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# APPENDIX 6

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## Chapter 6 Appendices:

- Evergreen Wetland Mitigation Plan
- Gyrodyne Wetland Mitigation Plan

**Planting Details**

Plant choices for the wetland expansion were made according to existing site conditions and locally common species. All planting will proceed by hand. Materials will be brought to the site in good condition (see below) and then placed in central drop locations. The materials will then be hand-carried to their planting locations and in turn, planted by hand. Only rounded, shallow planting shovels will be used in this effort.

Criteria for selecting plant material will include (1) the plant's ability to withstand the expected light and saturation conditions; (2) its demonstrated survival on this site and other nearby sites; (3) the plant must be native and non-invasive; and (4) whether the plant material is available at nurseries in the same region as the site. See Table 1 for complete plant species list. Seed mix was chosen based on the species' ability to survive in moist areas adjacent to the road with some sun.

Planting will be done in spring or early summer (between April 1 and July 1). Shrubs may also be planted in the late summer to early fall (September 1 to October 30). In all cases, a hole will be dug twice as deep as the root ball. The only shovels allowed are rounded, shallow spades. The hole will then be backfilled with a thin layer (two to four inches) of rich, organic topsoil, the plant placed inside, the hole backfilled to the top and then gently tamped down. Container-grown plant material delivered to the job site will be inspected to assure moist soilroot masses. Any dry and light weight plants will not be accepted. If not planted immediately the container will be stored out of the sun and wind and kept moist (i.e., a means of watering will be provided and watering will occur daily).

When removed from the containers, the plants will be the size of the specified container. If in leaf, the plants will appear healthy with no spots, leaf damage, discoloration, insects or fungus. If not in leaf, the buds will be firm and free of damage, discoloration, insects or fungus. Containers will be a minimum of quart size for shrubs and gallon size for trees. Plants not having an abundance of well developed terminal buds on the leaders and branches will be rejected. The stems and branches of all plants will be turgid and the cambium healthy or the plants rejected. Seeding within wetland areas should not be completed when there is more than two inches of standing water, or in areas that are likely to be flooded. Seeds should be broadcast by hand or knapsack seeding rate (3.5 pounds per acre) and carefully proportioning seed for the entire area. Cover with a light layer of straw mulch following seeding.

**Plan Notes**

1. Prior to commencement of site work, silt fence is to be placed at limit of disturbance.
2. Regrade area and spread topsoil four to six inches deep using existing stockpiles. Final grading is to be generally completed as shown on this plan. Some field adjustment to achieve desired flow paths is acceptable.
3. Trees to remain will be identified prior to the commencement of site grading. These trees will be flagged in the field prior to the commencement of any clearing or excavation. Leave smaller existing trees in assumed area of disturbance to the extent practicable. Field adjustments to the grading plan may be necessary in order to ensure minimal impacts to roots of trees to be saved.
4. Hay and seed area of wetland expansion with Ernst Conservation Seeds Northeast Wetland Hummock Mix or equivalent. Companion seed with annual ryegrass as per grower's recommendations.
5. Trees, shrubs and herbaceous materials will be planted within the proposed wetland creation area as specified on the plan and the table above. Following planting, the planted area will be ringed with deer fencing as shown on the plan and detail.

**Monitoring and Maintenance**

At least one pre-construction meeting will occur between the chosen grading and/or planting contractor/subcontractor and the site environmental systems planner prior to beginning construction on site. The construction monitor will have experience in wetland construction and a Bachelor of Science degree in Natural and/or Physical Resources.

Monitoring and maintenance efforts for the mitigation plantings will take place over a five year period following construction. This will include bi-weekly visits for the first growing season, and then twice a year for the next two years, with additional inspections as required depending on conditions. The applicant's environmental monitor will conduct a survey of the site and site conditions will be noted and adjusted as necessary. An annual report will be provided to the Town of Cortland at the end of the growing season for each of the three years. These reports will include the following information:

1. All plant species, along with their estimated relative frequency and percent cover, shall be identified by using plots measuring 10 feet by 10 feet with at least one representative plot located in each of the habitat types within the mitigation site. For this proposal, there are two plots identified on the plan view planting plan.
2. Vegetation cover maps, at a scale of one inch equals 100 or larger, shall be prepared for each growing season.
3. Photographs showing all representative areas of the mitigation site shall be taken at least once each year during the period between 1 June and 15 August.
4. Surface water and groundwater elevations in representative areas of the mitigation site shall be recorded twice a year during April through November of each year. The location of the monitoring wells are shown on the plan view grading plan.

Plantings will meet or exceed 85 percent survival rate by the end of the second growing season. If this goal is not met, the site will be re-evaluated, and re-grading and/or replanting will be completed as necessary. Invasive species (i.e., *Lythrum salicaria* and *Phragmites australis*) will not constitute more than 10 percent of the vegetative community. If this goal is exceeded, measures will be taken to eradicate the invasive species.

Throughout the monitoring period, the mitigation area will be subject to inspection by the Town Environmental Monitor, as will the submitted monitoring reports. The Town's costs associated with such monitoring will be funded by the inspection fees paid by the applicant, which will be paid by the applicant at the signing of this agreement.

1. An invasive species monitoring and control program will be implemented at the project site as part of the overall development plan. Species targeted for removal include the following:

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| <i>Tree-of-heaven (Ailanthus altissima)</i>         | <i>Multiflora rose (Rosa multiflora)</i>         |
| <i>Mugwort (Artemisia vulgaris)</i>                 | <i>Autumn olive (Elaeagnus umbellata)</i>        |
| <i>Garlic mustard (Alliaria petiolata)</i>          | <i>Purple loosestrife (Lythrum salicaria)</i>    |
| <i>Common reed (Phragmites australis)</i>           | <i>Oxalis hirta/venosa (Oxalis hirta/venosa)</i> |
| <i>Porcelainberry (Ampelopsis brevipedunculata)</i> | <i>Japanese Barberry (Berberis thunbergii)</i>   |
| <i>Japanese Still Grass (Microstegium vimineum)</i> | <i>Winged Euonymus (Euonymus alatus)</i>         |

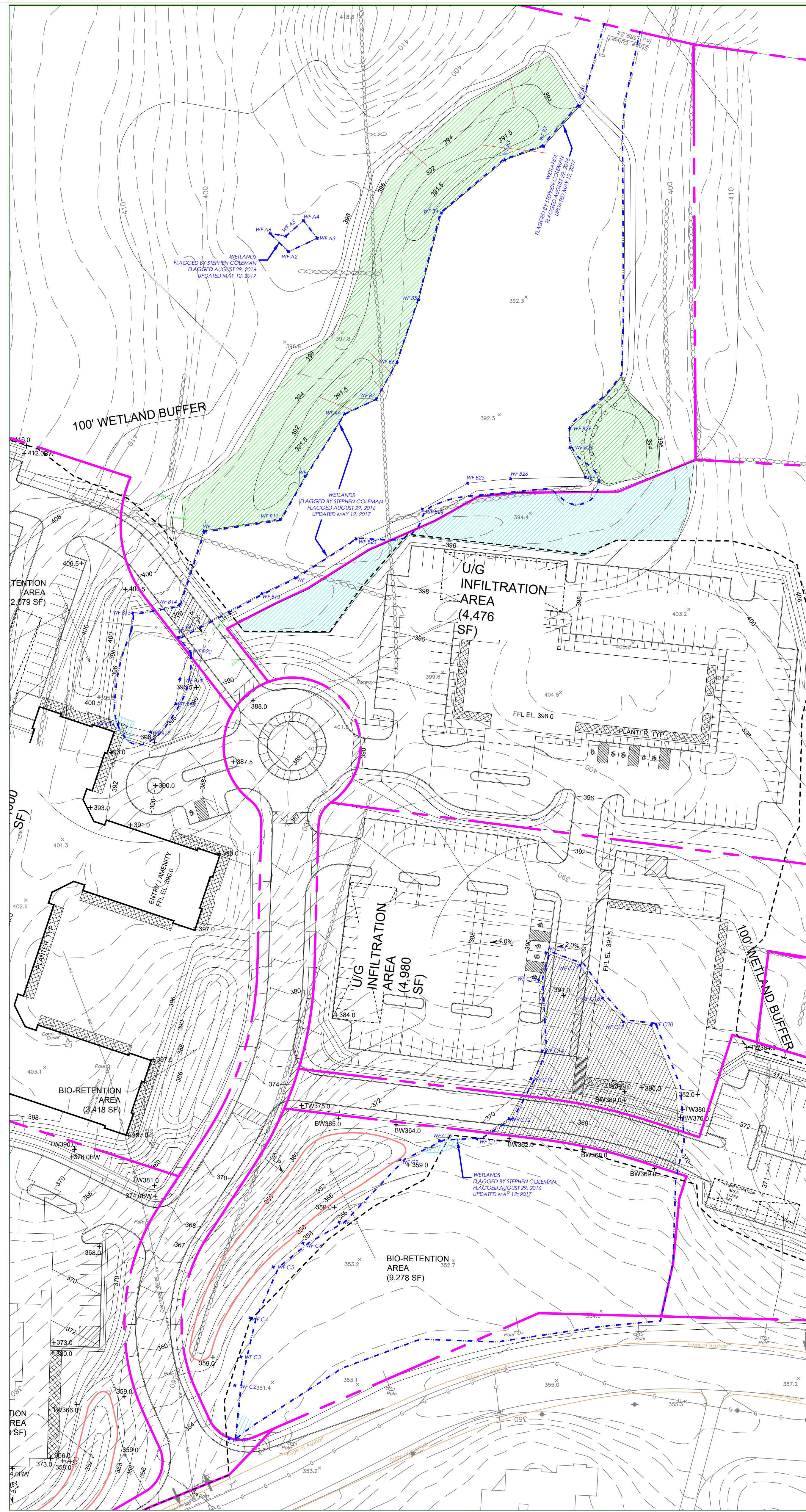
2. The goal of this program is to reduce the presence of exotic/invasive species to a threshold of less than ten percent total cover. A qualified biologist/botanist will supervise the removal of invasive species. Invasive species can be removed in several ways, depending on the location and species of the plant.

1. If a shrub is isolated and does not have its root system entwined with other plants, it may be removed mechanically. As much of the root system as possible should be removed to prevent the possibility of the invasive plant sprouting from root pieces left behind.
2. If a shrub is growing amongst other native plants the plant will be most safely and effectively removed by chemical means, by first cutting back to a few stubs and stumps, about twelve inches from the base. A concentrated solution of glyphosate (Round-up or equivalent) should be painted on the ends of the stumps. This technique is most effective in the early fall months but before the approaching dormant period. Proper notification must be made prior to the application of all restricted pesticides, and application made by a licensed applicator if required. No application will be made in areas of standing water without first receiving a DEC permit for aquatic pesticide application.
3. Highly invasive groundcovers, such as Japanese honeysuckle, should be sprayed with glyphosate, using a very close and targeted application during the active growing season. Repeated treatments may be necessary to remove the plant completely.
4. Several methods may be utilized in removing highly invasive annuals, such as garlic mustard. If the species is growing densely without other plants, the area may be sprayed with glyphosate during the active growing season, following the manufacturer's recommendations. Species may also be removed by hand. Both methods should be performed before plants set seed. Both methods also may need to be performed multiple times over a season and possibly over several seasons to completely eradicate the target species.

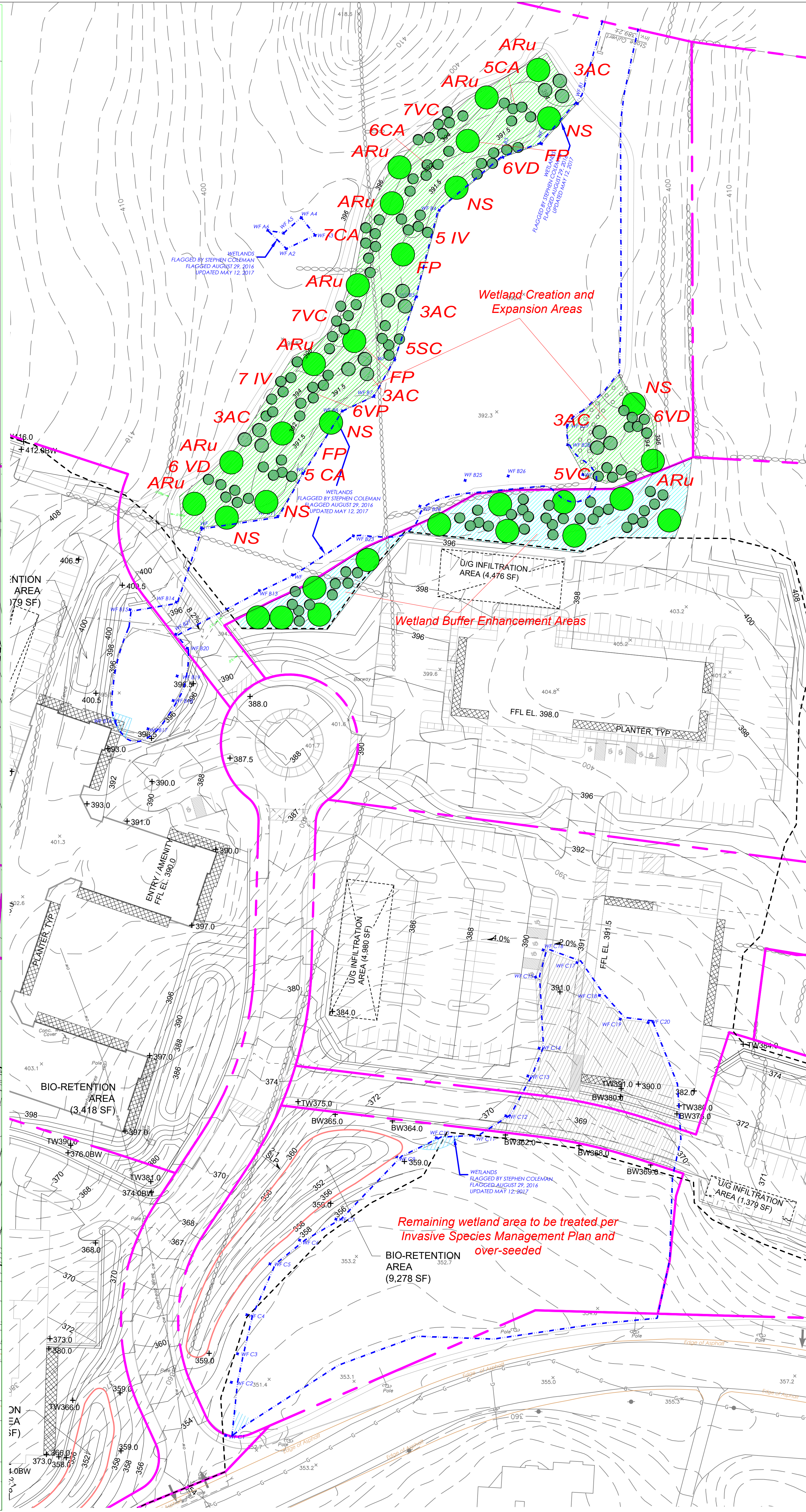
**Grading Details**

It is proposed to excavate the mitigation area in order to establish pools and flow paths as shown on the grading plan. These areas will be accessed for purposes of the wetland mitigation construction from the proposed road. If suitable, topsoil removal will be used within the wetlands as replacement of organic material for surface preparation. Soil erosion and sediment control fencing will be installed at the outer and down slope limits of the proposed wetland expansion. The location of the proposed mitigation will be cleared as necessary, but with an eye toward preserving any trees or shrubs adjacent to the work area; some may be removed and stockpiled for replanting after completion of grading.

Where available, the upper one foot of topsoil will be stripped from the site and set aside from other site grading materials. The temporary storage area will be an upland site either removed from wetlands by 100 feet or separated from same by a soil erosion and sediment control fence. All excavations will be to finished grade elevations as indicated in the mitigation drawings. Per the above, topsoil will be stripped from the site and stockpiled for use in finishing grading. The stockpiled topsoil will be returned to the site to create a planting surface four to six inches deep for the wetland mitigation plantings as described above. Finished soils at the invert of the mitigation sites will be of landscape quality. The finished surfaces of the planting area will be smooth within specified tolerances in uniform levels or slopes between points where elevations are indicated or between such points and existing grades. The accepted grading tolerance will be a smooth and even surface, free of voids, and within 0.25 feet of the specified elevation. Leaving the surface rough, creating mounds and knolls for a variable microtopography. During the course of earthwork, inspections will be scheduled at a frequency to be determined by the engineer/environmental consultant but no less than weekly. Some changes to the grades may be appropriate to establish flow paths and preserve trees. These determinations will be made by the wetland specialist supervising the grading.



Grading Plan 1" = 50'



Planting Plan 1" = 50'

Plant species election for wetland creation and expansion areas:

- 12 Winterberry holly - *Ilex verticillata* (IV)
- 12 Arrowwood - *Viburnum dentatum* (VD)
- 14 Highbush blueberry - *Vaccinium corymbosum* (VC)
- 5 Elderberry - *Sambucus canadensis* (SC)
- 6 Possumhaw viburnum - *Viburnum punctatum* (VP)
- 23 Summersweet - *Coletea alnifolia* (CA)
- 12 Shadbowl - *Ametanlich canadensis* (AC)
- 8 Red maple - *Acer rubrum* (ARu)
- 5 Black gum - *Nyssa sylvatica* (NS)
- 4 Green ash - *Fraxinus pennsylvanica* (FP)

Herbaceous plant species selection for wetland creation and expansion areas (2' stages):

- 100 Tussock sedge (*Carex stricta*)
- 100 Fringed sedge (*Carex crinita*)
- 100 Soft rush (*Juncus effusus*)
- 50 Cinnamon fern (*Comandra cinnamomea*)
- 50 Sensitive fern (*Onoclea sensibilis*)
- 75 Burreed (*Sparganium americanum*)
- 100 Rice cutgrass (*Leersia oryzoides*)

Plant species selection for wetland buffer enhancement areas (locations and quantities of each species to be determined in the field based on existing tree locations):

- Witchhazel - *Hamamelis virginiana*
- Arrowwood - *Viburnum dentatum*
- Nannyberry viburnum - *Viburnum lentago*
- Gray dogwood - *Cornus racemosa*
- Inkberry - *Ilex glabra*
- Red maple - *Acer rubrum*
- Pin oak - *Quercus palustris*
- Sweetgum - *Liquidambar styraciflua*

All shrubs to be in 3 to 5 gallon containers. All trees to be in 15 gallon containers.

Overseed planted areas with Ernst wetland hummock mix (ERNMX-125) or equivalent at five pounds per acre.

All trees to be in 3 to 5 gallon containers. All trees to be in 15 gallon containers.

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Town of CORTLANDT, New York

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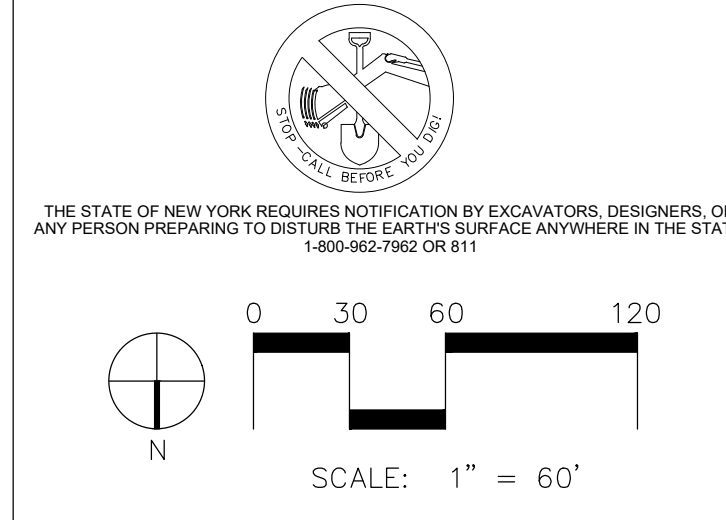
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DRAWING TITLE:

**WETLAND CREATION AND EXPANSION PLAN**

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| PROJECT NO: 812 | DATE: 03/25/19  |
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