species would occupy less than 5% of the space in the community.

While on site, the field ecologist evaluated the stability of the shoreline and recorded evidence of any erosion observed. Observations of animal species were recorded. Field notes were assembled to describe particular problems observed or opportunities recognized. All data were recorded in the field computer and on project data sheets. The field ecologist established two photo-monitoring points for each plant community polygon mapped at both sites.

A Coefficient of Conservatism was assigned to each plant species. The coefficient is a weighting factor that expresses the degree of conservatism or fidelity to a particular native plant community evidenced by a particular species in relation to all other species of the region in which the study takes place (Wilhelm & Ladd, 1988; Andreas & Lichvar, 1995). A score of 0 to 10 is assigned to each plant. In general, plants that are not typical or native to a region, or are species with very broad ecological niches (generalist, often early successional species), receive low scores. A score of zero is assigned to any non-native species. The scoring ranges are defined as:

- 0 to 3: Plants with a very broad range of ecological tolerances and are generally found in a variety of plant communities.
- 4 to 6: Plants with an intermediate range of ecological tolerances and are generally associated with a specific plant community.
- 7 to 8: Plants with a relatively narrow range of ecological tolerances and are generally associated with more advanced successional conditions.
- 9 to 10: Plants with very narrow ranges of ecological tolerances and which generally exhibit a high degree of fidelity to specific habitats and communities.

The New England Interstate Water Pollution Control Commission (2013) has published Coefficients of Conservatism for New York. These will be used for this project. Some species we encountered were not listed in the New England Interstate Water Pollution Control Commission (2013) list. We supplemented the New York List with lists from neighboring Ohio (Andreas *et al* 2004) and Pennsylvania (Bowman's Hill 2006). A mean Coefficient of Conservatism was calculated for each plant community polygon, by totaling the Coefficients of Conservatism and dividing by the number of native and non-native species identified in the area.

3 SUMMARY OF FIELD FINDINGS

The land area within the surveyed property boundary encompasses 3.25 acres. Prior to restoration, three cover type polygons were mapped at the Old Bailey Woods site (Figure 3-1). These polygons are summarized in Table 3-1.

Invasive species herbicide treatments were ongoing at the time of monitoring and planting efforts had not yet been completed, as described in Section 1.3.

Area 10[1] is an Upland and Wooded Area. It includes the planting plan areas Riparian Woods and Upland Woods This area is a floodplain forest with a canopy of black willow and cottonwood trees. Prior to invasive species treatment efforts, the forest understory was dominated by invasive knotweed, garlic mustard (*Allaria petiolata*) and dame's rocket (*Hesperis matronalis*). These species were treated with herbicide in 2017 and 2018 and have been greatly reduced. Twelve species of trees and 17 species of shrubs were planted; however, six native herbaceous species, and 100 woody vines composed of two species had not yet been installed. Figures 3-2 and 3-3 show this area.

Area 11 is the Riparian Wooded Area at the Old Bailey Woods site. It includes the Riparian Slope planting zone. It is located on the slope that descends from the floodplain forest to the shoreline of the Buffalo River. Vegetation in this area was not as thick as in the floodplain forest; however, knotweed and dame's rocket were still present prior to restoration efforts. Dominant species in the canopy include walnut (*Juglans nigra*) and box elder (*Acer negundo*). The dominant shrub, growing close to the shoreline, was European black alder (*Alnus glutinosa*); however invasive species treatment included removal of these plants. Yellow iris (*Iris pseudoacorus*) plants were also present along the shoreline and had not yet been treated. Prior to monitoring, 130 trees were planted on the slope per the restoration design. The trees were protected from beaver herbivory by three-foot fencing. They appeared healthy. Ten species of installed shrubs were present. The planting contractor reported that seed of twenty-four native species was spread in this area per the project specifications and approved revisions. There were a few small herbaceous plants growing in the understory that could not be identified to species; however, t did not appear that most of the seed mix had yet sprouted. The 175 herbaceous plants, composed of four native species, and 150 woody vines composed of two species had not yet been installed.

A portion of eroding riparian slope on the northeast corner of Area 11 was reinforced through construction of tiered vegetated rip-rap, and bendway weirs were placed in the river to reduce erosive forces along the shoreline. Thousands of pussy willow (*Salix discolor*) and red osier dogwood (*Cornus sericea*) and livestakes were installed along the rock tiers. The willow was clearly dominant and growing well. Fewer red osier dogwoods were observed. Six hundred thirty buttonbush (*Cephalanthus occidentalis*) livestakes were also installed, but these were not observed within the dense willow growth. Figures 3-4 and 3-5 show this area. The slope now appeared stable.

Prior to restoration, Area 12 was a Grasses and Lawns area dominated by planted lawn grasses mixed with familiar lawn weeds, such as gill over the ground and red clover. Two stands of black willow (*Salix nigra*) trees and one large tree of heaven (*Ailanthus altissima*) were growing within the lawn. This area was regularly mowed. This area was converted to a meadow with native landscape trees. There were more trees than in the restoration plans due to an overflow from other planting areas. The oaks in this area had been heavily deforested by caterpillar herbivory, but are expected to recover. The planting contractor reported that seed of twenty-four native plants was spread in this area per the project specifications and

[1] Polygons are number 10 through 13 as Ohio Street Boat Launch and Old Bailey Woods were reported on together in 2016.

changes approved by Waterkeeper. There were a few small plants growing in the meadow area that could not be identified to species. It did not appear that most of the seed mix had yet sprouted. The approved 15 species of herbaceous plugs had not yet been planted. Figure 3-6 shows this area.

Herbaceous emergent plants were not visible in the emergent planting area. The date of installation for the eight approved species consisting of 257 plants is unknown. Waterkeeper reported that the livestakes that were specified for the emergent erosion control area around the bendway weirs were not installed due to doubts of survivability.

The driveway that is used by Iron Mountain Records Management, Inc. is shown as Area 13. No changes were made to this driveway.

Table 3-1. Cover Types and Cover Categories at Old Bailey Woods

Cover Category	Acreage	Area(s)
Natural Cover Types		
Wooded Areas		
Upland Woods	2.06	10
Riparian Wooded Areas	0.48	11
Herb Dominated Areas		
Grasses and Lawns	0.52	12
Anthropogenic Cover Types		
Roads or Parking Areas	0.19	13
TOTAL	**3.25**	

Table 3-2. Pre-restoration Plant Species at Old Bailey Woods (2016)

Species	Common name	Nativity	DAFOR Rating	C of C	Status
Area 10, Upland Woodland, 2.06 acres					
Acer negundo	Box elder	Native	Occasional	2[1]	Not Listed
Acer platanoides	Norway Maple	Invasive	Rare	0[2]	Not listed
Ailanthus altissima	Tree-of-heaven	Non-native	Occasional	0[2]	Not listed
Alliaria petiolata	Garlic mustard	Invasive	Dominant	0[2]	Not listed
Artemisia vulgaris	Mugwort	Invasive	Abundant	0[2]	Not available
Glechoma hederaceae	Ground ivy	Non-native	Occasional	0[2]	Not listed
Hesperis matronalis	Dame's rocket	Non-native	Dominant	0[2]	Not listed
Juglans nigra	Black walnut	Native	Rare	3[1]	Not listed
Ligustrum obtusifolium	Border privet	Unknown	Occasional	0[2]	Listed, NY Endangered
Lonicera morrowii	Morrow honeysuckle	Invasive	Occasional	0[2]	Not available
Morus alba	White mulberry	Non-native	Rare	0[2]	Not listed
Populus deltoides	Cottonwood	Native	Occasional	4[1]	Not listed
Prunus virginiana	Choke cherry	Native	rare	3[1]	Not listed
Reynoutria japonica	Japanese knotweed	Invasive	Dominant	0[1]	Not available
Rhus typhina	Staghorn sumac	Native	Rare	1[1]	Not available
Rubus occidentalis	Black raspberry	Native	Occasional	3[1]	Not listed
Rumex obtusifolius	Broad-leaved dock	Non-native	Occasional	0[2]	Not listed
Salix nigra	Black willow	Native	Frequent	4[1]	Not listed

Table 3-2. Pre-restoration Plant Species at Old Bailey Woods (2016)

Species	Common name	Nativity	DAFOR Rating	C of C	Status
Urtica dioica	Stinging nettle	Non-native	Frequent	1[1]	Not listed
Viburnum oppulus	Highbush cranberry	Native	Occasional	7[1]	Not listed
Vitis riparia	Riverbank grape	Native	Frequent	3[1]	Not listed
Area 11, Riparian Wooded, 0.48 acres					
Acer negundo	Box elder	Native	Occasional	2[1]	Not Listed
Alnus glutinosa	Black alder	Non-native	Dominant	0[2]	Not listed
Iris pseudoacorus	Yellow iris	Invasive	Occasional	0	Not available
Juglans nigra	Black walnut	Native	Occasional	3[1]	Not listed
Reynoutria japonica	Japanese knotweed	Invasive	Dominant	0[1]	Not available
Tussilago farfara	Colt's foot	Non-native	Abundant	0[1]	Not listed
Ulmus sp.	Elm	Native	Occasional	Not Available	Not listed
Urtica dioica	Stinging nettle	Non-native	Occasional	1[1]	Not listed
Vitis riparia	Riverbank grape	Native	Occasional	3[1]	Not listed
Area 12, Grasses or Lawn, 0.52 acres					
Glechoma hederaceae	Ground ivy	Non-native	Frequent	0[2]	Not listed
Poaceae	Grasses	Not available	Dominant	Not available	Not available
Salix nigra	Black willow	Native	Null	4[1]	Not listed
Vitis riparia	Riverbank grape	Native	Dominant	3[1]	Not listed
Poaceae	Grasses	Not available	Dominant	Not available	Not available
Taraxacum officianale	Common dandelion	Non-native	Abundant	0[2]	Not listed
Trifolium pratense	Red clover	Non-native	Dominant	0[2]	Not listed
Urtica dioica	Stinging nettle	Non-native	Rare	1[1]	Not listed

[1]New England Water Pollution Control Commission (2013); [2]Andreas *et al* (2004); [3]Bowman's Hill (2006); [4]Yellow iris is not native. These individuals were not identified to species, but yellow iris is much more common than the native blue iris, so we assumed the individuals we found were not native.

Table 3-3. Post-restoration Plant Species at Old Bailey Woods (2018)

Species	Common name	Nativity	DAFOR Rating	C of C	Status
Area 10, Upland Woodland, 2.06 acres					
Acer negundo	Box elder	Native	Occasional	2[1]	Not Listed
Alliaria petiolata	Garlic mustard	Invasive	Occasional	2	Not listed
Aronia melanocarpa	Black chokeberry	Native	Frequent	5[1]	Not listed
Artemisia vulgaris	Mugwort	Invasive	Occasional	2	Not available
Asimina triloba	Pawpaw	Native	Occasional	5[1]	Listed, NY Threatened
Carya ovata	Shagbark hickory	Native	Rare	5[1]	Not listed
Cephalanthus occidentalis	Buttonbush	Native	Frequent	6[1]	Not listed
Cornus alternifolia	Alternate-leaf dogwood	Native	Rare	4[1]	Not listed
Cornus amomum	Silky dogwood	Native	Frequent	3[1]	Not listed
Cornus racemosa	Gray dogwood	Native	Frequent	2[1]	Not listed
Glechoma hederaceae	Ground ivy	Non-native	Rare	0[2]	Not listed
Hesperis matronalis	Dame's rocket	Non-native	Occasional	0[2]	Not listed
Ilex verticilata	Winterberry	Native	Frequent	4[1]	Not listed
Juglans nigra	Black walnut	Native	Rare	3[1]	Not listed

Table 3-3. Post-restoration Plant Species at Old Bailey Woods (2018)

Species	Common name	Nativity	DAFOR Rating	C of C	Status
Lindera benzoin	Spicebush	Native	Frequent	5[1]	Not listed
Liriodendron tulipifera	Tulip poplar	Native	Frequent	6[1]	Not listed
Platanus occidentalis	Sycamore	Native	Frequent	6[1]	Not listed
Populus deltoides	Cottonwood	Native	Occasional	4[1]	Not listed
Prunus virginiana	Choke cherry	Native	Occasional	3[1]	Not listed
Quercus alba	White oak	Native	Frequent	5[1]	Not listed
Reynoutria japonica	Japanese knotweed	Invasive	Frequent	0[1]	Not available
Rhus typhina	Staghorn sumac	Native	Occasional	1[1]	Not available
Rosa palustris	Swamp rose	Native	Frequent	5[1]	Not listed
Rosa virginiana	Virginia rose	Native	Frequent	3[1]	Not listed
Rubus occidentalis	Black raspberry	Native	Frequent	3[1]	Not listed
Rubus odoratus	Purple flowering raspberry	Native	Frequent	3[1]	Not listed
Rumex obtusifolius	Broad-leaved dock	Non-native	Occasional	0[1]	Not listed
Salix nigra	Black willow	Native	Frequent	4[1]	Not listed
Sambucus canadensis	Elderberry	Native	Frequent	3[1]	Not listed
Tilia americana	American basswood	Native	Occasional	5[1]	Not listed
Urtica dioica	Stinging nettle	Non-native	Occasional	1[1]	Not listed
Viburnum dentatum	Arrowwood	Native	Frequent	3[1]	Not listed
Viburnum lentago	Nannyberry	Native	Occasional	4[1]	Not listed
Viburnum oppulus	Highbush cranberry	Native	Rare	7[1]	Not listed
Vitis riparia	Riverbank grape	Native	Frequent	3[1]	Not listed
Area 11, Riparian Wooded, 0.48 acres					
Acer negundo	Box elder	Native	Abundant	2[1]	Not Listed
Acer rubrum	Red maple	Native	Occasional	3[1]	Not listed
Aronia melanocarpa	Black chokeberry	Native	Frequent	5[1]	Not listed
Celtis occidentalis	Hackberry	Native	Occasional	6[1]	Not listed
Cephalanthus occidentalis	Buttonbush	Native	Frequent	6[1]	Not listed
Cornus alternifolia	Alternate-leaf dogwood	Native	Rare	4[1]	Not listed
Cornus amomum	Silky dogwood	Native	Occasional	3[1]	Not listed
Cornus racemosa	Gray dogwood	Native	Frequent	2[1]	Not listed
Cornus sericea	Red osier dogwood	Native	Occasional	3[1]	Not listed
Iris pseudoacorus	Iris	Invasive	Occasional	0	Not available
Juglans nigra	Black walnut	Native	Frequent	3[1]	Not listed
Platanus occidentalis	Sycamore	Native	Occasional	6[1]	Not listed
Quercus alba	White oak	Native	Occasional	5[1]	Not listed
Quercus macrocarpa	Bur oak	Native	Occasional	5[1]	Not listed
Reynoutria japonica	Japanese knotweed	Invasive	Abundant	0[1]	Not available

Table 3-3. Post-restoration Plant Species at Old Bailey Woods (2018)

Species	Common name	Nativity	DAFOR Rating	C of C	Status
Rubus odoratus	Purple flowering raspberry	Native	Occasional	3[1]	Not listed
Salix discolor	Pussy willow	Native	Dominant	3[1]	Not listed
Salix nigra	Black willow	Native	Frequent	4[1]	Not listed
Sambucus canadensis	Elderberry	Native	Occasional	3[1]	Not listed
Ulmus sp.	Elm	Native	Occasional	Not Available	Not listed
Urtica dioica	Stinging nettle	Non-native	Occasional	1[1]	Not listed
Viburnum dentatum	Arrowwood	Native	Occasional	3[1]	Not listed
Viburnum lentago	Nannyberry	Native	Occasional	4[1]	Not listed
Viburnum opulus	American cranberry bush	Native	Occasional	3[1]	Not listed
Vitis riparia	Riverbank grape	Native	Occasional	3[1]	Not listed
Area 12, Grasses or Lawn, 0.52 acres					
Acer negundo	box elder	Native	Occasional	2[1]	Not Listed
Carya ovata	Shagbark hickory	Native	Occasional	5[1]	Not listed
Liriodendron tulipifera	Tulip poplar	Native	Occasional	6[1]	Not listed
Poaceae	Grasses	Not available	Dominant	Not available	Not available
Quercus alba	White oak	Native	Frequent	5[1]	Not listed
Salix nigra	Black willow	Native	Occasional	4[1]	Not listed
Tilia americana	Basswood	Native	Rare	5[1]	Not listed

[1]New England Water Pollution Control Commission (2013); [2]Andreas *et al* (2004); [3]Bowman's Hill (2006)

Table 3-4. Comparisons of Species Richness and Mean Coefficients of Conservatism in Plant Community Areas

Plant Community Area	Pre-const. Number of Species	Pre-const. Number of Native Species[1]	Pre-const. Mean C of C	Post-const. Number of Species	Post-const. Number of Native Species[1]	Post-const. Mean C of C
10	21	9	1.5	35	28	3.2
11	9	4	1.1	25	22	3.3
12	8	2	2.8	7	6	4.5

[1]Plants that were not identified to species have not been included in the native count, except for the rye, which was one of three native species.


Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed
BUFFALO
11
12
10
13
9
7
8
6
5
10
4
3
12
2
1
Legend
Property Boundary
Photo Monitoring Locations
Plant Community Polygon
BUFFALO NIAGARA WATERKEEPER
Figure 3-1. Old Bailey Woods Project Area
0
125
250
Feet
N
GOMEZ AND SULLIVAN ENGINEERS
P:\1961\OBW\Figure_3_1.mxd

Figure 3-2. Trees planted in Area 10

Figure 3-3. Trees planted in Area 10

Figure 3-4. Live stakes in erosion control portion of Area 11

Figure 3-5. Live stakes in erosion control portion of Area 11

Figure 3-6. Area 12 meadow with landscape trees

4 CONCLUSION

Restoration efforts at Old Bailey Woods have added native plant species to the site and simultaneously reduced the presence and dominance of non-native, invasive species. Although knotweed is still abundant at the site and other invasive herbaceous species are still present, additional invasive species treatments were scheduled following the monitoring visit. Continued management of invasive species may be required indefinitely at this site due to its proximity to large invasive species stands on adjacent properties as well as upstream sources for invasive plants.

Mean Coefficients of Conservatism increased notably within each plant community area; however calculated post-construction mean coefficients still do not account for the nineteen species of herbs that were installed in Areas 10, 11, and 12 as well as in the emergent zone following the monitoring visit. If the 19 native herbaceous species that were installed following monitoring are assumed to survive, the mean Coefficients of Conservatism in each area will increase accordingly. With time and proper meadow maintenance, the meadow seed mix may also establish and further increase the site's Coefficient of Conservatism. Additionally, planted trees and shrubs species are anticipated to flourish and spread, allowing for increased habitat value and ecological function throughout the upland and riparian forest habitat

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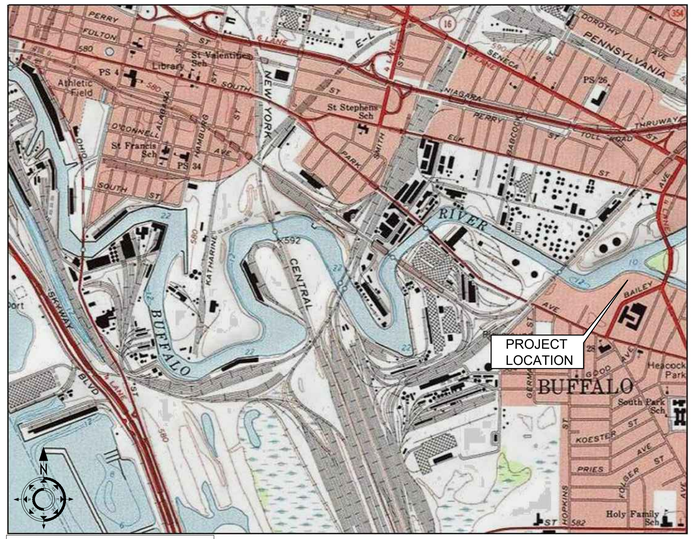
APPENDIX A. PROJECT PLANS

OLD BAILEY WOODS
SHORELINE & RIPARIAN HABITAT RESTORATION
AUGUST 14, 2017

DRAWING LIST	
SHEET NUMBER	DESCRIPTION
C1	COVER SHEET
P1	GENERAL NOTES
P2	PLANTING NOTES
P3	PLANTING TABLES AND DETAILS
P4	EXISTING CONDITIONS OVERVIEW
P5	PROPOSED CONDITIONS OVERVIEW
P6 – P8	PROPOSED CONDITIONS PLANS
P9 – P10	RESTORATION DETAILS



PROJECT LOCATION PLAN
1" = 2000'

Dig Safely. New York
Call 811 before you dig

WARNING
IT IS A VIOLATION OF NEW YORK EDUCATION LAW TITLE 8, ARTICLE 145, PARAGRAPH 7209 FOR ANY PERSON TO ALTER ITEMS ON THESE PLANS IN ANY WAY, UNLESS UNDER THE DIRECTION OF A NEW YORK STATE LICENSED PROFESSIONAL ENGINEER.

Great Lakes RESTORATION

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

CHECK M. STOTTLER
DRAFTING C. JENKINS
DESIGN E. REDDING/J. WESOLOWSKI
JOB MANAGER D. FRAZIER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

REVISIONS

LICENSED PROFESSIONAL ENGINEER — JENNIFER WESOLOWSKI — NO. 093514 — STATE OF NEW YORK

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BUFFALO NIAGARA RIVERKEEPER®

OLD BAILEY WOODS RIPARIAN HABITAT RESTORATION

COVER SHEET

PREPARED BY:	DWG.NO:
CHJ/JSW	C1
SCALE: AS NOTED	CONTRACT NO.

GENERAL NOTES

1. BUFFALO NIAGARA RIVERKEEPER (RIVERKEEPER) WILL DESIGNATE AN AUTHORIZED REPRESENTATIVE TO REPRESENT RIVERKEEPER DURING THE CONSTRUCTION PHASE. THIS AUTHORIZED REPRESENTATIVE MAY BE RIVERKEEPER STAFF OR A CONSULTANT. RIVERKEEPER'S STAFF AND/OR AUTHORIZED REPRESENTATIVES ARE COLLECTIVELY REFERRED TO HEREIN AS RIVERKEEPER.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FULFILL ALL REQUIREMENTS OF THE CONTRACT AND ALL AMENDMENTS THERETO, INCLUDING BUT NOT LIMITED TO, GENERAL CONDITIONS, SPECIAL CONDITIONS, SPECIFICATIONS AND THESE DRAWINGS IN ORDER TO COMPLETE THIS PROJECT.
3. THE CONTRACTOR SHALL ASSUME THERE WILL BE A KICKOFF MEETING IN THE BUFFALO AREA AT THE START OF THE PROJECT (THE PRIME CONTRACTOR AND SUBCONTRACTORS SHALL ATTEND) AND WEEKLY UPDATE CONFERENCE CALLS DURING THE TREATMENT PROCESS (SUBCONTRACTORS SHALL ATTEND AS NEEDED). DAILY FIELD REPORTS SHALL BE WRITTEN ON RIVERKEEPER'S STANDARD FORM AND DELIVERED TO RIVERKEEPER FOR REVIEW AND ACCEPTANCE.
4. PRIOR TO THE COMMENCEMENT OF THE WORK, THE CONTRACTOR SHALL SUBMIT A HEALTH AND SAFETY PLAN DETAILING THE HEALTH AND SAFETY SYSTEMS AND PROCEDURES WHICH WILL APPLY DURING THE TERM OF THE CONTRACT. THE HEALTH AND SAFETY PLAN WILL BE REVIEWED BY AND WILL BE SUBJECT TO APPROVAL BY THE RIVERKEEPER AND SITE OWNER.
5. THE CONTRACTOR SHALL HOLD DAILY SAFETY MEETINGS BEFORE THE START OF WORK.
6. ALL WORK SHALL BE COORDINATED AND PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
7. RIVERKEEPER IS AUTHORIZED TO ISSUE STOP WORK ORDERS DIRECTING THAT CONSTRUCTION ACTIVITIES CEASE IMMEDIATELY. THE CONTRACTOR SHALL, EFFECTIVE IMMEDIATELY UPON STOP WORK ORDER ISSUANCE, CEASE TO ISSUE ANY FURTHER ORDERS AND/OR SUBCONTRACTS FOR MATERIALS OR SERVICES IN SUPPORT OF THIS CONTRACT. THE CONTRACTOR SHALL IMMEDIATELY COMPLY WITH THE ORDER AND TAKE ALL REASONABLE STEPS TO MINIMIZE THE INCURRENCE OF COSTS ALLOCABLE TO THE WORK COVERED BY THIS ORDER DURING THE PERIOD OF WORK STOPPAGE.
8. ALL MATERIALS SHALL BE PROVIDED AND WORK SHALL BE PERFORMED IN CONFORMANCE WITH THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION OFFICE OF ENGINEERING STANDARD SPECIFICATIONS DATED MAY 1, 2008, AS AMENDED, AND ALL ADDENDA THERETO, UNLESS NOTED OTHERWISE.
9. RIVERKEEPER SHALL OBTAIN AND PAY FOR ALL RELEVANT LOCAL, STATE AND/OR FEDERAL PERMITS PRIOR TO THE START OF CONSTRUCTION, INCLUDING HERBICIDE TREATMENT PERMITS.
10. THE CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS CONTAINED IN RELEVANT PERMITS ISSUED FOR THIS PROJECT.
11. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR TEMPORARY FACILITIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PERFORMANCE AND COMPLETION OF THE WORK AND SHALL RETAIN COMPETENT STAFF AT THE SITE AT ALL TIMES WHEN WORK IS IN PROGRESS.
13. NO WETLANDS SHALL BE DISTURBED UNLESS INDICATED ON THE PLANS AND ALL APPROPRIATE PERMITS ARE IN PLACE.
14. SHOULD HAZARDOUS/UNSUITABLE MATERIAL BE ENCOUNTERED, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY RIVERKEEPER. THE CONTRACTOR WILL BE RESPONSIBLE TO NOTIFY THE APPROPRIATE REGULATORS AND ADDRESS REGULATORY REQUIREMENTS AND/OR GUIDANCE INCLUDING CALLING THE NYS SPILL HOTLINE AT 1-800-457-7362 IF NEEDED.
15. PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PREVENT ANY IMPACTS TO AREAS OUTSIDE OF THE LIMITS OF PROPOSED WORK. THE CONTRACTOR SHALL SUBMIT TO RIVERKEEPER FOR APPROVAL ANY IMPACTS TO AREAS OUTSIDE THE LIMITS OF PROPOSED WORK AT LEAST TWO WEEKS IN ADVANCE OF THE PROPOSED IMPACT. IF THE CONTRACTOR'S ACTIVITY ADVERSELY AFFECTS ANY AREA OUTSIDE THE LIMIT OF PROPOSED WORK, THE CONTRACTOR SHALL IMMEDIATELY RESTORE THE AREA TO ITS PRE-CONSTRUCTION CONDITION.
16. SURVEY DATA ARE BASED ON JUNE 2016 TOPOGRAPHIC SURVEY AND APRIL 2017 AMENDED SURVEY BY FOIT-ALBERT ASSOCIATES. COORDINATES SHOWN ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE.
17. ELEVATIONS ARE SHOWN IN NORTH AMERICAN VERTICAL DATUM 88.
18. THE BUFFALO RIVER PORTION OF THE SURVEY IS IN ZONE AE, "BASE FLOOD ELEVATION DETERMINED". THE UPLAND PORTION OF THE SURVEY IS IN ZONE X, "AREA OF 500-YEAR FLOOD, AREA OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE, AND AREAS PROTECTED BY LEVEES FROM 100-YEAR FLOOD", FLOOD INSURANCE RATE MAP COMMUNITY NO. 360230, PANEL NO. 0327G WHICH BEARS AN EFFECTIVE DATE OF SEPTEMBER 26, 2008.
19. THE CONTRACTOR SHALL BE ADVISED THAT THE PROJECT IS LOCATED IN AN AREA PRONE TO FLOODING AND SEVERE WEATHER IS KNOWN TO OCCUR AT THIS LOCATION. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE PROJECT WHILE UNDER CONSTRUCTION, WHICH MAY INCLUDE SEQUENCING THE PROJECT TO PROTECT TEMPORARY AND PERMANENT STRUCTURES. THIS INCLUDES, BUT IS NOT LIMITED TO, PROTECTION FROM STORMS, FLOODS, BOAT WAKES, CURRENT, WIND, AND RECREATIONAL USERS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE PROJECT SITE, TEMPORARY FACILITIES, FALSEWORK, EQUIPMENT, PERSONNEL, WORK, MATERIALS, AND OTHER PROPERTIES, BOATS, THE PUBLIC, OR INDUSTRY. FALSEWORK SHALL BE REMOVED IF WEATHER IS ANTICIPATED TO THREATEN THE PROJECT, THE BUFFALO RIVER, OR OTHER PROPERTY.
20. NO ADDITIONAL PAYMENT WILL BE MADE FOR WORK ACTIVITIES IMPACTED DUE TO FLUCTUATIONS IN THE WATER SURFACE ELEVATIONS. NO ADDITIONAL PAYMENT WILL BE MADE FOR INCREASED POLLUTION PREVENTION, FALSEWORK, OR TEMPORARY FACILITIES REQUIRED DUE TO VARYING WATER SURFACE ELEVATIONS.
21. THE CONTRACTOR SHALL PREVENT THE TRANSPORT OF INVASIVE PLANT MATERIAL TO AND FROM THE SITE. EQUIPMENT, VEHICLES, PERSONAL GEAR, AND IMPORTED MATERIALS SHALL BE CLEAN AND FREE OF PLANT MATERIAL. ALL EQUIPMENT SHALL BE CLEANED USING PRESSURE WASH PRIOR TO SITE MOBILIZATION. THE EQUIPMENT WILL BE EXAMINED AND PHOTOGRAPHED BY RIVERKEEPER UPON ARRIVAL AT THE SITE. IF EQUIPMENT IS NOT ACCEPTABLE, THE CONTRACTOR WILL BE REQUIRED TO CONDUCT ADDITIONAL CLEANING PRIOR TO INITIATING SITE ACTIVITIES.
22. THE CONTRACTOR IS RESPONSIBLE TO DESIGN AND INSTALL ALL TEMPORARY FACILITIES SO THAT THEY REMAIN IN PLACE AND FUNCTIONING. ALL TEMPORARY FACILITIES SHALL BE LOCATED TO AVOID IMPACTS TO SUBMERGED AQUATIC VEGETATION (SAV), WETLANDS, AND OTHER SENSITIVE RESOURCES.
23. ACCESS TO THE SITE WILL BE COORDINATED WITH RIVERKEEPER AND THE SITE OWNER, THE CITY OF BUFFALO AND BUFFALO URBAN RENEWAL AGENCY. THE USE OF VEHICLES ON THE SITE WILL FOLLOW GUIDELINES PROVIDED BY CITY OF BUFFALO AND BUFFALO URBAN RENEWAL AGENCY.
24. THE CONTRACTOR SHALL NOT BLOCK ACCESS OF IRON MOUNTAIN WITHIN THE IRON MOUNTAIN ACCESS AND MAINTENANCE EASEMENT.
25. EARTHWORK, AND PLACEMENT OF FILL IN THE SHORELINE AREA SHALL BE PERFORMED FROM BARGES, OR OTHER METHODS APPROVED BY RIVERKEEPER. MATERIAL SHALL BE HAULED ON BARGES, OR OTHER METHODS APPROVED BY RIVERKEEPER. THERE SHALL BE NO DISTURBANCE OF THE AREA OUTSIDE THE LIMITS OF PROPOSED WORK DURING CONSTRUCTION ACTIVITY.
26. IT IS ANTICIPATED THAT THE CONTRACTOR SHALL STAGE AND WORK FROM A BARGE, OR OTHER AREAS ABOVE WATER, TO MECHANICALLY REGRADE AS INDICATED FOR THIS PROJECT AND PLACE MATERIAL WITH AN EXCAVATOR OR OTHER APPROVED MEANS. THE CONTRACTOR SHALL SUBMIT THEIR PROPOSED METHOD FOR REGRADING AND INSTALLING THE PROPOSED STONE WEIRS TO RIVERKEEPER FOR APPROVAL PRIOR TO COMMENCING CONSTRUCTION.
27. ALL EXCAVATED MATERIAL SHALL BE TEMPORARILY STOCKPILED ON BARGES OR IN TEMPORARY CONTAINMENT FACILITIES PRIOR TO REUSE. STOCKPILED MATERIAL SHALL BE REUSED ON THE PROJECT SITE.
28. BARGE OVERFLOW AND BUCKET DRAINING WILL BE AVOIDED. THE CONTRACTOR SHALL MINIMIZE BARGE OVERFLOW AND MONITOR FOR COMPLIANCE WITH PERMIT REQUIREMENTS.
29. THE CONTRACTOR SHALL MIX THE EXCAVATED MATERIAL ON A BARGE OR IN AN APPROVED TEMPORARY CONTAINMENT FACILITY FOR AREAS THAT REQUIRE ENGINEERED MEDIA AS INDICATED ON THE DRAWINGS. ONLY MATERIALS ACCEPTABLE TO RIVERKEEPER SHALL BE USED IN THE FILL MIXTURE OR THE SOIL CHOKING OF THE RIP RAP.
30. IF EXCAVATED MATERIALS ARE TO BE HAULED, THE MATERIAL MUST BE COMPLETELY STABILIZED AND TIED DOWN TO PREVENT DISCHARGE INTO THE BUFFALO RIVER. THE CONTRACTOR SHALL NOT DISCHARGE EXCAVATED MATERIAL WITHIN THE BUFFALO RIVER, AS SPECIFIED ON THE PLANS AND THE AREA SHALL BE PROTECTED BY TURBIDITY CONTAINMENT DEVICES. ALL LOADING AND UNLOADING OF EXCESS MATERIAL SHALL BE CONDUCTED WITHIN A TURBIDITY CURTAIN OR AREA WITH AN APPROVED EROSION AND SEDIMENT CONTROL PLAN, IF REQUIRED.
31. MATERIAL STORAGE AND DEWATERING: TEMPORARY STOCKPILING OF EXCAVATED MATERIALS ON BARGES OR APPROVED TEMPORARY FACILITIES DESIGNATED AS SPOIL AREAS IS ACCEPTABLE. STOCKPILES SHALL BE PLACED, GRADED, AND SHAPED FOR PROPER DRAINAGE. COVER TO PREVENT WIND-BLOWN DUST. PROVIDE APPROVED SILT SOCKS OR OTHER CONTAINMENT APPROVED BY RIVERKEEPER IN ADVANCE OF PROJECT ACTIVITIES TO PREVENT WATERBORNE SEDIMENTS. TEMPORARY STOCKPILING SITES MUST HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN, IF REQUIRED BY FEDERAL, STATE, OR LOCAL REGULATION. DEWATERING MUST BE CARRIED OUT IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS, INCLUDING THE MANAGEMENT OF THE EFFLUENT FROM THE DEWATERING FACILITY. THE CONTRACTOR SHALL CONSTRUCT OR MAINTAIN A FACILITY SPECIFICALLY FOR THE DEWATERING OF MATERIAL, IF REQUIRED FOR THIS PROJECT. WATER REMOVED FROM EXCAVATED MATERIAL SHALL NOT BE DISCHARGED INTO WATERS OF THE UNITED STATES WITHOUT PROPER TREATMENT. IF DEWATERING IS TO BE CARRIED OUT ON A BARGE, THE OVERFLOW WEIR ON THE BARGE SHALL BE MONITORED TO ASSURE NO DISCHARGE EXCEEDS LEGAL LIMITS FOR TOTAL SUSPENDED SOLIDS.

CLEARING AND GRUBBING

TREE REMOVAL

1. CLEARING AND GRUBBING SHALL ONLY BE CONDUCTED IN THE EROSION CONTROL AREA SHOWN ON SHEET P9.
2. ALL TREE CLEARING MUST TAKE PLACE BETWEEN NOVEMBER 1 AND MARCH 31.
3. THIS WORK SHALL CONSIST OF CLEARING, GRUBBING, REMOVING AND DISPOSING OF ALL TREES, BRUSH, STUMPS, DEBRIS, AND MISCELLANEOUS STRUCTURES WITHIN THE EROSION CONTROL AREA.
4. WITHIN THE EROSION CONTROL AREA, RIVERKEEPER WILL ESTABLISH THE LIMITS OF AREAS TO BE CLEARED AND GRUBBED, TO BE CLEARED BUT NOT GRUBBED, OR AREAS, OBJECTS OR FEATURES THAT ARE DESIGNATED TO REMAIN UNDISTURBED. RIVERKEEPER WILL DESIGNATE DEBRIS, TREES AND BRUSH TO BE CLEARED WHERE GRUBBING IS NOT REQUIRED.
5. WHENEVER TREES ARE FELLED OR TRIMMED ON/OR ADJACENT TO ROADWAYS, ALL WOOD SHALL BE IMMEDIATELY REMOVED FROM THE ROADWAY OR ANY AREA THAT WOULD PRESENT A HAZARD TO TRAFFIC.
6. STUMPS AND ROOT BOLES SHALL ONLY BE REMOVED WHERE THE FINISHED GRADE SURFACE IS MORE THAN ONE FOOT LOWER THAN THE TOP OF THE STUMP OR ROOT BOLE.
7. WHERE TREES ARE CLEARED AND STUMPS ARE LEFT IN PLACE, THE TREE TRUNK OR EXISTING STUMP SHALL BE CUT OFF NOT MORE THAN 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE UNLESS OTHERWISE APPROVED. THIS WORK SHALL BE COMPLETED WITHIN ONE WEEK AFTER START OF WORK ON THE TREE.
8. ALL ASH TREES SHALL BE PROPERLY CHIPPED ON SITE TO PREVENT THE SPREAD OF EMERALD ASH BORER.
9. ALL WOOD SHALL BE REMOVED FROM THE CONTRACT SITE OR OTHERWISE DISPOSED OF IN A MANNER APPROVED BY RIVERKEEPER.

RESTORATION SYSTEM NOTES

SOIL-CHOKED RIP-RAP

1. SOIL-CHOKED RIP-RAP SHALL CONSIST OF 60% BY VOLUME NYS DOT MEDIUM STONE AND 40% BY VOLUME CHOKING MIXTURE.
   A. STONE
      i. SUITABLE STONE SHALL INCLUDE NYS DOT MEDIUM STONE (ITEM 620.04)
   B. CHOKING MIXTURE
      i. SUITABLE CHOKING MIXTURE SHALL CONSIST OF A BANK RUN SAND AND GRAVEL PROCESSED THROUGH A 2-INCH SCREEN WITH THE ADDITION OF COMPOST. THE BANK RUN SAND AND GRAVEL MIXTURE SHALL MEET NYSDOT 304 TYPE 4 REQUIREMENTS FOR SOUNDNESS AND MEET THE FOLLOWING PARTICLE SIZE REQUIREMENT:

SIEVE SIZE	RANGE OF % PASSING BY WEIGHT	
2	100	
3/4	98	92
3/8	90	84
1/4	82	60
#40	55	30
#200	25	10

      ii. AN ADDITION OF 15% COMPOST BY WEIGHT SHALL THEN BE COMBINED INTO THE CHOKING MIXTURE.
      iii. COMPOST SHALL BE COMPRISED OF AN EQUAL MIXTURE OF THE FOLLOWING TWO ITEMS:
      a. LEAF COMPOST. THE MATERIAL SHALL CONSIST EXCLUSIVELY OF DECIDUOUS LEAF MATERIAL. COMPOST MATERIAL THAT CONTAINS FOOD WASTE, SEWAGE WASTE, OR OTHER WASTE MATERIAL IS UNACCEPTABLE. THE LEAF COMPOST SHALL BE MATURE (ACTIVELY COMPOSTED FOR 6 MONTHS MINIMUM, AND TEMPERATURE SLIGHTLY ABOVE AIR TEMPERATURE) AND HUMIC (ORGANIC MATERIAL IS NO LONGER RAPIDLY DEGRADING). MATURE COMPOST MATERIAL SHALL BE A DARK, FRIABLE, PARTIALLY DECOMPOSED SUBSTANCE THAT HAS AN EARTHY ODOR. VISIBLE FIBERS SHOULD BE SHORT AND DARK WITH NO DISCERNABLE PARTICLES OF LEAF MATERIAL. BECAUSE NOT ALL ITEMS DECOMPOSE AT THE SAME RATE SCREENING MAY BE NECESSARY TO REMOVE LARGER PARTIALLY DECOMPOSED MATERIAL AND/OR UNDECOMPOSED MATERIAL.
         - ORGANIC CONTENT - 25% TO 100% BY DRY WEIGHT
         - NATURAL INERT MATERIAL - <5% BY DRY WEIGHT OF WOODY OR GREEN YARD DEBRIS MATERIAL.
         - MAN-MADE INERT MATERIAL - <1% BY DRY WEIGHT OF MAN-MADE MATERIAL SUCH AS GLASS OR PLASTIC.
         - BULK DENSITY - 636 TO 812 KG/M3 MOISTURE CONTENT - 30% TO 60% BY TOTAL WEIGHT.
      b. WELL-ROTTED MANURE. THE MATERIAL SHALL CONSIST OF ANIMAL EXCRETA WITH LITTER MATERIAL. THE WELL-ROTTED MANURE SHALL BE MATURE (AGED A MINIMUM OF ONE YEAR), DARK BROWN OR BLACK IN COLOR, CRUMBLY IN TEXTURE, AND SHALL NOT HAVE AN OBJECTIONABLE ODOR. THE MATERIAL'S MOISTURE CONTENT SHALL BE SUCH THAT NO VISIBLE FREE WATER OR DUST IS PRODUCED WHEN HANDLING IT. IT SHALL CONTAIN NO VISIBLE ADMIXTURE OF REFUSE OR OTHER PHYSICAL CONTAMINATES OR ANY MATERIAL TOXIC TO PLANT GROWTH.
      i. PRIOR TO THE PROCUREMENT AND DELIVERY OF COMPOST, THE FOLLOWING INFORMATION AND SAMPLES ARE REQUIRED FOR REVIEW AND APPROVAL FOR EACH SOURCE:
      a. PROPOSED MATERIAL SOURCE AND VENDOR.
      b. CERTIFICATION THAT PROPOSED VENDOR CAN PROVIDE SUFFICIENT QUANTITIES OF MATERIAL.
      c. A 5-POUND SAMPLE OF THE PROPOSED MATERIAL, INDICATING THE METHOD OF SAMPLING AND LOCATION OF THE SAMPLE.
      d. RESULTS OF PH, SOLUBLE SALT CONCENTRATION (ELECTRICAL CONDUCTIVITY), MOISTURE CONTENT, AND PARTICLE SIZE CONDUCTED IN ACCORDANCE WITH TEST METHODS FOR THE EXAMINATION OF COMPOSTING AND COMPOST (TMECC, THE US COMPOSTING COUNCIL).

TEMPORARY STRAW MULCH

1. TEMPORARY STRAW MULCH SHALL CONFORM TO NYS DOT TEMPORARY MULCH (ITEM 209.100101).

STONE WEIR BOULDERS

1. STONE WEIR BOULDERS SHALL MEASURE APPROXIMATELY 5 FEET BY 3 FEET BY 3 FEET.
2. STONE WEIR BOULDERS SHALL CONSIST OF LIMESTONE OR DOLOMITE WITH MINIMAL PHYSICAL DEFECTS AND/OR SEAMS OF CHERT, GYPSUM, OR OTHER INCLUSIONS.
3. RIVERKEEPER SHALL HAVE THE RIGHT TO INSPECT THE STONE WEIR BOULDERS PRIOR TO SHIPMENT.
4. BOULDERS SHALL HAVE NO VISIBLE FISSURES OR CRACKS LONGER THAN 1 FOOT OR WIDER THAN 1/8-INCH.

TURBIDITY CURTAIN

1. THE CONTRACTOR SHALL MAKE PROVISIONS TO WORK IN TURBID WATER INSIDE THE POLLUTION PREVENTION MEASURES.
2. THIS WORK MAY INCLUDE ADDITIONAL POLLUTION PREVENTION CONTROL MEASURES OR DEWATERING. ALL DESIGNS FOR ADDITIONAL PROPOSED TURBIDITY CONTROL MEASURES SHALL BE SUBMITTED TO RIVERKEEPER FOR APPROVAL PRIOR TO IMPLEMENTATION, HOWEVER, THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE WORK AND THE BUFFALO RIVER.
3. THE CONTRACTOR SHALL PREVENT EXCESSIVE PLUMES OF SEDIMENT FROM ENTERING THE BUFFALO RIVER AND PROVIDE DEWATERING AND DIVERSION OF WATER AS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE CONTROLS (SUCH AS TURBIDITY CURTAIN) SHOULD THE WORK IN THE WATER PRODUCE TURBIDITY THAT LEAVES THE IMMEDIATE WORK AREA AND CAUSES A VISIBLE PLUME MORE THAN 100 FEET FROM THE WORK AREA. TURBIDITY CURTAIN SHALL BE INSTALLED IN ADVANCE OF CONSTRUCTION ACTIVITIES THAT ARE ANTICIPATED TO CAUSE SUCH DISTURBANCES. IF THE TURBIDITY CURTAIN FAILS TO PREVENT SEDIMENT FROM ENTERING THE BUFFALO RIVER THE CONTRACTOR SHALL EMPLOY OTHER MEANS AT THE DISCRETION OF RIVERKEEPER.
5. THE CONTRACTOR SHALL CONDUCT ALL WORK IN ACCORDANCE WITH THE PROJECT'S NATIONWIDE 13 PERMIT.
6. MATERIALS PLACED IN OR ENTERING THE RIVER WHICH ARE NOT PART OF THE PERMANENT WORK SHALL BE REMOVED AND DISPOSED OF PROPERLY PRIOR TO PROJECT COMPLETION. THESE MATERIALS INCLUDE BUT ARE NOT LIMITED TO SEDIMENT CONTROL DEVICES AND DEWATERING MEASURES.

SOIL AND EROSION CONTROL NOTES

1. ALL MATERIALS SHALL BE PROVIDED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS FOR EROSION AND SEDIMENT CONTROL.
2. THE CONTRACTOR SHALL INSTALL ALL REQUIRED POLLUTION CONTROL DEVICES PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THEIR MAINTENANCE, REPOSITIONING AND REMOVAL UPON COMPLETION OF WORK.
3. BIODEGRADABLE FILTER SOCK SHALL BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS. INSTALLATION LOCATIONS SHALL BE APPROVED BY RIVERKEEPER. AT TIME OF REMOVAL, THE STAKES AND ANY OTHER ANCILLARY MATERIALS ASSOCIATED WITH THE FILTER SOCK SHALL BE REMOVED FROM THE SITE.
4. ALL EXPOSED AREAS, INCLUDING STOCKPILES, THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE TEMPORARY SEEDING. MULCH, WATER AND ANCHOR AS NECESSARY TO ESTABLISH GRASS AND PREVENT LOSS TO WIND. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH SMALL GRAIN STRAW AT A RATE OF TWO (2) TONS PER ACRE, IN ACCORDANCE WITH STATE STANDARDS.
5. PERMANENT VEGETATION TO BE SEEDED ON ALL EXPOSED AREAS IMMEDIATELY AFTER FINAL GRADING. STRAW MULCH TO BE USED FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
6. SHOULD CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET, TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED, OR MULCH SHALL BE APPLIED IN ACCORDANCE WITH STATE STANDARDS FOR EROSION CONTROL.
7. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMITS OF DISTURBANCE OR ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. STOCKPILE AND STAGING LOCATIONS SHALL BE APPROVED BY RIVERKEEPER.
9. THE CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL PRACTICES, OTHER CONTROLS, AND AREAS WHERE VEHICLES EXIT THE SITE AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF ANY STORM THAT PRODUCES 0.5 INCHES OR MORE OF RAINFALL AT THE SITE. WHERE SITES HAVE BEEN FINALLY STABILIZED, SUCH INSPECTION SHALL BE CONDUCTED AT LEAST ONCE A MONTH.

CONSTRUCTION WASTE MANAGEMENT NOTES

1. THE CONTRACTOR AT ALL TIMES SHALL KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY ITS OPERATION. GOOD HOUSEKEEPING PRACTICES SHALL BE MAINTAINED ON A CONTINUOUS BASIS FROM WORK SITE TO WORK SITE. DISPOSAL OF ANY WASTE MATERIALS ON THE CONSTRUCTION SITE IS PROHIBITED.
2. THE CONTRACTOR SHALL NOT DISTURB SOIL (CLEAR, GRUB, GRADE, EXCAVATE, OR DEWATER) IN AREAS OUTSIDE OF THOSE SPECIFIED ON THE PLAN UNLESS APPROVED BY RIVERKEEPER.
3. THE CONTRACTOR WILL PROVIDE EMPLOYEE FACILITIES, WASTE DISPOSAL, AND SANITARY FACILITIES.
4. ALL COMBUSTIBLE WASTE MATERIALS SHALL BE PLACED IN COVERED METAL CONTAINERS AND PROMPTLY DISPOSED OF IN AN APPROVED MANNER AT AN APPROVED WASTE DISPOSAL FACILITY.
5. STORAGE AND/OR USE OF CHEMICALS, FUELS, OILS, GREASES, BITUMINOUS MATERIALS, SOLIDS, WASTE WASHINGS, AND CEMENT SHALL BE HANDLED AS TO PREVENT LEACHING OR SURFACE RUN-OFF INTO PUBLIC WATERS OR DRAINS. ALL APPROVED STORAGE AREAS FOR THESE MATERIALS MUST BE DIKED.
6. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF ALL WASTE MATERIAL AND/OR DEBRIS (INCLUDING BUT NOT LIMITED TO INVASIVE-SPECIES PLANT DETRITUS). WASTE MATERIAL AND DEBRIS SHALL NOT BE RELEASED INTO THE RIVER OR BURNED. ALL WASTE MATERIAL AND DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL LAWS AND OTHER APPLICABLE CODES, AT A LOCATION APPROVED BY RIVERKEEPER.
7. THE CONTRACTOR'S EQUIPMENT MUST BE FREE OF HYDRAULIC LEAKS. THE EQUIPMENT WILL BE MAINTAINED IN AN OPERATIONAL CONDITION AT ALL TIMES AND MAY BE INSPECTED BY RIVERKEEPER AT ANY TIME FOR HYDRAULIC LEAKS AND GENERAL CONDITION.

WATER POLLUTION CONTROL NOTES

1. CARE SHALL BE TAKEN TO PROTECT THE WATER.
2. ALL WATER RESOURCES (I.E. GROUND AND SURFACE WATERS), INCLUDING ALL DRAINS, SHALL BE PROTECTED FROM LEACHING AND/OR RUN-OFF OF CHEMICAL POLLUTANTS, SOLID WASTES, AND CONSTRUCTION SITE DEBRIS.
3. EQUIPMENT, TOOLS AND TRUCKS USED IN THIS PROJECT SHALL BE CLEANED IN SUCH A MANNER AS TO PREVENT WASH WATER FROM ENTERING ANY WATER BODY.
4. SPILLAGE OF HAZARDOUS SUBSTANCES INTO THE WATERWAY IS PROHIBITED BY THE CLEAN WATER ACT OF 1977. MEASURES INCLUDING PROPER MAINTENANCE OF CONSTRUCTION EQUIPMENT, DESIGNATING FUEL/HAZARDOUS SUBSTANCES HANDLING AREAS TO ALLOW SPILLS TO BE CONTAINED BEFORE REACHING THE WATERWAY, INSTRUCTING PERSONNEL NOT TO DISPOSE OF OIL AND OTHER SUCH MATERIALS INTO DRAINS OR INTO THE WATERWAY DIRECTLY, AND OTHER NECESSARY PROCEDURES SHALL BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION ACTIVITIES.
5. ABSORBENT MATERIALS SHALL BE RETAINED ONSITE IN THE EVENT THAT A SPILL OCCURS.

CHECK M. STOTTLER
DRAFTING C. JENKINS
DESIGN E. REDDING/J. WESOLOWSKI
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LICENSED PROFESSIONAL ENGINEER — JENNIFER WESOLOWSKI — NO. 095514 — STATE OF NEW YORK

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PLANTING AND SEEDING NOTES

PLANTING

1. PLANT MATERIALS FURNISHED BY THE CONTRACTOR SHALL MEAN SHRUBS, VINES, AND TREES OF ALL DESCRIPTIONS, IN ACCORDANCE WITH PLANS AND AS SPECIFIED HEREIN.
2. THE CONTRACTOR SHALL FOLLOW GENERAL INDUSTRY STANDARDS, PLANTING TABLES, AND THE SPECIFICATIONS PROVIDED.
3. ALL PLANTING MATERIAL SHALL BE FREE OF UNWANTED SEED AND NON-NATIVE PLANT MATERIAL.
4. ALL PLANTS SHALL BE NATIVE SPECIES INDIGENOUS TO WESTERN NEW YORK. NO HYBRIDS OR CULTIVARS SHALL BE USED.
5. ALL PLANTS SHALL CONFORM TO THE LATEST EDITION OF ANSI Z60.1 NURSERY STOCK STANDARDS. TO ENSURE THAT CONTAINERIZED STOCK, STAKES, AND SEED ARE AVAILABLE, THE PLANTS SHOULD BE STARTED FAR ENOUGH IN ADVANCE TO BE READY FOR THE SCHEDULED PLANTING TIMES. ALL PLANTS SHALL BE TRUE TO NAME. EACH TRAY OF POTTED PLANTS, INDIVIDUAL CONTAINER (FOR CONTAINERIZED STOCK), AND BUNDLES OF LIVE STAKES SHALL BE LEGIBLE AND SECURELY LABELED WITH THE SCIENTIFIC SPECIES NAME. CARE SHALL BE TAKEN THROUGHOUT THE OPERATION TO KEEP EACH PLANT SPECIES OR VARIETY SEGREGATED AND LABELED. RIVEERKEEPER WILL REJECT PLANTS WHERE THERE IS DOUBT AS TO CORRECT NOMENCLATURE, EITHER AT THE TIME OF DELIVERY OR AT ANY SUBSEQUENT TIME.
6. ALL PRECAUTIONS THAT ARE CUSTOMARY IN GOOD TRADE PRACTICE SHALL BE TAKEN TO ENSURE THE PLANTS ARE IN GOOD CONDITION FOR SUCCESSFUL GROWTH. RIVERKEEPER RESERVES THE RIGHT TO REJECT PLANTS NOT DEEMED SATISFACTORY IN HIS/HER OPINION AS TO QUALITY, SIZE, TYPE OR COLOR. ALL PLANTS MUST BE HEALTHY AND VIGOROUS, FREE FROM DISEASE, INJURIOUS INSECTS AND THEIR EGGS OR LARVA, MECHANICAL WOUNDS, BROKEN BRANCHES, DECAY, LEAF DAMAGE, CHLOROSIS OR WILTING, OR ANY OTHER DEFECTS. ALL PLANTS MUST HAVE A GOOD, HEALTHY, WELL-FORMED UPPER GROWTH AND ROOT SYSTEM, INCLUDING PLIABLE STEMS AND ROOTS PLANTS WITH DRIED-OUT ROOTS OR TWIGS OR PLANTS WHICH HAVE BECOME OVERHEATED OR STRESSED IN TRANSIT OR ARE FOUND NOT TO COMPLY WITH THESE SPECIFICATIONS IN ANY WAY WILL BE REJECTED.
7. THE CONTRACTOR SHALL NOTIFY RIVERKEEPER IN WRITING PRIOR TO PLANT INSTALLATION IF CONFLICTS BETWEEN THE CONTRACT DOCUMENTS AND FIELD CONDITIONS ARE FOUND. ADJUSTMENTS IN THE LOCATION OF PLANTINGS NECESSITATED BY A CHANGE IN FIELD CONDITION SHALL NOT CONSTITUTE A CHANGE IN CONTRACT PRICE, UNLESS THE NUMBER OF PLANTINGS IS INCREASED SUBSTANTIALLY.
8. FOR POTTED PLANTS, ALL SPECIMENS SHALL BE WATERED TO SATURATION PRIOR TO TRANSPORT TO THE JOB SITE.
9. WHEN POSSIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. WHEN THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT THE STOCK NOT PLANTED. PLANT MATERIAL SHALL BE PROTECTED FROM HERBIVORY, SUN AND DRYING WINDS, AND SHALL BE KEPT WELL-WATERED. SHADE CLOTH SHALL BE PRESENT AT THE JOB SITE AT ALL TIMES.
10. TREES AND SHRUBS SHALL BE PROTECTED FROM DAMAGE DURING STORAGE, AND TRANSPORTATION, AND HANDLING.
11. SPECIES SUBSTITUTIONS SHALL NOT BE PERMITTED EXCEPT BY APPROVAL OF RIVERKEEPER. SUBSTITUTIONS SHALL NOT BE PERMITTED UNLESS PROOF IS SUBMITTED THAT SPECIFIC PLANTS OR SIZES ARE UNOBTAINABLE AFTER ALL RESOURCES HAVE BEEN EXHAUSTED. THE CONTRACTOR SHALL SUBMIT PROPOSAL FOR SUBSTITUTION(S) FOR RIVERKEEPER'S APPROVAL, TO BE CONSIDERED FOR NEAREST SIZE OR VARIETY WITH EQUITABLE ADJUSTMENT TO CONTRACT PRICE.
12. THE OBJECTIVE IS TO ACHIEVE A NATURAL LOOKING HETEROGENEOUS PATTERN WITH RESPECT TO DENSITIES AND SPECIES WITHIN THE PLANTING AREAS SPECIFIED ON THE DESIGN SHEETS. THESE AREAS WERE DEVELOPED ACCORDING TO EXPECTED SITE CONDITIONS AND THE LIST OF PLANTS SPECIFIED FOR EACH ARE SPECIES EXPECTED TO THRIVE UNDER THOSE CONDITIONS. FIELD ADJUSTMENTS (E.G., MORE PLANTS IN A PARTICULAR ZONE THAN SPECIFIED BALANCED BY LESS IN ANOTHER) REQUIRE THE EXPRESSED APPROVAL OF RIVERKEEPER. THE LOCATION OF EACH PLANT SPECIES TO BE PLANTED IS ACCORDING TO AREA SHOWN ON THE PLANS. PLANTS SHALL BE INSTALLED IN THE CORRECT AREAS, AS INDICATED ON THE DESIGN SHEETS. THE EXACT LOCATIONS OF STAKES AND CONTAINERIZED STOCK WITHIN EACH AREA ARE NOT SPECIFIED; AS LONG AS OVERALL DENSITIES ARE ACHIEVED, SPACING BETWEEN INDIVIDUAL PLANTS SHALL BE VARIABLE AND FIELD-DETERMINED. RIVERKEEPER MAY ASSIST IN THE LAYOUT OF PLANT MATERIAL.
13. POTTED SPECIMENS SHALL BE PLANTED LEVEL WITH OR SLIGHTLY ABOVE EXISTING GRADE INTO THE SOIL MEDIUM. THE ROOT FLARE SHOULD BE SLIGHTLY ABOVE THE TOP OF THE HOLE, NEVER BELOW THE TOP OF THE HOLE.
14. THE CONTRACTOR SHALL USE AN AUGUR, SHOVEL, OR SPADE TO DIG INDIVIDUAL HOLES, AT LEAST 1.5 TIMES THE SIZE OF THE TREE, SHRUB, OR HERBACEOUS PLANT ROOT BALL.
15. POTS SHALL BE REMOVED AND CIRCLING ROOTS SHALL BE CUT WITH PRUNERS ALONG THE FULL HEIGHT OF THE ROOT BALL. WITH A SHARP SQUARE SPADE, ROOT MATS SHALL BE SLICED AND REMOVED FROM THE BOTTOM THE ROOT BALL.
16. PLANTING HOLES SHALL BE BACKFILLED WITH PLANTING SOIL MIXTURE. DO NOT COVER TOP OF ROOT, DO NOT MOUND SOIL UP AND ABOVE THE ROOT BALL. EACH PLANT SHALL BE WATERED TO SATURATION PROMPTLY AFTER PLANTING.
17. LIVE STAKES SHALL BE FRESHLY CUT. NO LEAF BUDS ON THE STAKES SHALL HAVE INITIATED GROWTH BEYOND ¼" AND THE CAMBIUM LAYER SHALL BE MOIST, GREEN AND HEALTHY. ALL LIVE STAKE MATERIAL SHALL BE MAINTAINED IN A CONTINUOUSLY COOL, COVERED, AND MOIST STATE PRIOR TO USE AND BE IN GOOD CONDITION WHEN INSTALLED.
18. LIVE STAKES SHALL BE DRIVEN INTO THE GROUND (CUT TO A POINT AT BASAL END) UNTIL APPROXIMATELY 3-6 INCHES REMAINS EXPOSED (AND 2 LIVE BUDS) OR TO REFUSAL (2/3 OF THE STAKE SHALL BE BURIED IN THE GROUND UNLESS OTHERWISE APPROVED).
19. LIVE STAKES SHALL BE INSTALLED BY HAND OR BY USING A DEAD BLOW HAMMER TO DRIVE STAKES INTO THE GROUND. THE HAMMER HEAD SHOULD BE FILLED WITH SHOT OR SAND. A DIBBLE, IRON BAR, OR SIMILAR TOOL SHALL BE USED TO MAKE A PILOT HOLE TO PREVENT DAMAGING THE STAKE DURING INSTALLATION.
20. CARE SHALL BE TAKEN NOT TO DAMAGE THE LIVE STAKES DURING INSTALLATION. LIVE STAKES THAT ARE DAMAGED AT THE TOP DURING INSTALLATION SHALL BE TRIMMED BACK TO UNDAMAGED CONDITION.
21. WHEN POSSIBLE, SOIL AROUND LIVE STAKES SHALL BE TAMPED DOWN.
22. WELDED-WIRE PROTECTION FENCING WILL BE INSTALLED AROUND ALL PLANTED TREES AND SHRUBS AND WILL BE HELD IN PLACE BY AT LEAST TWO WOODEN STAKES PER PLANT. FENCING SHALL BE AT LEAST 5 FEET TALL AND SHALL BE PLACED AT THE TREE DRIP LINE OR SURROUNDING THE PLANT CROWN. THE FENCING SHALL BE CLOSED WITH J-CLIPS. THIS WILL BE INSTALLED IN ACCORDANCE WITH THE PLANS AND INCLUSIVE DETAIL. FENCING SHALL NOT BE PLACED AROUND LIVE STAKES.
23. PLANT SPACING
    - A. RIPARIAN AND UPLAND PLANTS
        - i. THE EXACT LOCATIONS OF SHRUBS, PLUGS AND TUBER STOCK WITHIN EACH PLANTING ZONE ARE NOT SPECIFIED; AS LONG AS OVERALL DENSITIES ARE ACHIEVED, SPACING BETWEEN INDIVIDUAL PLANTS SHALL BE VARIABLE AND FIELD-DETERMINED. LIKE-SPECIES SHALL BE CLUMPED INTO GROUPS OF MULTIPLE UNITS. PLANTING IN DISTINCT ROWS OR COLUMNS IS TO BE AVOIDED. PLANTINGS SHALL OCCUR IN A RANDOM PATTERN WHILE ACHIEVING THE SPECIFIED OVERALL DENSITIES. PLANTINGS SHALL NOT INTERFERE WITH THE GROWTH ESTABLISHED NATIVE PLANTS ADD THE SITE. RIVERKEEPER WILL ASSIST IN THE LAYOUT OF PLANT MATERIAL.
    - B. EMERGENT PLANTS:
        - i. LIKE SPECIES SHALL BE POSITIONED INTO SAME-SPECIES-CLUMPS OF SEVERAL UNITS WITH ADEQUATE SPACING BETWEEN INDIVIDUAL UNITS TO AVOID CROWDING AND STUNTING OF GROWTH. CLUMPS OF PLANTINGS ARE TYPICALLY SEPARATED FROM ONE ANOTHER BY ABOUT 1-3 FT. (EDGE TO EDGE).
        - ii. THE OVERALL QUANTITIES/DENSITIES WITHIN THE EMERGENT PLANTING AREA SHALL NOT CHANGE FROM THAT SPECIFIED; HOWEVER, DENSITIES MAY BE INCREASED IN THE UPPER ELEVATIONS WITHIN THAT ZONE IF THE CONTRACTOR FEELS THAT THIS WILL RESULT IN BETTER PLANT ESTABLISHMENT. PLANTS WILL TYPICALLY SPREAD BY RHIZOME OR OTHER MEANS TO COLONIZE BARE AREAS DURING THE FIRST GROWING SEASON FOLLOWING PLANTING. NO PLUGS SHALL BE INSTALLED SUCH THAT GROWING PORTIONS OF THE PLANTS ARE NOT ABOVE WATER.
        - iii. THE TOP OF THE PLUG SHALL BE PLANTED FLUSH WITH EXISTING SOIL SURFACE.
24. PLANT GUARANTEE AND REPLACEMENT
    - i. PLANTS SHALL BE GUARANTEED AND MAINTAINED FOR A PERIOD OF ESTABLISHMENT, BEGINNING ON THE DATE OF SUBSTANTIAL COMPLETION WHEN ALL PLANTING HAS INITIALLY BEEN ACCEPTED AND ENDING ON AUGUST 15, 2018. PLANTS THAT ARE DEAD OR THAT ARE IN UNHEALTHY OR UNSIGHTLY CONDITION OR THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER MAINTENANCE, AS DETERMINED BY RIVERKEEPER, SHALL BE REMOVED FROM THE SITE. SUCH PLANTS SHALL BE REPLACED WITH PLANTS AS ORIGINALLY SPECIFIED, AT NO COST TO RIVERKEEPER OR THE CITY OF BUFFALO URBAN RENEWAL AGENCY.
    - ii. PLANT REPLACEMENT SHALL TAKE PLACE AS SOON AS IS REASONABLY POSSIBLE AFTER THEIR UNSATISFACTORY CONDITION IS EVIDENT.
    - B. THE TIME FOR REPLACING UNSATISFACTORY PLANTS SHALL BE DETERMINED BY RIVERKEEPER, OR NO LATER THAN THE NEXT SUCCEEDING PLANTING SEASON. PLANTS THAT EXHIBIT UNACCEPTABLE CONDITIONS, AS DETERMINED BY RIVERKEEPER, SHALL BE REMOVED FROM THE SITE AND REPLACED WITH PLANTS AS ORIGINALLY SPECIFIED, AT NO COST TO RIVERKEEPER OR THE CITY OF BUFFALO URBAN RENEWAL AGENCY.
25. SEQUENCE OF PLANTING CONSTRUCTION
    - A. THE CONTRACTOR SHALL INSTALL POTTED PLANT MATERIAL DURING THE GROWING SEASON BETWEEN JUNE 1 AND OCTOBER 1 UNLESS SEASONAL VARIATIONS PROVIDE A LONGER PLANTING SEASON.
    - B. THE CONTRACTOR SHALL INSTALL THE DORMANT LIVE STAKES AT LOCATIONS SHOWN ON PLANS, AFTER SEPTEMBER 1 (EXPECTED TO BE THE FALL OF 2017).

PLANTING SOIL MIXTURE

1. PLANTING SOIL MIXTURE SHALL CONSIST OF A MIXTURE OF 67% BY VOLUME EXISTING ON-SITE TOPSOIL AND 33% BY VOLUME COMPOST.
    - A. EXISTING ON-SITE TOPSOIL
    - B. COMPOST SHALL FOLLOW THE SAME SPECIFICATION AS IN THE RESTORATION SYSTEM NOTES 1-B.

MEADOW AREA PREPARATION

1. THE CONTRACTOR SHALL CLOSELY MOW AREA TO BE SEEDED TO STIMULATE WEED GROWTH, TWO WEEKS PRIOR TO TILLING, BETWEEN MAY 31 AND SEPTEMBER 30.
2. THE CONTRACTOR SHALL TILL THE AREA TO BE SEEDED, ALLOW GROWTH FOR TWO WEEKS, THEN TILL A SECOND TIME BEFORE FINE GRADING.
3. FINE GRADING: IMMEDIATELY BEFORE SEEDING, THE CONTRACTOR SHALL RAKE AND SCARIFY THE TOPSOIL UNTIL THE SURFACE IS SMOOTH, FRIABLE AND UNIFORMLY FINE TEXTURED.
4. THE CONTRACTOR SHALL FLOAT THE SURFACE BY DRAGGING A WOOD FLOAT OVER IT TO LEVEL MINOR HUMPS AND DEPRESSIONS.
5. THE CONTRACTOR SHALL LIMIT THE FINE GRADING TO AREAS THAT CAN BE PLANTED IMMEDIATELY AFTER FINE GRADING.
6. THE CONTRACTOR SHALL TWO STEP DRILL SEED ENTIRE AREA TO RECEIVE CULTIVATED MEADOW.
7. IF MEADOW AREAS BECOME ERODED OR OTHERWISE DISTURBED PRIOR TO DRILL SEEDING, THE CONTRACTOR SHALL RESTORE MEADOW AREAS TO SPECIFIED CONDITION.
8. THE CONTRACTOR SHALL RESTORE MEADOW AREAS THAT HAVE BECOME ERODED BY WIND OR WATER USING EROSION NETTING, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED APPLICATION PROCEDURES.

SEEDING

1. SEED SHALL BE SPREAD THROUGHOUT THE PROJECT AREA AT A RATE OF 20 POUNDS PER ACRE.
2. THE CONTRACTOR SHALL PROCEED WITH SEEDING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. ADVERSE WEATHER CONDITIONS INCLUDE, BUT ARE NOT LIMITED TO: INTENSE RAIN, HIGH WINDS, AND OTHER CONDITIONS THAT WOULD DECREASE THE OPPORTUNITY FOR SEED ESTABLISHMENT.
3. THE CONTRACTOR SHALL ENSURE THAT AREAS ARE STABILIZED PRIOR TO SEEDING.
4. SEED WILL BE INSPECTED BY RIVERKEEPER UPON DELIVERY IN ORIGINAL SEALED, LABELED, AND UNDAMAGED CONTAINERS. LABELLING SHALL INCLUDE:
    - NAME AND TELEPHONE NUMBER OF SUPPLIER
    - YEAR OF PRODUCTION
    - DATE OF PACKAGING
    - BOTANICAL AND COMMON NAMES OF SPECIES
    - PERCENTAGE BY WEIGHT OF EACH SPECIES AND VARIETY
    - PERCENTAGE OF PURITY AND GERMINATION
    - PERCENTAGE WEED SEED
5. SEED SHALL BE STORED IN A COOL, DARK PLACE UNTIL USE AND PROTECTED FROM ALL FORMS OF MOISTURE SUCH AS RAIN, SNOW, SURFACE DRAINAGE, GROUND WATER, CONDENSATION ETC.
6. PROVIDE SEED FROM AVAILABLE COMMERCIAL SOURCES WHICH DO NOT CONTAIN MORE THAN 1% WEED CONTENT (DEFINED AS NON-TARGET SPECIES), NOT LESS THAN 85% PURITY, AND NOT LESS THAN 90% GERMINATION FOR EACH VARIETY AND SHALL NOT CONTAIN ANY SEED OF EXOTIC OR INVASIVE SPECIES.
7. ALL SEED MIX SHALL BE SPREAD IN 2017.
8. IN WOODED AREAS, THE CONTRACTOR SHALL CONSULT THE SEED SUPPLIER'S INSTRUCTIONS FOR SEEDING.
9. IN THE MEADOW AREA, THE CONTRACTOR SHALL UNIFORMLY DISTRIBUTE SEED USING A DRILL SEEDER, SUCH AS A BRILLION OR APPROVED EQUAL. THE AREA SHALL BE DRILLED FROM TWO DIRECTIONS WITH AT LEAST 45-DEGREE ANGLE DIFFERENCE IN ANGLE OF APPROACH. AFTER SEEDING ALL AREAS SHALL BE CULTIPACKED UNTIL A MINIMUM OF 85% OF THE SEED IS COVERED OR OTHERWISE ACCEPTED BY RIVERKEEPER.
10. THE PERIOD OF ESTABLISHMENT FOR SEEDS WILL GO THROUGH AUGUST 15, 2018.
11. SEEDS MAY BE SOURCED FROM ERNST CONSERVATION SEEDS OR AN APPROVED ALTERNATIVE SUPPLIER.

PLANTING MAINTENANCE

1. THE CONTRACTOR SHALL MAINTAIN AND ESTABLISH THE MEADOW BY WATERING, WEEDING, MOWING, TRIMMING, REPLANTING, AND PERFORMING OTHER OPERATIONS AS REQUIRED TO ESTABLISH A HEALTHY, VIABLE MEADOW. ROLL, REGRADE, AND REPLANT BARE OR ERODED AREAS AND RE-MULCH. PROVIDE MATERIALS AND INSTALLATION THE SAME AS THOSE USED IN THE ORIGINAL INSTALLATION.
    - A. FOR THE PURPOSE OF ESTABLISHING AN ACCEPTABLE STANDARD FOR MEADOW AREAS, SCATTERED BARE SPOTS NOT LARGER THAN ONE (1) SQUARE FOOT EACH WILL BE PERMITTED UP TO A MAXIMUM OF 3% OF ANY SEEDED AREA.
    - B. FILL IN AS NECESSARY SOIL SUBSIDENCE THAT MAY OCCUR BECAUSE OF SETTLING OR OTHER PROCESSES. REPLACE MATERIALS AND MEADOW DAMAGED OR LOST IN AREAS OF SUBSIDENCE.
    - C. IN AREAS WHERE MULCH HAS BEEN DISTURBED BY WIND OR MAINTENANCE OPERATIONS, ADD NEW MULCH AND ANCHOR AS REQUIRED TO PREVENT DISPLACEMENT.
    - D. APPLY TREATMENTS AS REQUIRED TO KEEP MEADOW AND SOIL FREE OF PESTS AND PATHOGENS OR DISEASE. USE INTEGRATED PEST MANAGEMENT PRACTICES WHENEVER POSSIBLE TO MINIMIZE THE USE OF PESTICIDES AND REDUCE HAZARDS.
2. THE CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY PIPING, HOSES, AND WATERING EQUIPMENT TO CONVEY WATER FROM SOURCES AND TO KEEP THE INSTALLED UPLAND PLANTS UNIFORMLY MOIST.
    - A. SCHEDULE WATERING TO PREVENT WILTING, PUDDLING, EROSION, AND DISPLACEMENT OF SEED OR MULCH. LAY OUT TEMPORARY WATERING SYSTEM TO AVOID WALKING OVER MUDDY OR NEWLY PLANTED AREAS.
    - B. WATER MEADOW WITH FINE SPRAY AT A MINIMUM RATE OF 1/2 INCH PER WEEK FOR EIGHT WEEKS AFTER PLANTING UNLESS RAINFALL PRECIPITATION IS ADEQUATE.
3. CONTRACTOR SHALL CHECK AND MAKE ANY NECESSARY REPAIRS TO PLANT PROTECTION FENCING AT EACH WATERING VISIT OR AT LEAST ONCE PER MONTH FOR THE PERIOD OF MAINTENANCE.
4. THE PERIOD OF MAINTENANCE FOR ALL PLANTS WILL GO THROUGH AUGUST 15, 2018.

JOB MANAGER D. FRAZIER | DESIGN E. REDDING/J. WESOLOWSKI | DRAFTING C. JENKINS | CHECK M. STOTTLER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

REVISIONS

LICENSED PROFESSIONAL ENGINEER — JENNIFER WESOLOWSKI — NO. 093514 — STATE OF NEW YORK

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OLD BAILEY WOODS RIPARIAN HABITAT RESTORATION

BUFFALO NIAGARA RIVERKEEPER®

PLANTING NOTES

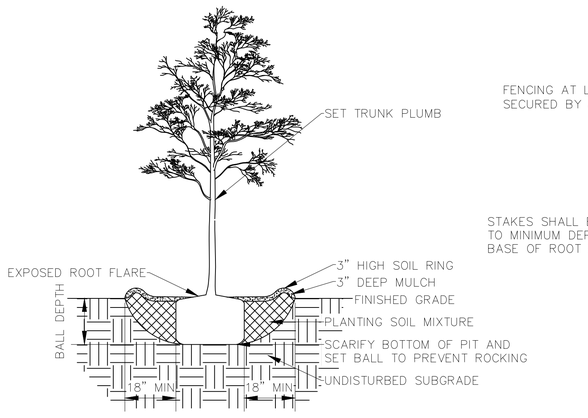
PREPARED BY:	DWG.NO:
CHJ/JSW	P2
SCALE: AS NOTED	CONTRACT NO.

Species Name	Common Name	Minimum Plant Size	Emergent	Riparian Slope	Riparian Woods	Upland Woods	Meadow	Erosion Control Area: Emergent	Erosion Control Area: Riparian	Total Count
Trees										
Acer rubrum	Red maple	#5 container (approx. 60" tall, 1/2" caliper)	0	25	0	0	0	0	0	25
Asimina triloba	Pawpaw	#10 container (84" ft tall, 3/4" caliper)	0	0	0	25	0	0	0	25
Carya ovata	Shagbark hickory	#10 container (84" ft tall, 3/4" caliper)	0	0	0	25	2	0	0	27
Celtis occidentalis	Hackberry	#10 container (84" ft tall, 3/4" caliper)	0	25	0	0	0	0	0	25
Juglans nigra	Black walnut	#10 container (84" ft tall, 3/4" caliper)	0	25	25	0	0	0	0	50
Liriodendron tulipifera	Tulip poplar	#5 container (approx. 60" tall, 1/2" caliper)	0	0	25	0	0	0	0	25
Liriodendron tulipifera	Tulip poplar	#10 container (84" ft tall, 3/4" caliper)	0	0	0	25	2	0	0	27
Platanus occidentalis	Sycamore	#5 container (approx. 60" tall, 1/2" caliper)	0	25	25	0	0	0	0	50
Platanus occidentalis	Sycamore	#10 container (84" ft tall, 3/4" caliper)	0	0	0	25	0	0	0	25
Quercus alba	White oak	#10 container (84" ft tall, 3/4" caliper)	0	25	50	50	2	0	0	127
Quercus bicolor	Swamp white oak	#10 container (84" ft tall, 3/4" caliper)	0	0	0	25	0	0	0	25
Quercus macrocarpa	Burr oak	#10 container (84" ft tall, 3/4" caliper)	0	0	25	25	0	0	0	50
Salix nigra	Black willow	#10 container (84" ft tall, 3/4" caliper)	0	25	25	25	2	0	0	77
Tilia americana	Basswood	#10 container (84" ft tall, 3/4" caliper)	0	0	25	0	2	0	0	27
Trees Total			**0**	**150**	**200**	**225**	**10**	**0**	**0**	**585**
Small Trees and Shrubs										
Aronia melanocarpa	Black chokeberry	#2 container (approx. 24" tall, 1/3" caliper)	0	25	10	0	0	0	0	35
Cephalanthus occidentalis	Buttonbush	#2 container (approx. 24" tall, 1/3" caliper)	25	0	0	0	0	0	0	25
Cephalanthus occidentalis	Buttonbush	3' live stake	0	0	0	0	0	130	500	630
Cornus alternifolia	Alternate-leaf dogwood	#2 container (approx. 24" tall, 1/3" caliper)	0	25	10	0	0	0	0	35
Cornus amomum	Silky dogwood	#2 container (approx. 24" tall, 1/3" caliper)	0	25	25	25	0	0	0	75
Cornus racemosa	Gray dogwood	#2 container (approx. 24" tall, 1/3" caliper)	0	25	25	25	0	0	0	75
Cornus sericea	Redosier dogwood	3' live stake	50	20	0	0	0	130	4250	4450
Ilex verticilata	Winterberry	#2 container (approx. 24" tall, 1/3" caliper)	0	0	10	25	0	0	0	35
Decadon verticillatus	Waterwillow	#2 container (approx. 24" tall, 1/3" caliper)	25	0	0	0	0	0	0	25
Lindera benzoin	Spicebush	#2 container (approx. 24" tall, 1/3" caliper)	0	0	25	25	0	0	0	50
Prunus virginiana	Choke cherry	#2 container (approx. 24" tall, 1/3" caliper)	0	0	10	25	0	0	0	35
Rhus typhina	Staghorn sumac	#2 container (approx. 24" tall, 1/3" caliper)	0	25	10	0	0	0	0	35
Rosa palustris	Swamp rose	#2 container (approx. 24" tall, 1/3" caliper)	0	0	25	25	0	0	0	50
Rosa virginiana	Virginia rose	#2 container (approx. 24" tall, 1/3" caliper)	0	0	25	25	0	0	0	50
Rubus occidentalis	Black raspberry	#2 container (approx. 24" tall, 1/3" caliper)	0	0	25	25	0	0	0	50
Rubus odoratus	Purple flowering raspberry	#2 container (approx. 24" tall, 1/3" caliper)	0	25	25	25	0	0	0	75
Salix discolor	Pussy willow	3' live stake	50	0	0	0	0	130	4250	4430
Sambucus canadensis	Elderberry	#2 container (approx. 24" tall, 1/3" caliper)	0	25	25	25	0	0	0	75
Viburnum dentatum	Arrowwood	#2 container (approx. 24" tall, 1/3" caliper)	0	15	25	15	0	0	0	55
Viburnum lentago	Nannyberry	#2 container (approx. 24" tall, 1/3" caliper)	0	10	10	10	0	0	0	30
Viburnum opulus	Highbush cranberry	#2 container (approx. 24" tall, 1/3" caliper)	0	25	15	25	0	0	0	65
Shrubs Total			**150**	**245**	**300**	**300**	**0**	**390**	**9000**	**10385**
Vines										
Clematis virginiana	Virgin's bower	18" length	0	75	25	0	0	0	100	200
Parthenocissus quinquefolius	Virginia creeper	18" length	0	75	25	0	0	0	100	200
Vines Total			**0**	**150**	**50**	**0**	**0**	**0**	**200**	**400**
Emergent Herbs										
Chelone glabra	Turtlehead	DP 50 plug	25	0	0	0	0	20	0	45
Juncus effusus	Soft rush	DP 50 plug	25	0	0	0	0	20	0	45
Peltandra virginica	Green arrow arum	DP 50 plug	25	0	0	0	0	20	0	45
Pontederia cordata	Pickerelweed	DP 50 plug	50	0	0	0	0	20	0	70
Schoenoplectus tabernaemontanii	Softstem bulrush	DP 50 plug	25	0	0	0	0	20	0	45
Scirpus cyperinus	Woolgrass	DP 50 plug	25	0	0	0	0	20	0	45
Sparganium eurycarpum	Giant bur-reed	DP 50 plug	25	0	0	0	0	20	0	45
Emergent Herbs Total			**200**	**0**	**0**	**0**	**0**	**140**	**0**	**340**
Wet Meadow, Riparian, and Upland Herbs										
Ageratina altissima	White snakeroot	DP 50 plug	0	0	0	50	50	0	0	100
Apocynum cannabinum	Dogbane	DP 50 plug	0	0	0	50	50	0	0	100
Asclepias purpurescens	Purple milkweed	DP 50 plug	0	0	0	0	50	0	0	50
Asclepias syriaca	Common Milkweed	DP 50 plug	0	0	0	0	50	0	0	50
Circaea lutetiana	Enchanter's nightshade	DP 50 plug	0	0	0	100	0	0	0	100
Eurybia macrophylla	Large leaf wood aster	DP 50 plug	0	0	0	0	50	0	0	50
Euthamia graminifolia	Grassleaf goldenrod	DP 50 plug	0	0	0	0	50	0	0	50
Eutrochium maculatum	Joe-Pye weed	DP 50 plug	0	50	50	0	50	0	0	150
Heliopsis helianthoides	Oxeye sunflower	DP 50 plug	0	0	0	0	50	0	0	50
Iris versicolor	Blue flag iris	DP 50 plug	0	50	0	0	0	0	0	50
Lobelia cardinalis	Cardinal flower	DP 50 plug	25	0	0	0	0	0	0	25
Maianthemum canadense	Canada mayflower	DP 50 plug	0	0	0	100	0	0	0	100
Maianthemum racemosum	False Solomon's seal	DP 50 plug	0	0	0	100	0	0	0	100
Monarda didyma	Beebalm	DP 50 plug	0	50	0	100	50	0	0	200
Monarda fistulosa	Wild Bergamot	DP 50 plug	0	0	0	0	100	0	0	100
Podophyllum peltatum	Mayapple	DP 50 plug	0	0	50	100	0	0	0	150
Pycnanthemum tenuifolium	Slender mountainmint	DP 50 plug	0	0	0	0	100	0	0	100
Symphyotrichum laeve	Smooth Blue Aster	DP 50 plug	0	0	0	0	100	0	0	100
Symphyotrichum novae-angliae	New England aster	DP 50 plug	0	0	0	0	100	0	0	100
Vernonia noveboracensis	Ironweed	DP 50 plug	0	0	0	0	100	0	0	100
Wet Meadow, Riparian, and Upland Herbs Total			**25**	**150**	**100**	**600**	**950**	**0**	**0**	**1825**
TOTAL			**375**	**695**	**650**	**1125**	**960**	**530**	**9200**	**13535**

Seed Mix for Riparian Slope, Riparian Woods, Upland Woods, and Meadow		
Plant at 20 lbs/acre		
Species Name	**Common Name**	**Percentage**
Andropogon gerardi	Big Bluestem	10.0%
Anemone canadensis	Canada anemone	2.5%
Ageratina altissima	White snakeroot	5.0%
Apocynum cannabinum	Dogbane	5.0%
Asclepias syriaca	Common milkweed	5.0%
Circaea lutetiana	Enchanter's nightshade	2.5%
Elymus canadensis	Canada wildrye	5.0%
Elymus virginicus var. virginicus	Virginia wildrye	5.0%
Eurybia macrophylla	Large leaf wood aster	2.5%
Euthamia graminifolia	Grassleaf goldenrod	2.5%
Eutrochium maculatum	Joe-Pye weed	5.0%
Helianthus decapetalus	Thin-leaved sunflower	2.5%
Heliopsis helianthoides	Oxeye sunflower	5.0%
Monarda fistulosa	Wild bergamot	5.0%
Panicum clandestinum	Deertongue	2.5%
Panicum virgatum	Switchgrass	2.5%
Pycnanthemum tenuifolium	Slender mountainmint	2.5%
Rudbeckia laciniata	green-headed coneflower	2.5%
Schizachyrium scoparium	Little bluestem	10.0%
Solidago canadensis	Canada goldenrod	2.5%
Sorgastrum nutans	Indian grass	2.5%
Symphyotrichum cordifolium	blue wood aster	2.5%
Symphyotrichum laeve	Smooth blue aster	2.5%
Symphyotrichum novae-angliae	New England aster	5.0%
Vernonia noveboracensis	Ironweed	2.5%
Seed Mix Total		**100.0%**

TREE AND SHRUB PLANTING TYPICAL DETAIL

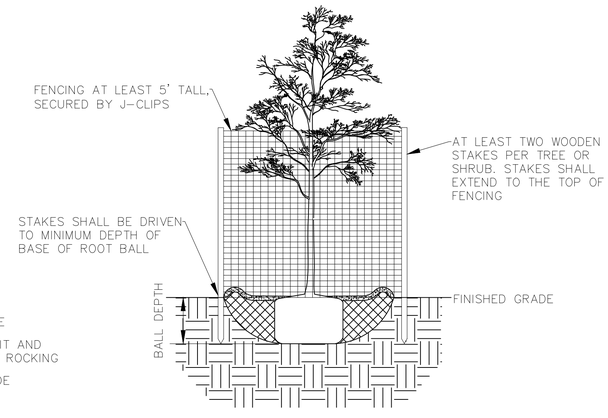
NOT TO SCALE



NOTES:
1. REMOVE BURLAP OR ROPE FROM TOP ⅓ OF BALL MINIMUM, CUT REMAINING PORTIONS OF ROPE ONCE PLANT IS IN THE FINAL POSITION IN PIT.
2. TOP OF ROOT BALL SHALL BE SET FLUSH WITH OR SLIGHTLY ABOVE SURROUNDING FINISHED GRADE.

TREE AND SHRUB PROTECTION TYPICAL DETAIL

NOT TO SCALE



NOTES:
1. FENCING SHALL BE AT LEAST 5 FT TALL AND SHALL BE PLACED AT TREE DRIP LINE OR SURROUNDING THE PLANT CROWN. THE FENCING SHALL BE CLOSED WITH J-CLIPS.

CHECK M. STOTTLER

DRAFTING C. JENKINS

DESIGN E. REDDING/J. WESOLOWSKI

D. FRAZIER

JOB MANAGER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

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OLD BAILEY WOODS RIPARIAN HABITAT RESTORATION

BUFFALO NIAGARA RIVERKEEPER®

PLANTING PLAN

PREPARED BY: CHJ/JSW	DWG.NO: **P3**
SCALE: AS NOTED	CONTRACT NO.

THIS MAP IS BASED ON A FIELD SURVEY COMPLETED BY FOIT–ALBERT ASSOCIATES, ARCHITECTURE, ENGINEERING, AND SURVEYING, P.C. ON 6–08–2016.

THE GROUND ELEVATIONS UNDERWATER ARE BASED ON A BATHYMETRIC SURVEY COMPLETED ON 4–07–2017.

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY AND RECORD INFORMATION PROVIDED. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM RECORD INFORMATION AVAILABLE, THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. IT IS THE CLIENTS' RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES (WHETHER SHOWN OR NOT) AND TO PROTECT SAID UTILITIES FROM ANY DAMAGE.

COORDINATES ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM WEST ZONE, NAD 83.

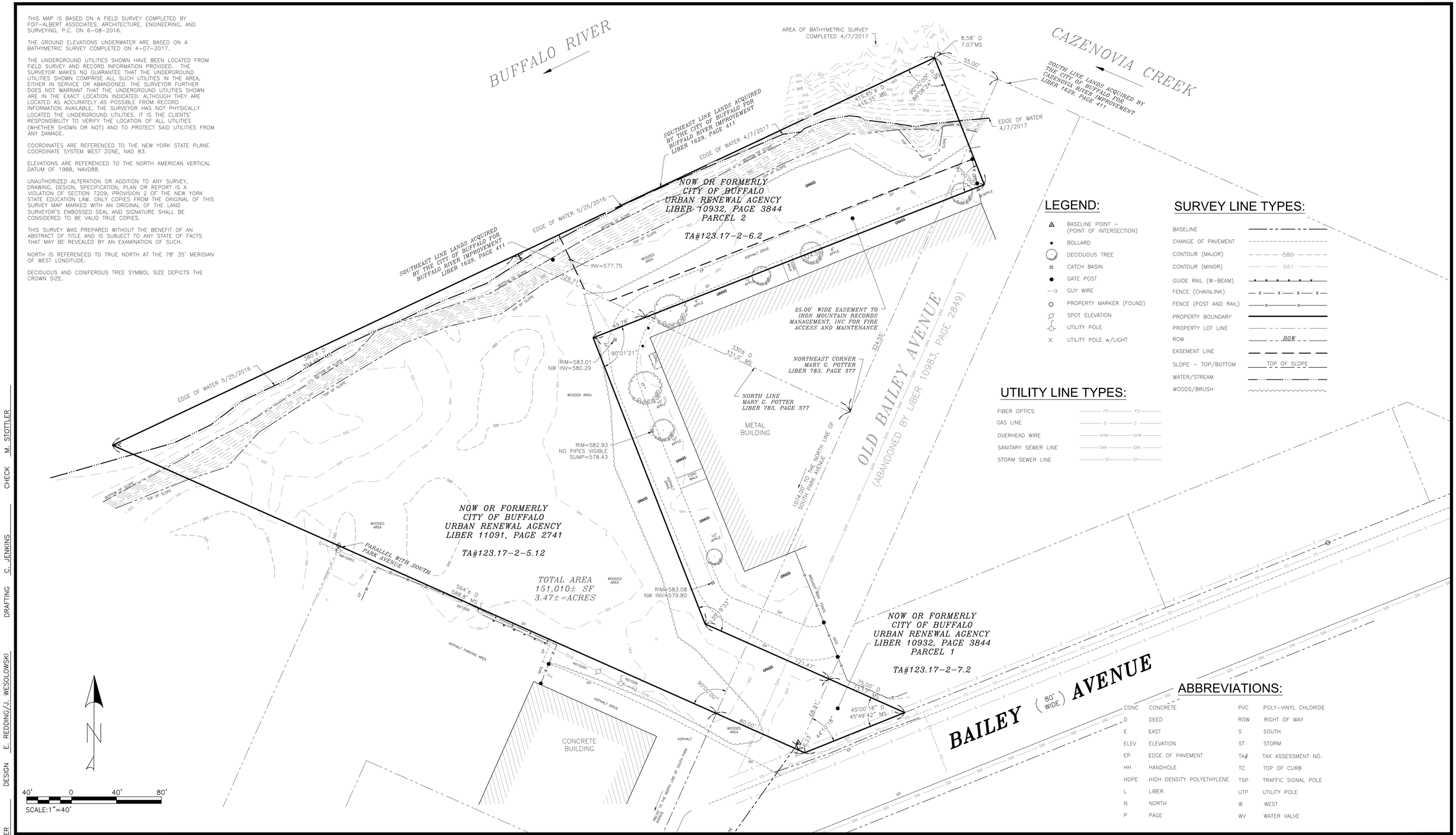
ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88.

UNAUTHORIZED ALTERATION OR ADDITION TO ANY SURVEY, DRAWING, DESIGN, SPECIFICATION, PLAN OR REPORT IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MAP MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S EMBOSSED SEAL AND SIGNATURE SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

NORTH IS REFERENCED TO TRUE NORTH AT THE 78° 35' MERIDIAN OF WEST LONGITUDE.

DECIDUOUS AND CONIFEROUS TREE SYMBOL SIZE DEPICTS THE CROWN SIZE.



LEGEND:

- BASELINE POINT – (POINT OF INTERSECTION)
- BOLLARD
- DECIDUOUS TREE
- CATCH BASIN
- GATE POST
- GUY WIRE
- PROPERTY MARKER (FOUND)
- SPOT ELEVATION
- UTILITY POLE
- UTILITY POLE w/LIGHT

SURVEY LINE TYPES:

- BASELINE
- CHANGE OF PAVEMENT
- CONTOUR (MAJOR) -580-
- CONTOUR (MINOR) -581-
- GUIDE RAIL (W–BEAM)
- FENCE (CHAINLINK) — x — x — x — x —
- FENCE (POST AND RAIL)
- PROPERTY BOUNDARY
- PROPERTY LOT LINE
- ROW — ROW —
- EASEMENT LINE
- SLOPE – TOP/BOTTOM — TOP OF SLOPE —
- WATER/STREAM
- WOODS/BRUSH

UTILITY LINE TYPES:

- FIBER OPTICS — FO — FO —
- GAS LINE — G — G —
- OVERHEAD WIRE — OHW — OHW —
- SANITARY SEWER LINE — SAN — SAN —
- STORM SEWER LINE — ST — ST —

ABBREVIATIONS:

CONC	CONCRETE	PVC	POLY–VINYL CHLORIDE
D	DEED	ROW	RIGHT OF WAY
E	EAST	S	SOUTH
ELEV	ELEVATION	ST	STORM
EP	EDGE OF PAVEMENT	TA#	TAX ASSESSMENT NO.
HH	HANDHOLE	TC	TOP OF CURB
HDPE	HIGH DENSITY POLYETHYLENE	TSP	TRAFFIC SIGNAL POLE
L	LIBER	UTP	UTILITY POLE
N	NORTH	W	WEST
P	PAGE	WV	WATER VALVE

JOB MANAGER D. FRAZIER | DESIGN E. REDDING/J. WESOLOWSKI | DRAFTING C. JENKINS | CHECK M. STOTTLER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

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OLD BAILEY WOODS RIPARIAN HABITAT RESTORATION

BUFFALO NIAGARA RIVERKEEPER®

EXISTING CONDITIONS

PREPARED BY:	DWG.NO:
CHJ/JSW	P4
SCALE: AS NOTED	CONTRACT NO.

PLANTING AREAS

- MEADOW
- UPLAND WOODED AREA
- RIPARIAN WOODS (TOP OF SLOPE TO EDGE OF WOODS)
- RIPARIAN SLOPE (SURVEYED EDGE OF WATER TO TOP OF SLOPE)
- EMERGENT (EL. 572' TO SURVEYED EDGE OF WATER)
- EROSION CONTROL AREA: RIPARIAN (TO TOP OF SLOPE)
- EROSION CONTROL AREA: EMERGENT (EL. 572' TO EDGE OF WATER IN PROPOSED WEIR AREA)

BUFFALO RIVER

CAZENOVIA CREEK

SEE DETAILS SHEET P9

SHEET P8

SHEET P7

SHEET P6

(ML) A

A

(ML) B

B

COMPOST FILTER SOCK (OR APPROVED EQUAL)

OLD BAILEY AVENUE

BAILEY (80' WIDE) AVENUE

METAL BUILDING

CONCRETE BUILDING

ASPHALT DRIVE

ASPHALT PARKING AREA

WOODED AREA

TOP OF SLOPE

BOTTOM OF SLOPE

LEGEND:

- BASELINE POINT – (POINT OF INTERSECTION)
- BOLLARD
- DECIDUOUS TREE
- CATCH BASIN
- GATE POST
- GUY WIRE
- PROPERTY MARKER (FOUND)
- SPOT ELEVATION
- UTILITY POLE
- UTILITY POLE w/LIGHT

SURVEY LINE TYPES:

- BASELINE
- CHANGE OF PAVEMENT
- CONTOUR (MAJOR) 580
- CONTOUR (MINOR) 581
- GUIDE RAIL (W-BEAM)
- FENCE (CHAINLINK)
- FENCE (POST AND RAIL)
- PROPERTY BOUNDARY
- PROPERTY LOT LINE
- ROW
- EASEMENT LINE
- SLOPE – TOP/BOTTOM TOP OF SLOPE
- WATER/STREAM
- WOODS/BRUSH

UTILITY LINE TYPES:

- FIBER OPTICS FO
- GAS LINE G
- OVERHEAD WIRE OHW
- SANITARY SEWER LINE SAN
- STORM SEWER LINE ST

ABBREVIATIONS:

CONC	CONCRETE	PVC	POLY-VINYL CHLORIDE
D	DEED	ROW	RIGHT OF WAY
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HH	HANDHOLE	TC	TOP OF CURB
HDPE	HIGH DENSITY POLYETHYLENE	TSP	TRAFFIC SIGNAL POLE
L	LIBER	UTP	UTILITY POLE
N	NORTH	W	WEST
P	PAGE	WV	WATER VALVE

N

40' 0 40' 80'

SCALE:1"=40'

CHECK M. STOTTLER

DESIGN E. REDDING/J. WESOLOWSKI

DRAFTING C. JENKINS

JOB MANAGER D. FRAZIER

REV NO	DATE	DESCRIPTION	DWN	CHK	PROJ APP.
		100% PLANS			

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OLD BAILEY WOODS RIPARIAN HABITAT RESTORATION

PROPOSED CONDITIONS

BUFFALO NIAGARA RIVERKEEPER®

PREPARED BY: CHJ/JSW

DWG.NO: P5

SCALE: AS NOTED

CONTRACT NO.

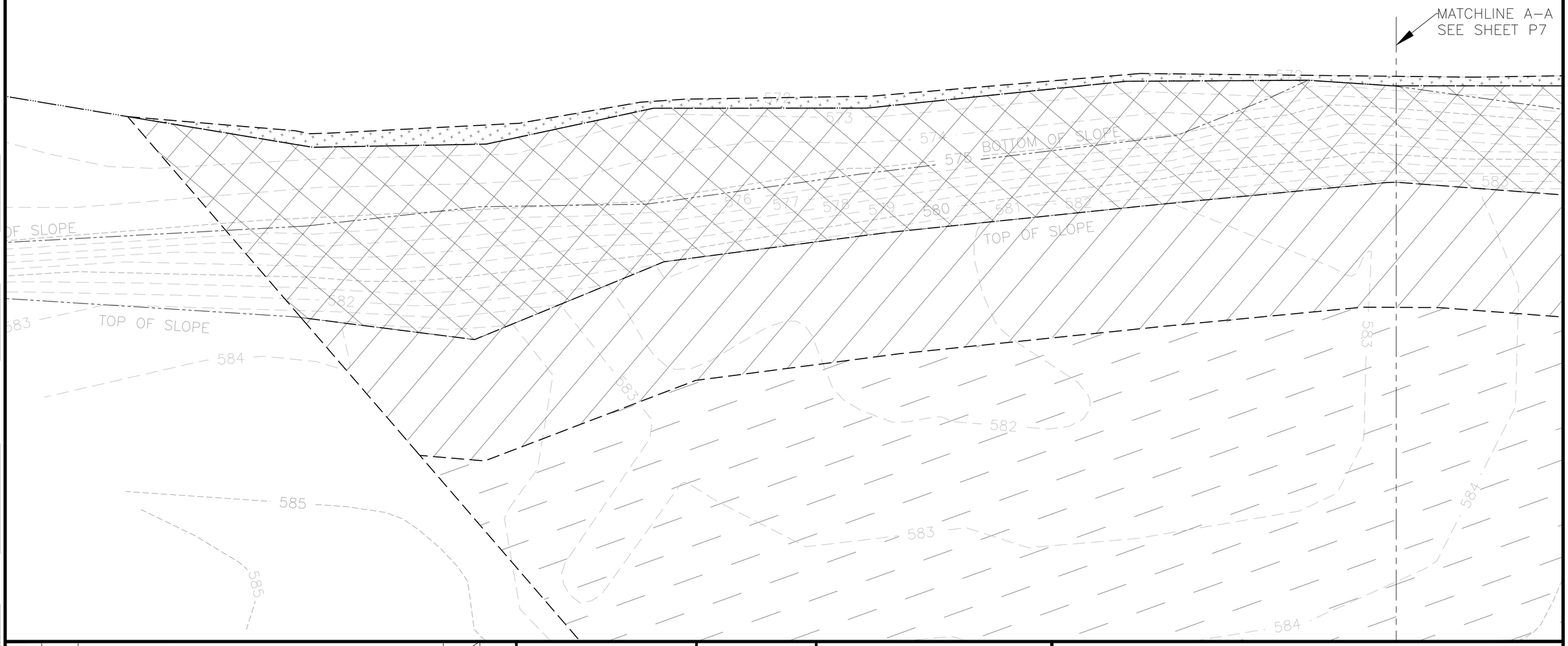
PLANTING AREAS

- MEADOW
- UPLAND WOODED AREA
- RIPARIAN WOODS (TOP OF SLOPE TO EDGE OF WOODS)
- RIPARIAN SLOPE (SURVEYED EDGE OF WATER TO TOP OF SLOPE)
- EMERGENT (EL. 572' TO SURVEYED EDGE OF WATER)

10' 0 10' 20'
SCALE: 1" = 10'

SURVEY LINE TYPES

- CONTOUR (MAJOR) ----580----
- CONTOUR (MINOR) — —581— —
- SLOPE – TOP/BOTTOM TOP OF SLOPE
- WATER/STREAM —·——·——·—
- LIMIT OF PLANTING AREA — — — — —



CHECK M. STOTTLER
DRAFTING C. JENKINS
DESIGN E. REDDING/J. WESOLOWSKI
JOB MANAGER D. FRAZIER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

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BUFFALO NIAGARA RIVERKEEPER®

PROPOSED LAYOUT PLAN I

PREPARED BY:	DWG.NO:
CHJ/JSW	P6
SCALE: AS NOTED	CONTRACT NO.

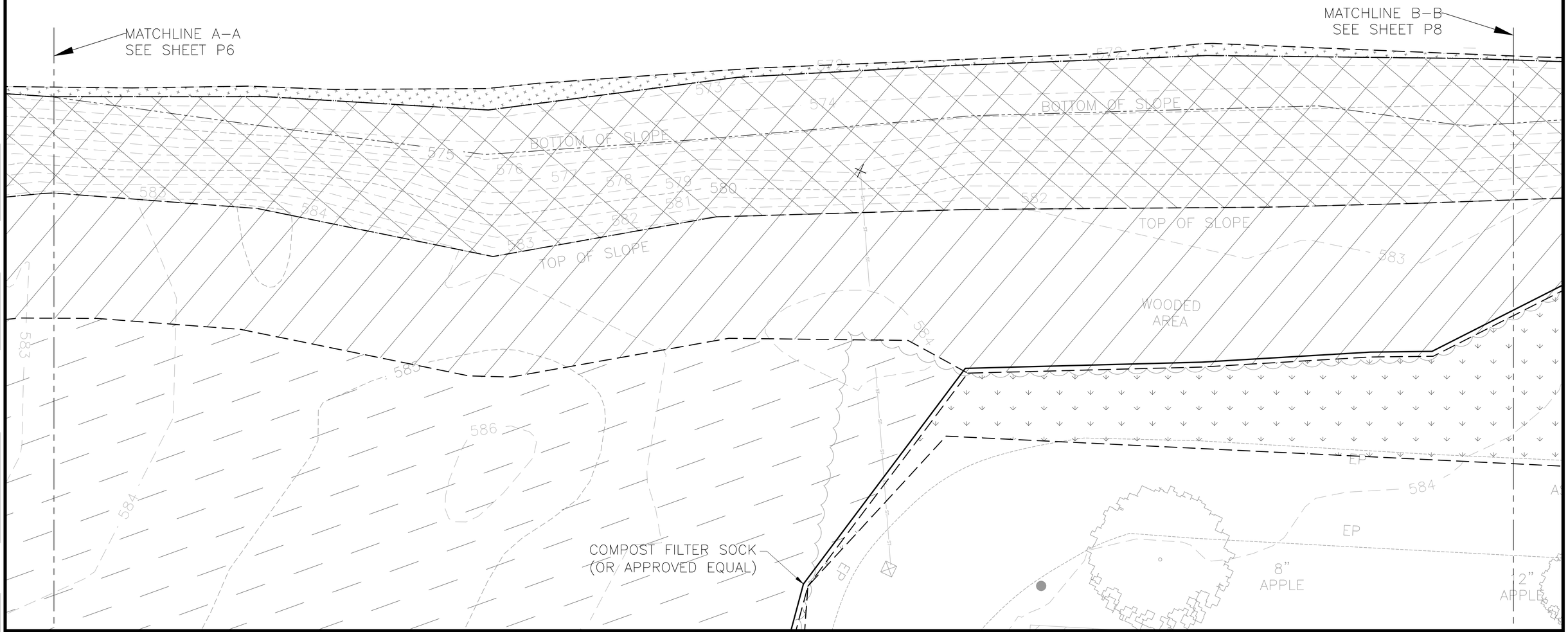
PLANTING AREAS

- MEADOW
- UPLAND WOODED AREA
- RIPARIAN WOODS (TOP OF SLOPE TO EDGE OF WOODS)
- RIPARIAN SLOPE (SURVEYED EDGE OF WATER TO TOP OF SLOPE)
- EMERGENT (EL. 572' TO SURVEYED EDGE OF WATER)

10' 0 10' 20'
SCALE: 1" = 10'

SURVEY LINE TYPES

- CONTOUR (MAJOR) ----580----
- CONTOUR (MINOR) — —581— —
- SLOPE – TOP/BOTTOM TOP OF SLOPE
- WATER/STREAM —·—·—·—·—
- LIMIT OF PLANTING AREA — — — — —



CHECK M. STOTTLER
DRAFTING C. JENKINS
DESIGN E. REDDING/J. WESOLOWSKI
JOB MANAGER D. FRAZIER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

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BUFFALO NIAGARA RIVERKEEPER®

PROPOSED LAYOUT PLAN II

PREPARED BY:	DWG.NO:
CHJ/JSW	P7
SCALE: AS NOTED	CONTRACT NO.

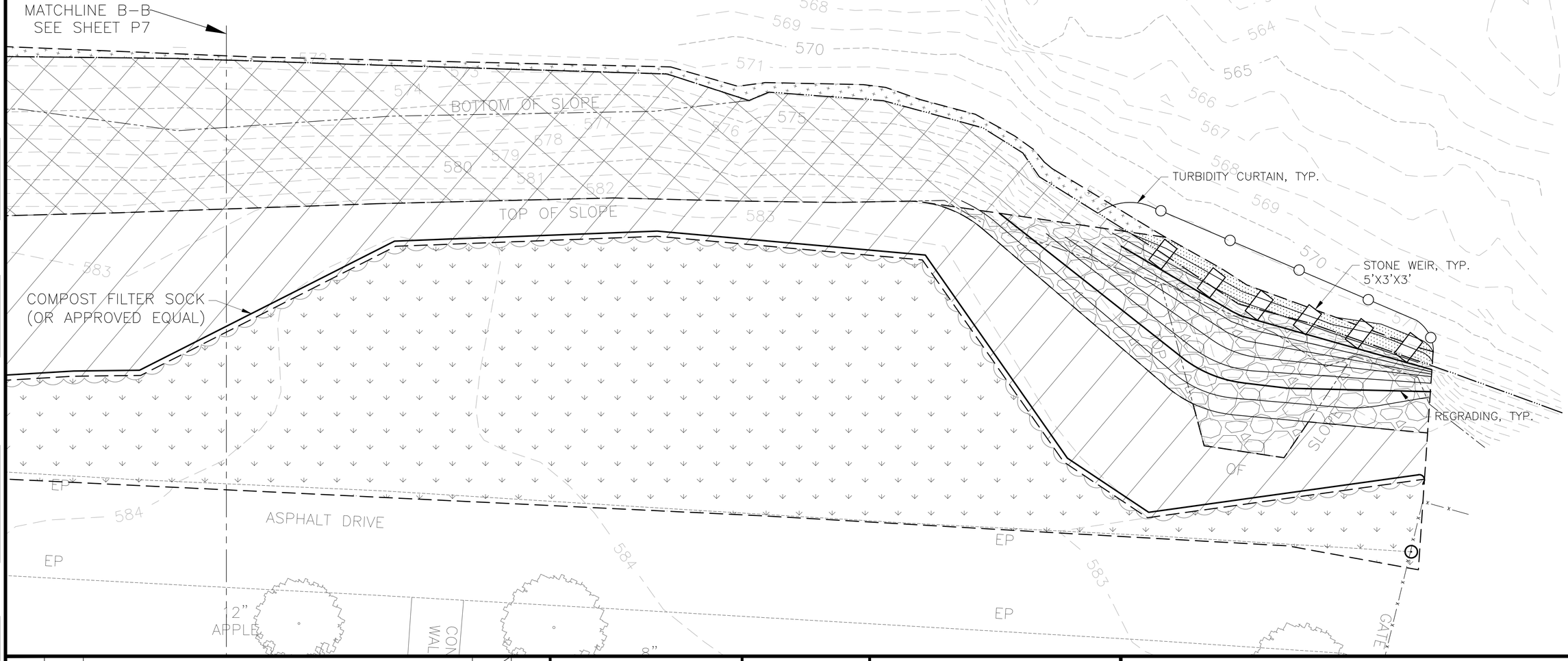
PLANTING AREAS

- MEADOW
- UPLAND WOODED AREA
- RIPARIAN WOODS (TOP OF SLOPE TO EDGE OF WOODS)
- RIPARIAN SLOPE (SURVEYED EDGE OF WATER TO TOP OF SLOPE)
- EMERGENT (EL. 572' TO SURVEYED EDGE OF WATER)
- EROSION CONTROL AREA: RIPARIAN (TO TOP OF SLOPE)
- EROSION CONTROL AREA: EMERGENT (EL. 572' TO EDGE OF WATER IN PROPOSED WEIR AREA)

SURVEY LINE TYPES

- CONTOUR (MAJOR) ----580----
- CONTOUR (MINOR) — —581— —
- SLOPE – TOP/BOTTOM TOP OF SLOPE
- WATER/STREAM
- LIMIT OF PLANTING AREA — — — — —

10' 0 10' 20'
SCALE:1"=10'



JOB MANAGER D. FRAZIER | DESIGN E. REDDING/J. WESOLOWSKI | DRAFTING C. JENKINS | CHECK M. STOTTLER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

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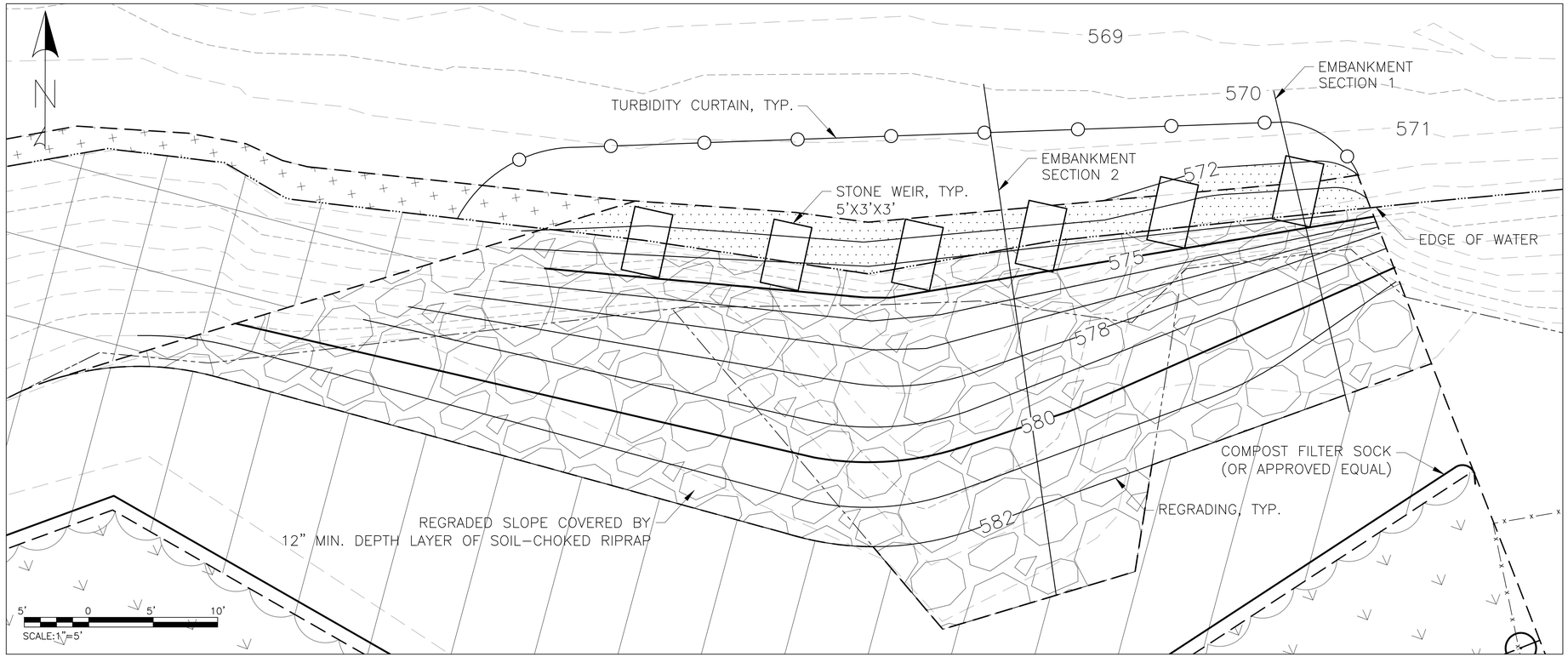
PROPOSED LAYOUT PLAN III

PREPARED BY:	DWG.NO:
CHJ/JSW	**P8**
SCALE: AS NOTED	CONTRACT NO.



RESTORATION AND REGRADING DETAIL

PLANTING AREAS

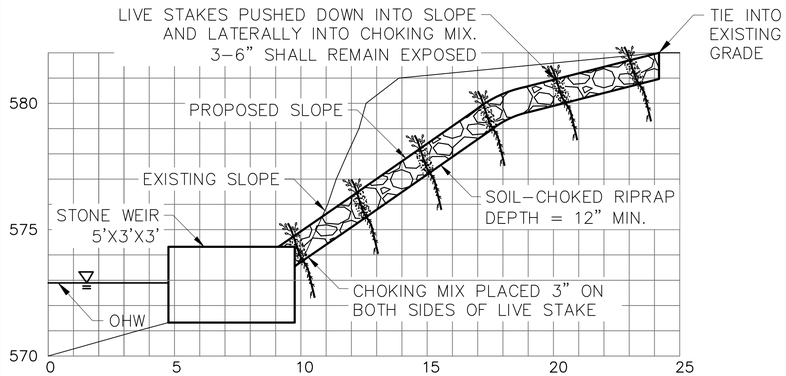
- MEADOW
- UPLAND WOODED AREA
- RIPARIAN WOODS (TOP OF SLOPE TO EDGE OF WOODS)
- RIPARIAN SLOPE (SURVEYED EDGE OF WATER TO TOP OF SLOPE)
- EMERGENT (EL. 572' TO EDGE OF WATER)
- EROSION CONTROL AREA: RIPARIAN (TO TOP OF SLOPE)
- EROSION CONTROL AREA: EMERGENT (EL. 572' TO EDGE OF WATER)

SURVEY LINE TYPES

- CONTOUR (MAJOR) ----580----
- CONTOUR (MINOR) — —581— —
- SLOPE – TOP/BOTTOM TOP OF SLOPE
- WATER/STREAM

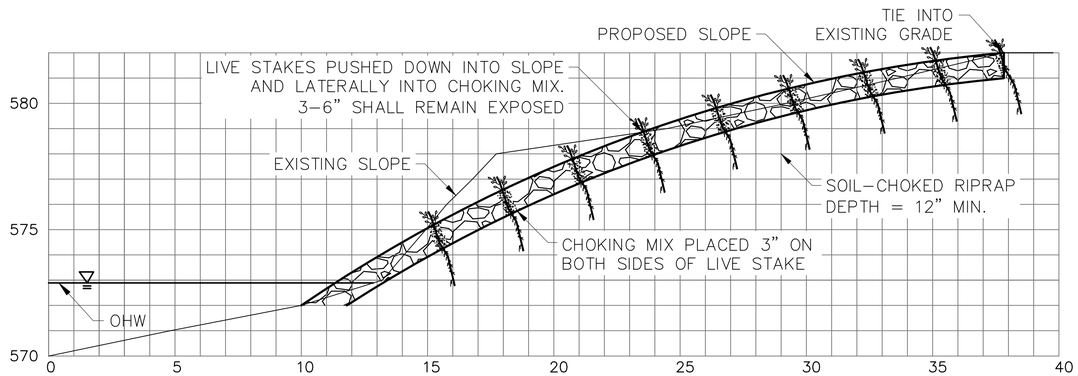
PROPOSED LINE TYPES

- PROP. CONTOUR (MAJ.) 580
- PROP. CONTOUR (MIN.) 581
- LIMIT OF PLANTING AREA
- TURBIDITY CURTAIN



EMBANKMENT SECTION 1

SCALE: AS SHOWN



EMBANKMENT SECTION 2

SCALE: AS SHOWN

NOTES:

1. STONE WEIRS SHALL BE PLACED FACING UPSTREAM AT A 20 DEGREE ANGLE. THEY SHALL BE SPACED 10' ON CENTER.
2. LIVE STAKES SHALL BE PLACED IN HORIZONTAL ROWS PARALLEL TO RIVER FLOW. SOIL-CHOKED RIPRAP SHALL BE PLACED BETWEEN ROWS.

JOB MANAGER D. FRAZIER | DESIGN E. REDDING/J. WESOLOWSKI | DRAFTING C. JENKINS | CHECK M. STOTTLER

REV NO	DATE	DESCRIPTION	DWN. / CHK	PROJ APP.
		100% PLANS		

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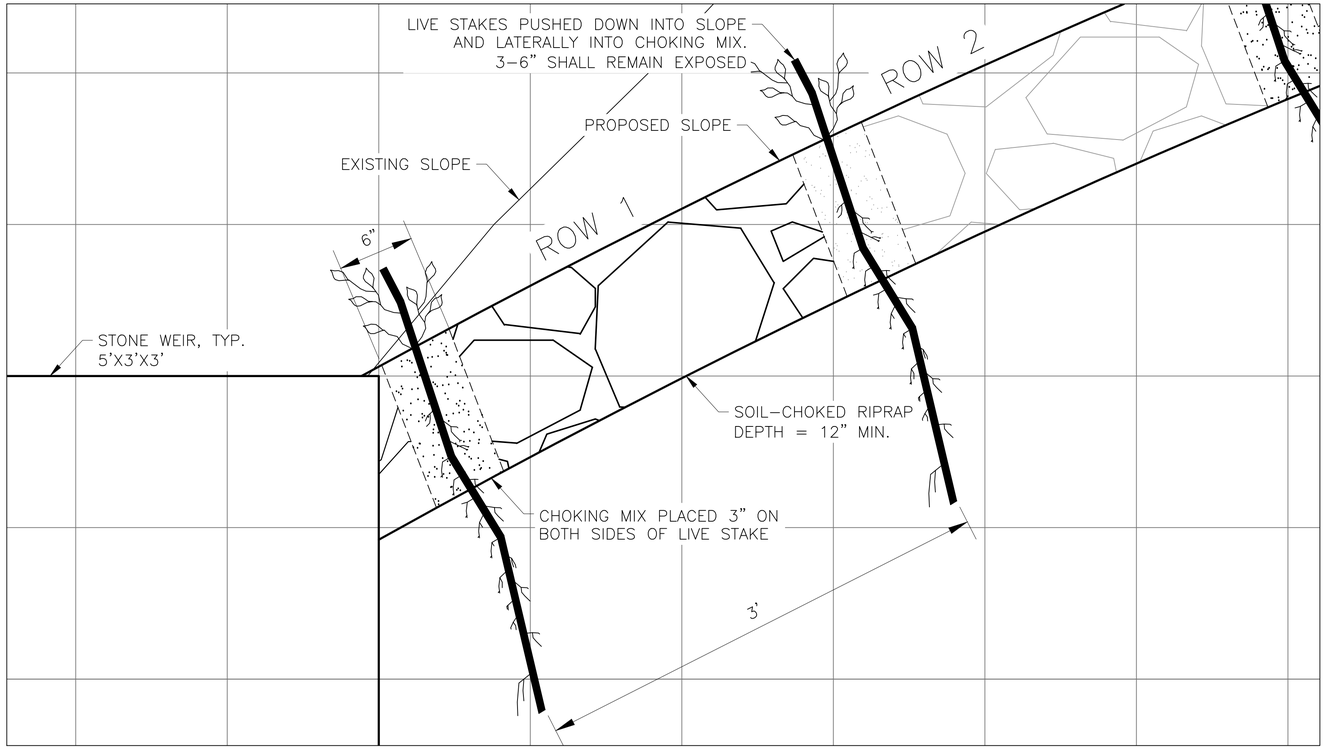
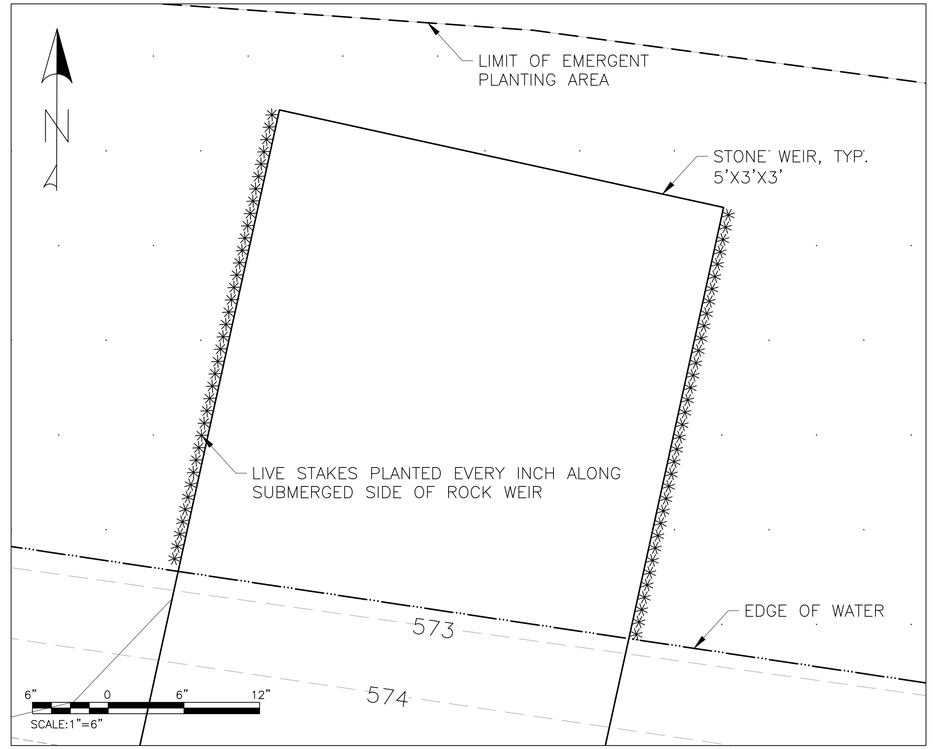
BUFFALO NIAGARA RIVERKEEPER®

DETAILS I

PREPARED BY:	DWG.NO:
CHJ/JSW	**P9**
SCALE: AS NOTED	CONTRACT NO.



LIVE STAKE EMBANKMENT PLANTING DETAIL N.T.S.



LIVE STAKE EMERGENT AREA PLANTING DETAIL

SUGGESTED CONSTRUCTION SEQUENCE:

1. CUT BACK HILLSIDE, REMOVING TREES AS NECESSARY. REFER TO CLEARING AND GRUBBING NOTES ON THE GENERAL NOTE SHEET REGARDING REMOVAL OF STUMPS.
2. INSTALL STONE WEIRS AT TOE OF SLOPE SPACED TEN FEET ON CENTER AS INDICATED ON THE DRAWINGS
3. INSTALL LIVE STAKES ON BOTH SIDES OF STONE WEIRS IN THE EMERGENT ZONE (FROM TOE OF STONE TO EDGE OF WATER). PLACEMENT TO BE AT ONE INCH SPACING.
4. SOIL CHOKED RIPRAP TO BE SPACED AT 2.5–FOOT WIDTH INTERVAL BETWEEN THE LIVE STAKES.
5. PLACE HORIZONTAL ROWS OF LIVE STAKES SPACED LATERALLY AT A MINIMUM OF ONE INCH INTERVALS. THE LIVE STAKES SHALL BE ENVELOPED BY 6–INCHES OF SOIL CHOKING MIXTURE, WITH 3–INCHES ON BOTH SIDES OF THE STAKES, BELOW AND ABOVE THE STAKES.
6. CONTINUE SEQUENTIAL INSTALLATION OF SOIL CHOKED RIPRAP, SOIL CHOKING MIXTURE, AND LIVE STAKES IN ALTERNATING LAYERS PROGRESSING FROM THE TOE OF SLOPE TO TOP OF HILLSIDE.

JOB MANAGER D. FRAZIER | DESIGN E. REDDING/J. WESOLOWSKI | DRAFTING C. JENKINS | CHECK M. STOTTLER

REV NO	DATE	DESCRIPTION	DWN / CHK	PROJ APP.
		100% PLANS		

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BUFFALO NIAGARA RIVERKEEPER®

DETAILS II

PREPARED BY:	DWG.NO:
CHJ/JSW	**P10**
SCALE: AS NOTED	CONTRACT NO.

Plate A.1: Old Bailey Woods Installed Plant Inventory Provided by Applied Ecological Services

Applied Ecological Services
Old Bailey Woods
Planting Inventory- Trees/shrubs

Trees

Species Name	Common Name	Plant Size	Emergent	Riparian Slope	Riaparian Woods	Upland Woods	Meadow	Erosion Control Area	Delivery Date/s	Total Count Installed	Project total	Difference
Acer rubrum	Red Maple	5-gallon		15	10				11/14/2017	25	25	0
Asimina triloba	Paw Paw	3-Gallon				25			11/29/2017	25	25	0
Carya ovata	Shagbark Hickory	B&B				6	6		6/1/2018	12	27	15
Celtis occidentalis	Hackberry	10-Gallon		10	15				11/14/2017	25	25	0
Juglans nigra	Black walnut	7-Gallon		25	25				11/14/2017	50	50	0
Liriodendron tulipifera	Tulip poplar	5-Gallon			25				11/14/2017	25	25	0
Liriodendron tulipifera	Tulip poplar	10-Gallon				20	7		11/14/2017	27	27	0
Plantanus occidentalis	Sycamore	5-Gallon		25	26				11/14/2017	51	50	-1
Plantanus occidentalis	Sycamore	10-Gallon			10	15			11/14/2017	25	25	0
Quercus alba	White oak	7-Gallon		25	25	50	2		11/14/2017	102	102	0
Quercus alba	White oak	10-Gallon			10	10	5		11/14/2017	25	25	0
Quercus alba	White oak	7-Gallon					15		6/1/2018	15	0	-15
Quercus bicolor	Swamp White oak	10-Gallon			5	20			11/14/2017	25	25	0
Quercus macrocarpa	Bur oak	7-Gallon			25	25			11/14/2017	50	50	0
Salix nigra	Black willow	5-gallon		30	25	20	2		11/14/2017	77	77	0
Tilia america	Basswood	7-Gallon			25		2		11/14/2017	27	27	0
		Total=	0	130	226	191	39	0		586	585	-1

Small Trees & Shrubs

Species Name	Common Name	Plant Size	Emergent	Riparian Slope	Riaparian Woods	Upland Woods	Meadow	Erosion Control Area	Delivery Date	Total Count Installed	Project total	Difference
Aronia melanocarpa	Black chokeberry	2-Gallon		25	10				11/14/2017	35	35	0
Cephalanthus occidentalis	Buttonbush	2-Gallon	25	55	40				11/21/2017	120	25	-95
Cornus alternifolia	Alternate-leaf dogwood	2-Gallon		25	10				12/4/2017	35	35	0
Cornus amomum	Silky dogwood	2-Gallon		25	25	25			11/14/2017	75	75	0
Cornus racemosa	Gray dogwood	2-Gallon		25	25	25			12/4/2017	75	75	0
Ilex verticillata-Male	Winterberry	1-Gallon				25			11/14/2017	25	35	10
Ilex verticillata-Female	Winterberry	3-Gallon			10	25			11/14/2017	35	0	-35
Decadon verticilatus	Waterwillow									0	25	25
Lindera benzoin	Spicebush	2-Gallon			26	25			11/29/2017	51	50	-1
Prunus virginiana	Choke cherry	2-Gallon				35			12/4/2017	35	35	0
Rhus typhina	Staghorn sumac	2-Gallon			10	25			11/14/2017	35	35	0
Rosa palustris	Swamp rose	2-Gallon			25	25			11/14/2017	50	50	0
Rosa virginiana	Virginia rose	2-Gallon			25	25			11/14/2017	50	50	0
Rubus occidentalis	Black raspberry	3-Gallon			25	25			12/4/2017	50	50	0
Rubus oderatus	Purple flowering raspberry	2-Gallon		25	25	25			12/4/2017	75	75	0
Sambucus canadensis	Elderberry	2-Gallon		25	25	25			12/4/2017	75	75	0
Viburnum dentatum	Arrowwood	2-Gallon		15	25	15			12/4/2017	55	55	0
Viburnum lentago	Nannyberry	2-Gallon		10	10	10			12/4/2017	30	30	0
Viburnum opulus	Highbush cranberry									0	65	65
Viburnum trilobum	American cranberry bush	2-Gallon		25	15	25			11/29/2017	65	0	-65
										971	875	-96

Livestakes

Species Name	Common Name	Plant Size	Emergent	Riparian Slope	Riaparian Woods	Upland Woods	Meadow	Erosion Control Area	Delivery Date	Total Count Installed	Project total	Difference
Archewild												
Cornus sericea	Red osier dogwood	Livestake						500	11/10/2017	500	4450	3950
Salix discolor	Pussy willow	Livestake						2000	11/10/2017	2000	4430	2430
Cornus amomum	Silky dogwood	Livestake						3120	12/11/2017	3120	0	-3120
Soutnern Tier Consulting												0
Cephalanthus occidentalis	Buttonbush	Livestake	330	300					11/13/2017	630	630	0
Salix discolor	Pussy willow	Livestake	130						11/13/2017	130	0	-130
Cornus sericea	Red-osier dogwood	Livestake	130						11/13/2017	130	0	-130
New England Wetland Plants												0
Salix discolor	Pussy willow	Livestake						1500	12/18/2017	1500	0	-1500
Cornus amomum	Silky dogwood	Livestake						1500	12/18/2017	1500	0	-1500
							Total=	8620		9510	9510	0

Red text indicates species that were unavailable.

Applied Ecological Services
Old Bailey Woods
Planting Inventory- Vines/Herbs

Herbaceous Plugs & Vines											
Species Name	**Common Name**	**Plant Size**	**Emergent**	**Riparian Slope**	**Riaparian Woods**	**Upland Woods**	**Meadow**	**Erosion Control A**	**Total Count Installed**	**Project Total**	**Difference**
Vines											
Celamatis virginiana	Virgin's bower	18" Length		75	50			123	248	200	-48
Parthenocissus quinquefolius	Virginia creeper	18" Length		75	50			151	276	200	-76
	Total=		0	150	100	0	0	274	524	400	-124

Emergent Herbs											
Species Name	**Common Name**	**Plant Size**	**Emergent**	**Riparian Slope**	**Riaparian Woods**	**Upland Woods**	**Meadow**	**Erosion Control A**	**Total Count Installed**	**Project Total**	**Differnce**
Chelone glabra	Turtlehead	Plug-50	25					25	50	45	-5
Juncus effusus	Soft rush	Plug-50	25					25	50	45	-5
Peltandra virginica	Green arrow arrum	Plug-50	25					25	50	45	-5
Pontedaria cordata	Pickerweed	Plug-72	50					50	100	70	-30
Schoenoplectus tabermaemontanii	Soft stem bulrush	Plug-50	25					25	50	45	-5
Scirpus cyperinus	Wool grass	Plug-50	25					25	50	45	-5
Sparganium eurycarpum	Giant bur-reed	Plug-72	52					25	77	45	-32
	Total=		227	0	0	0	0	200	427	340	-87

Wet Meadow, Riparian, and Upland Herbs											
Species Name	**Common Name**	**Plant Size**	**Emergent**	**Riparian Slope**	**Riaparian Woods**	**Upland Woods**	**Meadow**	**Erosion Control A**	**Total Count Installed**	**Project Total**	**Difference**
Ageratina altissima	White snake root	Bare-root				75	25		100	100	0
Apocynum cannabinum	Dogbane	Bare-root				50	50		100	100	0
Asclepias purpescens	Purple milkweed	Plug-50							0	50	50
Asclepias syriaca	Common milkweed	Plug-50					50		50	50	0
Circea lutetiana	Enchanter's nightshade	Bare-root				100			100	100	0
Eurybia macrophylla	Large leaf wood aster	Plug-50					50		50	50	0
Euthamia graminifolia	Grass leaf goldenrod	Plug-50					50		50	50	0
Eutrochium maculatum	Joe-pye weed	Plug-50		50	50		50		150	150	0
Heliopsis helianthoides	Oxeye sunflower	Plug-50					50		50	50	0
Iris versicolor	Blue flag iris	Plug-50		50					50	50	0
Lobelia cardinalis	Cardinal flower	Plug-50	25	25					50	25	-25
Maiathemum canadense	Canada mayflower	32-cells					100		100	100	0
Maianthemum racemosum	False solomon's seal	32-cells					100		100	100	0
Monarda didyma	Beebalm	Plug-50		50		100	50		200	200	0
Monarda fistulosa	Wild bergamot	Plug-50					100		100	100	0
Podophyllum peltatum	Mayapple	32-cells			50	100			150	150	0
Pycnanthemum tenuifolium	Slender mountainmint	Plug-50					100		100	100	0
Symphyotrichum laeve	Smooth blue aster	Plug-50					100		100	100	0
Symphyotrichum novae-angliae	New england aster	Plug-50					100		100	100	0
Vernonia noveboracensis	ironweed	Plug-50					100		100	100	0
	Total=								1800	1825	25

Blue text indicates species that were sourced in a different size than originally specified.

Applied Ecological Services
Old Bailey Woods
Planting Inventory- Seed

Seed Mix for Riparian Slope, Riparian Woods, Upland Woods, & Meadow (Delivered on 4/13/18)		
Species Name	**Common Name**	**Quantity/Lbs**
Andropogon gerardi	Big Bluestem	3.6
Anemone canadensis	Canadian Anemone	3.6
Ageratina altissima	White snakeroot	3.6
Apocynum cannabinum	Dogbane	1.8
Asclepias syriaca	Common milkweed	1.8
Circaea lutetiana	Enchanter's nightshade	0
Elymus canadensis	Canada wild rye	1.8
Elymus virginicus	Viginia wild rye	3.6
Eurybia macrophylla	Large leaf wood aster	1
Euthamia gramnifolia	Grass leaf goldenrod	0
Eutrochium maculatum	Joe-Pye weed	1.8
Helianthus decapetalus	Thin-leaved sunflower	0
Heliopsis helianthoides	Oxeye sunflower	1.8
Monarda Fistulosa	Wild bergamot	1.8
Panicum clandestinum	Deertongue	7.3
Panicum virgatum	Switchgrass	3.6
Schizachyrium scoparium	Little bluestem	7.2
Solidago canadensis	Canada goldenrod	1.8
Solidago flexicaulis	Zigzag goldenrod	1.7
Sorgastrum nutans	Indian grass	1.8
Thalictrum pubescens	Tall meadow rue	1.7
Vernonia noveboracensis	New York ironweed	3.6
Symphyotrichum laeve	Smooth blue aster	3
Symphyotrichum novae-angliae	New England aster	2.9
Symphyotrichum ericoides	Heath aster	3.9
Bidens frondosa	Beggartick	1.8
Elymus hystix	Bottlebrush grass	5.5
	Total=	72

Native Cover Seed for Riparian Slope, Riparian Woods, Upland Woods, & Meadow		
Species Name	**Common Name**	**Quantity/Lbs**
Elymus canadensis	Canada Wild Rye	16.4
Elymus virginicus	Virginia Wild Rye	12.2
Elymus riparius	Riverbank Wild Rye	17.9
	Annual Rye	40
	Total=	86.5

APPENDIX B. PHOTO MONITORING PHOTOGRAPHS

Photo monitoring point 1
Tree was promptly replaced by planting contractor

Photo monitoring point 2

Photo monitoring point 3 – photo 1

Photo monitoring point 3 – photo 2

Photo monitoring point 4 – photo 1

Photo monitoring point 4 – photo 2

Photo monitoring point 5 – photo 1

Photo monitoring point 5 – photo 2

Photo monitoring point 6 – photo 1

Photo monitoring point 6 – photo 2

Photo monitoring point 7

Photo monitoring point 8 – photo 2

Photo monitoring point 9 – photo 1

Photo monitoring point 9 – photo 2

Photo monitoring point 10 – photo 1

Photo monitoring point 10 – photo 2

Photo monitoring point 11 – photo 1

Photo monitoring point 11 – photo 2

Photo monitoring point 12

APPENDIX C. ADDITIONAL SITE PHOTOGRAPHS

Erosion Control Area

Riparian Slope, Riparian and Upland Woods