

management, and monitoring. Pending approval, it is our goal to complete all of the work (except monitoring and replanting, if necessary) this fall/early winter 2013 or spring 2014. All wetland restoration and replication work and buffer zone restoration will occur under the direct supervision of a qualified Wetland Scientist with at least 10 years of experience in wetland restoration/replication approved by the Conservation Director and/or Conservation Commission. We also have included a Construction Sequence in **Attachment B** to function as a guide for all parties during completion of this work. The first item on the sequence is a pre-construction meeting with the Contractor, the approved Wetland Scientist, and Commission Staff to review the requirements contained in this Wetland Restoration & Replication Plan to ensure all parties understand the purpose and goals of this work.

As a component of the restoration work, the Farm is proposing to replace the paddock fences that were removed west of the stream (western paddocks), complete the work previously authorized by the Commission in 1996, but never completed by the Piro's, to establish a paddock east of the intermittent stream (eastern paddock), restoring all other disturbed areas beyond the paddocks.

Eastern Paddock

The eastern paddock work would consist of installing a post-and-rail type fence (likely PVC but perhaps wooden) to enclose the area. Access would be gained via the existing historic pathway located within an AT&T easement. A portion of this pathway also will be fenced to further limit access to the restored area and keep the trainers and the horses within the easement/pathway when accessing the Eastern Paddock. Along the northern and eastern limits of the paddock, the fence would be installed just inside the stone wall that demarcates the property boundary. The remainder of the fence line will be installed greater than 50-feet from the BVW, and concrete bounds would be installed to permanently demarcate the limits of the paddock (and the approved fence location) and the extent of permanently restored/replicated wetland and buffer zone. As shown on the attached plan (**Attachment E**), these concrete bounds would be set at each change in fence direction or approximately every 100 feet for a total of eight (8) bounds. Establishing this paddock involves allowing 1,661 square feet of the finger-like projection of remnant drainage ditch to remain filled. At the suggestion of Tom Tidman, a portion of this fill will be removed and backfilled with crushed stone and a perforated PVC pipe to ensure proper drainage across the paddock. The ground surface within the paddock would then be scarified and seeded with the locally sold "Concord Blend" grass seed. Based on soil conditions and at the discretion of the approved Wetland Scientist, approximately 3 inches of loam may be spread across the paddock to establish a more suitable growing medium for the grass seed mix.

Western Paddocks

The Western Paddock was divided into a series of smaller paddocks to allow for rotational grazing and/or segregating horses while at pasture. These post-and-rail fences will be reinstalled as shown on the attached plans. As shown on the plans, a sliver (2,895 square feet) of wetland is located within the

property, create three (3) topographic depressions within the restored wetland, and restore a third drainage channel that will direct off-site flows into the aforementioned topographic depressions (see Wetland Restoration and Replacement Plan in **Attachment E**).

During the September 18, 2013 Commission meeting, information was presented by a neighbor indicating that stumps may have been buried in the southeastern portion of the property. The Applicant has produced two receipts (see attachment A) from Assabet Mack Service, Inc. invoicing for trailer rentals and a surcharge for stump removal. Additionally, LEC conducted a site visit at the Farm on October 4, 2013 with the individual who supervised the work activity. The attached sketch plan (Attachment A) depicts the location where roots, brush, and 10-12 stumps were buried within upland portions of the Farm. According to 310 CMR 16.03 of the Solid Waste Regulations, disposal of stumps, trees, and brush at a single family home or farm is an allowed activity as long as the material was generated by the occupant or resident of the home or farm and disposed of on-site. Any stumps encountered within the footprint of proposed restoration or replication will either be used to provide breeding attachment sites within the proposed depressions or disposed in accordance with the law.

Grade stakes will be established in the field by Benchmark Survey to ensure appropriate elevations are achieved and all grading will be conducted under the supervision of the approved Wetland Scientist. Excess soil material will either be spread within the proposed eastern paddock or removed from the project site. Since no soil material was removed from the site, it is unlikely that any soil amendments will be required. However, soils will be evaluated by the approved Wetland Scientist at the time of re-grading and if necessary, the soil will be amended with leaf compost to create a proper growing medium for the proposed restoration.

Wetland Replication

Two areas of wetland replication are proposed east of the stream; the original 2,497 square feet of wetland replacement previously approved by the Commission in 1996, but never completed by the Piro's, has been enlarged to encompass 3,417 square feet and an additional area encompassing 10,389 square feet. The 3,417 square foot area will be graded to create one of the three proposed depressions, and the 10,389 square foot area will be graded to match the elevations within the adjacent wetland and to restore the drainage channel.

Re-vegetation

The extent and type of re-vegetation within the restored wetland and buffer zone was designed to allow the existing seed bank and remnant woody vegetation to aid in re-vegetation of disturbed areas and to create open water habitat with canopy shading, scattered patches of woody shrub species, and a variety of herbaceous seed mixes in an effort to create diversity in the species and cover types. Therefore, LEC has

Buffer Zone Restoration

Sapling Trees:

Red Maple (*Acer rubrum*) FAC

Northern White Cedar (*Thuja occidentalis*)

Shrubs:

Chokeberry (*Aronia melanocarpa*) FAC

Witch Hazel (*Hamamelis virginiana*) FAC-

Herbaceous:

Northeast Upland Native/Naturalized Wildflower Mix, or equivalent, for the restored Buffer Zone.

The above seed mixes are available from Southern Tier Consulting & Nursery. A detailed description of the seed mix is contained in **Attachment C**. An equivalent seed mix from an alternative source may be substituted with the consent of the approved Wetland Scientist; however based on our recent conversation with Southern Tier Consulting & Nursery on September 18, 2013, all three seed mixes are available and are best planted in the fall due the need for cold stratification for many of the seeds in the mix to germinate. Most seed mixtures will not germinate in saturated conditions; therefore, it is unlikely that a seed mixture will be applied to any inundated portions of the Wetland Restoration Area. For a fall seeding, each seed mix will be blended with 5-10 lbs. per acre of winter wheat or annual rye to help stabilize the area over the winter months.

Invasive Species Management

As described in the General Site Description, the area of alteration and adjacent upland and freshwater wetland contain European buckthorn and Tartarian honeysuckle, listed as Invasive and Likely Invasive, respectively, in the *NHESP Guide to Invasive Plants in Massachusetts*. European buckthorn (see Fact Sheet in **Attachment D**) spreads rapidly through its prolific production of seed which are spread by birds and can remain viable in the soil for 2 to 3 years. Once the plant becomes dominant, the dense shade it provides eliminates native tree seedlings, saplings, and ground layer species and disrupts natural regeneration and species diversity within the understory. Tartarian honeysuckle is a bushy plant that forms a dense shrub layer that also shades and disrupts the growth of native plant species. Bush honeysuckle are known to release toxic chemicals into the soil that prevent other plants from growing in the vicinity (see Fact Sheet in **Attachment D**).

It is not clear how prevalent either of these species were within the areas of alteration. Therefore, our initial recommended treatment for controlling these species within the restoration areas involves hand pulling of seedlings under the oversight of a qualified Wetland Scientist approved by the Commission. The initial phase of hand pulling will be conducted as part of our first monitoring inspection of the restored areas and detailed in our monitoring report. In each subsequent inspection, the area will be re-evaluated and additional hand removal of seedlings will occur, as necessary, and may continue throughout the subsequent years of monitoring. Depending on regrowth of either species from remnant root stock,