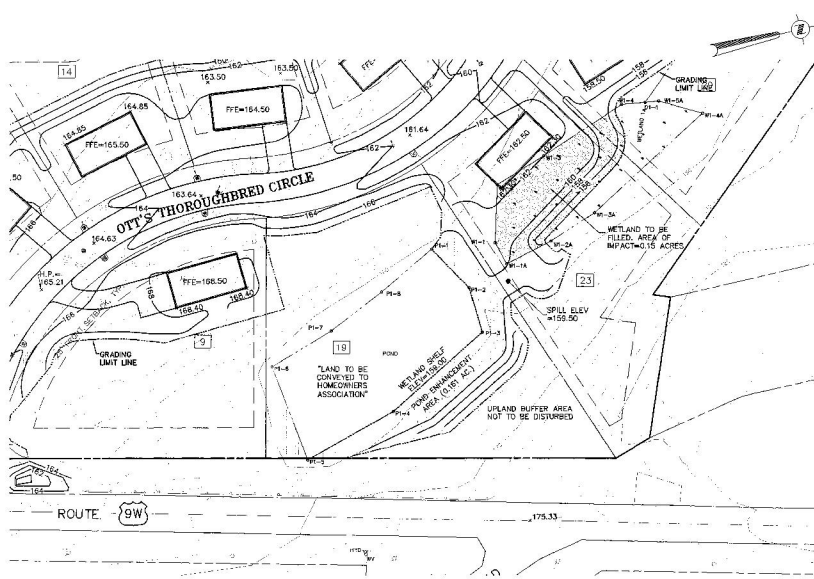




WETLAND MITIGATION PLAN
 SCALE: 1" = 40'
 NORTH REFERENCE: NONE

Plantings	Scientific Name	Nursery Stock Condition	Approximate Spacing	Approximate Number
Spotted alder	<i>Alnus incana</i>	(18-24")	6 feet on center	50
Bittersweet	<i>Saxifraga oppositifolia</i>	(18-24")	6 feet on center	25
Sky dogwood	<i>Cornus amomum</i>	(18-24")	6 feet on center	30
Spotted alder	<i>Alnus incana</i>	(18-24")	6 feet on center	30
Pussy willow	<i>Salix discolor</i>	(18-24")	6 feet on center	25

Seed Mixtures for Upland Areas

New England Erosion Control/Restoration Seed Mix (Dry Sites)
 Supplier - New England Wetland Plants, Inc., Amherst, MA
 (413) 255-1752
 Application Rate - 30 lbs./acre

or

Northeast Upland Wildflower/Restoration Erosion Seed Mix
 Supplier - Southern Tier Consulting, Inc., West Desford, NY
 (716) 968-3120
 Application Rate - 47 lbs./acre

Seed Mixtures for Wetland Enhancement Areas

Northeast Wetland Diversity Seed Mix
 Supplier - Southern Tier Consulting, Inc., West Desford, NY
 (716) 968-3120
 Composition - Mixture of sedges, rushes and forbs
 Application Rate - Approx. 2 lbs./acre

or

New England Wetland Diversity Seed Mix
 Supplier - New England Wetland Plants, Inc., Amherst, MA
 (413) 255-1752
 Composition - Mixture of sedges, rushes and forbs
 Application Rate - Approx. 6 lbs./acre

WETLAND MITIGATION PLAN

Approximately 0.15 acres of wetlands and other waters of the U.S. will be unavoidably impacted as a result of the proposed Troubadour Estates Subdivision. To compensate for unavoidable wetland impacts, the applicant is proposing to enhance an existing pond on the project site within a 0.15-acre Pond Enhancement Area. The pond was originally constructed to provide water to horses that were kept on the property. The pond is now in a degraded condition and unfavorable plant species, including common reed (*Phragmites australis*), have invaded the pond edges.

Goals of Wetland Mitigation

The applicant is proposing to enhance the existing pond by controlling invasive species (i.e., common reed) growing around the pond edge and by creating a wetland shelf around a portion of the pond (refer to Grading Plan sheet 3 of 3). An upland buffer will surround the Pond Enhancement Area on the eastern side of Lot 19. No development activities will occur within this adjacent upland area and it will be set-aside strictly to serve as a protective buffer for the Pond Enhancement Area. The Pond Enhancement Area will be designated as Lot 19 and will ultimately be conveyed to the homeowners association. Lot 19 will become a common property that will be maintained as a natural state using fees collected from the residents. A deed restriction will be implemented for Lot 19 to restrict future activities within the Pond Enhancement Area, including the pond itself, and the surrounding upland buffer.

Common Reed Control Measures

Common reed is an invasive plant that primarily grows in disturbed areas. It is identified in the summer and late fall by the large plummy inflorescence (flowers) atop a tall coarse stem. Common reed is a grass and grows in a dense stand. The applicant is proposing to control the common reed (within the Pond Enhancement Area) to help improve the aesthetic value of the pond and promote a more diverse mix of wetland plants. Proposed control measures for the common reed are as follows:

1. Common reed stalks will be manually removed before grading commences to prevent collection in newly graded areas. It is recommended that removal take place when the adjacent parts of the pond are well formed but the water-lilies are not formed (i.e., late July-early August). Stalks will be cut off at ground level by hand using a machete, or equivalent. The stalks will be placed within plastic bags/containers and removed off-site, for disposal in a landfill, away from any wetland areas.
2. The entire root system of the common reed and all surrounding soils will be removed and properly disposed. Care will be taken to ensure that all sediments containing roots be fully removed since common reed can reproduce from rhizome (root) fragments.
3. The Pond Enhancement Area will be rough graded or mechanically rolled following the removal of the common reed.
4. The entire Pond Enhancement Area will be immediately seeded and planted following the completion of grading activities to outcompete invasive species that may try to establish again (refer to Seeding and Planting Plan Section).

Pond Enhancement Area

A wetland shelf will be created along the eastern and northern edges of the existing pond. The shelf will be graded to an elevation of the approximate mean high water level of the pond. The shelf will be re-vegetated with favorable wetland species following the grading activities. Shrubs will be planted to provide cover and food for wildlife and to outcompete invasive plant species.

Grading will be conducted during the winter months (i.e., late summer or early fall), and in conjunction with the on-going construction activities on the project site. Erosion and sediment controls will be put into place before excavation begins to prevent equipment and sediment from entering undisturbed wetland and areas. The following steps will be undertaken to conduct the pond enhancement activities:

1. The extent of the Pond Enhancement Area will be staked in the field and all fence will be installed adjacent to the pond edge and along the boundary of existing wetlands that will not be disturbed.
2. The wetland shelf will be rough graded to 6-inches below design contours. Excess soil material will be disposed of in a predetermined appropriate area and road. Soil that contains common reed stalks or rhizomes will be disposed of in accordance with the guidelines in the Common Reed Control Measures Section.
3. A layer of approximately 8-inches of clean topsoil will be placed on the wetland shelf to achieve final grades. Once the topsoil has been placed, care will be taken to not overly compact soils.
4. The wetland shelf will be seeded immediately following grading activities as indicated in the Seeding and Planting Plan Section.
5. All equipment tracks outside the wetland shelf will be fine graded and rolled. An appropriate upland seed mix will be spread in upland areas immediately adjacent to the wetland shelf and pond.

Seeding and Planting Plan

The proposed pond enhancement activities will include seeding and planting of the wetland shelf and seeding of the adjacent upland areas. Seeding activities will be done immediately following grading activities. The upland areas will be seeded with an appropriate upland seed mix as specified in the Seed Mixtures for Upland Areas Table. The wetland shelf will be seeded immediately with grass and grasses at a rate of 42 lbs./acre and with one of the suggested wetland seed mixes as specified in Seed Mixtures for the Wetland Enhancement Area Table. It is important to note that the immediate seeding with annual grass is proposed to outcompete invasive species, such as common reed, that may try to establish prior to the germination of the specialty wetland seed.

The following steps will be undertaken to implement the seeding plan:

1. All disturbed areas will be seeded immediately after grading activities are completed.
2. In wetland areas, seed should be applied while the ground is saturated but not inundated, as this will not allow seed germination.
3. Seed will be applied using a hand spreader or blower. To achieve an even distribution of seed on the soil by hand-seeding, it is recommended that one half of the seed mixture be applied walking in one direction on the site and the other half be applied by walking or on skid steer in the other half of the site. It is recommended that the area be rolled after seeding, to mix the seeds into the soil.
4. Immediately after seeding, the wetlands should be mulched with a straw-free straw or the equivalent. No fertilizer or lime will be applied in wetland areas.
5. Fertilizer, lime and mulch will be applied as needed in upland areas.

Shrub plantings will be installed within the Pond Enhancement Area during the spring or fall planting season immediately following the grading activities. The following steps will be undertaken to implement the planting plan:

1. Shrubs will be planted as per supplier's specifications.
2. Plantings will not be installed in standing water.
3. Bare root shrubs will be randomly planted and will not be established in organized rows.

Maintenance Schedule for Pond Enhancement Area

Maintenance of the Pond Enhancement Area will be funded by the homeowners association. It is anticipated that the wetland pond edge will be regularly inspected and maintained. A plant area will be set up to overlook the pond and the area will be landscaped and mowed routinely.

The seed to use a generic herbicide, such as Roundup, will be evaluated if common reed or purple loosestrife (*Lythrum salicaria*) represents more than 20% of the vegetation within the Pond Enhancement Area. If herbicide is used, the following protocols will be followed:

- a) Herbicide will be applied by a licensed applicator.
- b) Herbicide will be applied on foliage in late July, once the plant has transferred a significant portion of its stored energy into shoot production but prior to the production of seed heads.
- c) Care will be taken during herbicide application to protect "non-target" favorable wetland species.

C.T. MALE ASSOCIATES, P.C.

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