SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.

Wetland Delineations Ecological Studies Site Assessments Project Planning Soil Testing

June 21, 2021

Michael Antonetti
38 Carter Road
Cheshire, CT 06410

RE: Wetland and Upland Review Area Restoration Plan Recommendations
38 Carter Road, Cheshire, CT

Dear Mr. Antonetti:

In accordance with your request, Jennifer Beno, Biologist/Wetland Scientist, with Soil Science and Environmental Services, Inc. (SSES) inspected the above-referenced property on June 3, 2021. The purpose of the inspection was to observe the existing conditions of the wetland and upland review (wetland buffer) areas on the property that had recently been disturbed. The property owner, Mr. Antonetti, was present during the site inspection and described his activities within the wetland and upland review areas. According to Mr. Antonetti, he cleared four small trees and the understory vegetation (shrubs and herbaceous layer) as well as pushed sticks and branches out of the way within the regulated areas to create a narrow trail for his children to ride motorized dirt bikes. He stated that during those activities he also felled a large tree that had been damaged in a recent storm event and was leaning on adjacent trees creating a safety concern. According to Mr. Antonetti, all activities occurred on his property. No jumps or deep ruts were observed within the regulated wetland and upland review areas. Some shallow rutting was observed within the wetland near the western property boundary. No erosion and sedimentation concerns were observed in association with the activities within the wetlands and upland review area during the June 3, 2021 inspection. Dense herbaceous vegetation was observed to be growing along the edges of the dirt bike path. Small brush piles were observed on the site near property boundaries and do not appear to create an erosion / sedimentation problem. In fact, the brush piles likely create habitat for small mammals. According to Mr. Antonetti, he was unaware that a wetland existed on his property when he created the dirt bike trail and felled the damaged tree. Mr. Antonetti provided SSES with a sketch (Figure 1) showing the approximate limits of disturbance for the dirt bike path within the wetland and upland review areas.

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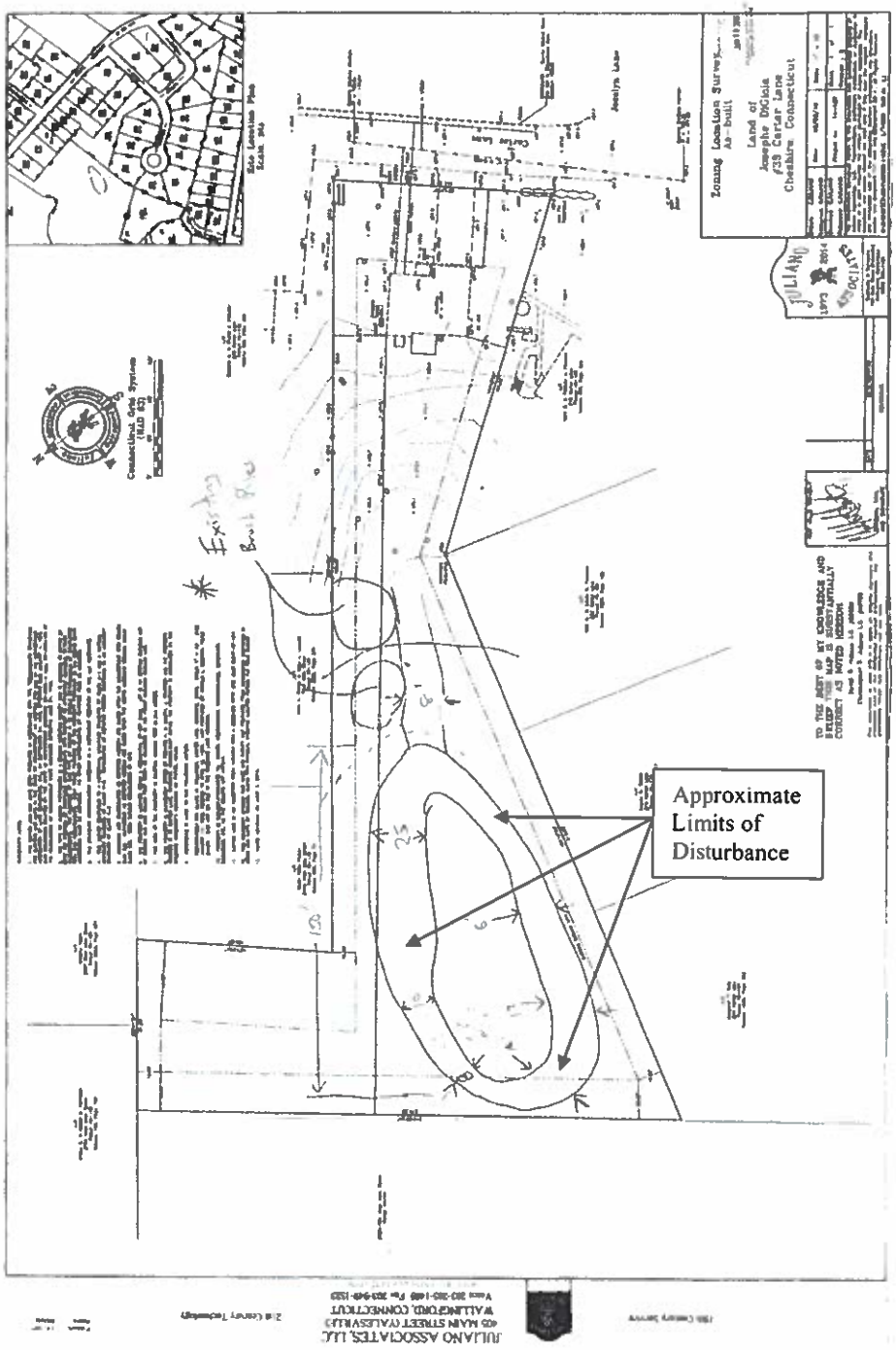

Figure 1 – Approximate Disturbance Limits Sketch Map (supplied by property owner)

Dirt bike path within upland review area south of wetland (6/3/2021).

Dirt bike path within upland review area north of wetland (6/3/2021).

Shallow dirt bike ruts and roots of felled tree within western portion of wetland (6/3/2021).

Small brush pile (6/3/2021).

In 2014, Scott Stevens, Registered Professional Soil Scientist with SSES, inspected the property and delineated the wetland boundary for others. No remnant wetland boundary flags were observed on the property during the June 3, 2021 inspection. The wetland consists of a palustrine forested (wooded) wetland community that continues off-site to the west. The vegetation on-site is dense and is dominated by red maple, catalpa, spicebush, multiflora rose, silky dogwood, sensitive fern, sedges, jewelweed, path rush, poison ivy, curly dock, garlic mustard, Japanese knotweed, mugwort, grape, and bittersweet.

The upland review (buffer) area consists of wooded upland dominated by sugar maple, catalpa, elm, red maple, multiflora rose, spicebush, Japanese barberry, burning bush, garlic mustard, wood sorrel, pokeweed, grasses, Virginia creeper, and pachysandra.

Several invasive species, including multiflora rose, Japanese barberry, burning bush, Japanese knotweed, garlic mustard, mugwort, and bittersweet were observed within the wetland and adjacent upland areas. The large size of the invasive species shrubs and the density of the herbaceous invasive species plants indicate that the invasive species have been present on the property for multiple years.

Mitigation

The applicant is proposing the following mitigation measures to restore the wetland and buffer areas that were disturbed. Mr. Antonetti stated that he will rake out and smooth over the small ruts existing within the wetland and any compacted soils within the wetland buffer, will plant native, non-invasive trees and shrubs, and will maintain the tree and shrub plantings (by removing invasive species from around the plantings, by cutting tall volunteer native vegetation that over-tops the plantings from around the plantings, and by watering the plantings as necessary) to promote survival and successful restoration.

Typically, SSES prepares a planting plan sketch map showing the proposed locations of the recommended trees and shrubs within planting areas by utilizing ± 20 scale plan sheets accurately showing the planting area and wetland boundary. No survey plan sheet showing the locations of the wetland boundary flags was available for our use. In order to provide a map to depict the approximate recommended restoration planting locations, we overlaid and merged the wetland boundary delineation sketch map prepared by Scott Stevens and the approximate limits of disturbance sketch map prepared by the owner (approximately the same scale: ±1"=20').

Generally, we recommend utilizing the same native species that currently exist on a project site and enhancing the diversity with similar, or complementary, species when designing a planting plan.

Wetland Restoration Plantings Recommendation

Native, non-invasive trees and shrubs are proposed to be planted within the wetland restoration area. The recommended shrub plantings for the area can include (but are not limited to) a combination of silky dogwood (*Cornus amomum*), spicebush (*Lindera benzoin*),

and arrowwood (*Viburnum dentatum*). The recommended tree planting for the area can include (but is not limited to) swamp white oak (*Quercus bicolor*). Species substitutions, if necessary based on availability, may occur as long as they are approved by the design team and Town Staff.

Seven (7) shrubs are proposed for the estimated wetland restoration planting area. The shrubs should be at least 36 inches in height (unless otherwise specified) and can be obtained as container grown or ball and burlap plants. SSES recommends that one (1) tree be planted within the wetland restoration area. The tree should be 6 feet in height and can be obtained as a ball and burlap plant. The tree and shrub plantings recommended for the wetland restoration area should be installed as shown on the included Wetland and Upland Review Area Restoration Plantings Sketch Map (Figure 2). The recommended species tolerate various soil moisture regimes and partial sun to full shade conditions. Tree and shrub plantings within the wetland restoration area will provide vegetation diversity and restore wildlife habitat (nesting sites, cover and food sources). Locations of some plantings may need to be altered depending on the presence of existing obstacles such as rocks or existing trees. The applicant may need to provide irrigation (water) for the plantings depending on the time of year they are installed.

Once the tree and shrubs have been installed, the New England Wetmix - Wetland Seed Mix, or similar mix, should be spread over any bare soils within the wetland restoration area. See included mix information sheet at the end of the report. The seed mixture may need to be mulched (with weed-free straw) and watered as necessary depending on the season.

Upland Review Area / Buffer Plantings

Native, non-invasive trees and shrubs are proposed to be planted within the buffer restoration area. The recommended shrub plantings for the area can include (but are not limited to) a combination of shadbush (*Amelanchier canadensis/arborea*), black chokeberry (*Aronia melanocarpa*), and gray dogwood (*Cornus racemosa*). The recommended tree plantings for the area can include (but are not limited to) red maple (*Acer rubrum*). Species substitutions, if necessary based on availability, may occur as long as they are approved by the design team and Town Staff.

Seventeen (17) shrubs are proposed for the estimated wetland buffer restoration planting area. The shrubs should be at least 36 inches in height (unless otherwise specified) and can be obtained as container grown or ball and burlap plants. SSES recommends that three (3) trees be planted within the wetland buffer restoration area. The tree should be 6 feet in height and can be obtained as a ball and burlap plant. The tree and shrub plantings recommended for the wetland buffer restoration area should be installed as shown on the included Wetland and Upland Review Area Restoration Plantings Sketch Map (Figure 2). The recommended tree and shrub species tolerate various soil moisture regimes and partial sun to full shade conditions. The plantings will provide vegetation diversity and wildlife habitat (nesting sites, cover and food sources), as well as restore a natural buffer between the yard area and the wetland.

Bare soils within the buffer planting area should be seeded with a conservation seed mix which includes native, non-invasive species. See included example conservation seed mix at the end of the report. The herbaceous vegetation will provide soil stabilization and wildlife habitat.

It likely will be necessary to periodically maintain the wetland restoration and buffer planting areas by removing any invasive species so that they do not out-compete and over-grow the newly planted shrubs and trees. SSES recommends that any invasive species be removed from the planting areas for a period of at least 3 years. Invasive species (particularly Japanese knotweed, garlic mustard, multiflora rose, and bittersweet) were observed within and adjacent to the proposed restoration areas. In addition, seeds and root stock from invasive species are expected to exist within the disturbed soils. Invasive species could become established and out-compete the planted native species if the areas are not maintained. The applicant should conduct inspections during the early and late growing season and any observed invasive species should be hand pulled out of the planting areas. Maintenance, such as cutting back volunteer species from around the plantings, may be necessary until the plantings can compete with the volunteer species and are not over-topped and shaded.

Subsequent to the shrub and tree plantings, an inspection of the restoration areas should be conducted by a biologist to document the placement and vigor of the installed shrubs and trees, to document the herbaceous cover (soil stabilization), and to document any invasive species growth requiring maintenance. Additional inspections of the restoration planting areas should be conducted during the growing season for at least three subsequent years to ascertain survival rates. Copies of the reports documenting the findings of the inspections should be provided to the Town of Cheshire Inland Wetlands, Watercourses and Conservation Commission. If the mortality rate of the plantings is greater than 15%, the plantings should be replaced by the same or similar species depending on the reason for the mortality.

Recommendations

SSES recommends that an obvious demarcation between the wetland and non-wetland areas on the property be installed in order to inform the future property owners of the regulated area. Physical means of demarcation can include large rocks or posts with wetland boundary placards.

Respectfully submitted,

SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.

Jennifer L. Beno

Jennifer L. Beno
Biologist/Wetland Scientist

Recommended Tree and Shrub Species for Wetland Restoration Area

Scientific/Common Names	Code	Indicator Status	#	Size	Sun/Shade Tolerance	Features
Cornus amomum silky dogwood	CA	FACW	3	36"	full sun to full shade	fast growing; wildlife habitat
Lindera benzoin spicebush	LB	FACW	2	36"	full sun to full shade	wildlife habitat
Quercus bicolor swamp white oak	QB	FACW	1	6'	full sun to part shade	wide moisture tolerance; wildlife habitat
Viburnum dentatum arrowwood	VD	FAC	2	36"	full sun to full shade	wildlife habitat

Recommended Shrub Species for Buffer Plantings

Scientific/Common Names	Code	Indicator Status	#	Size	Sun/Shade Tolerance	Features
Acer rubrum red maple	AR	FAC	3	6'	full sun to full shade	wildlife habitat
Amelanchier canadensis/arborea shadbush	AC	FAC	5	36"	part shade	good wetland buffer species; wildlife habitat
Aronia melanocarpa black chokeberry	AM	FAC	8	36"	full sun to partial shade	Very adaptable; wildlife habitat
Cornus racemosa gray dogwood	CR	FAC	4	36"	full sun to full shade	wildlife habitat

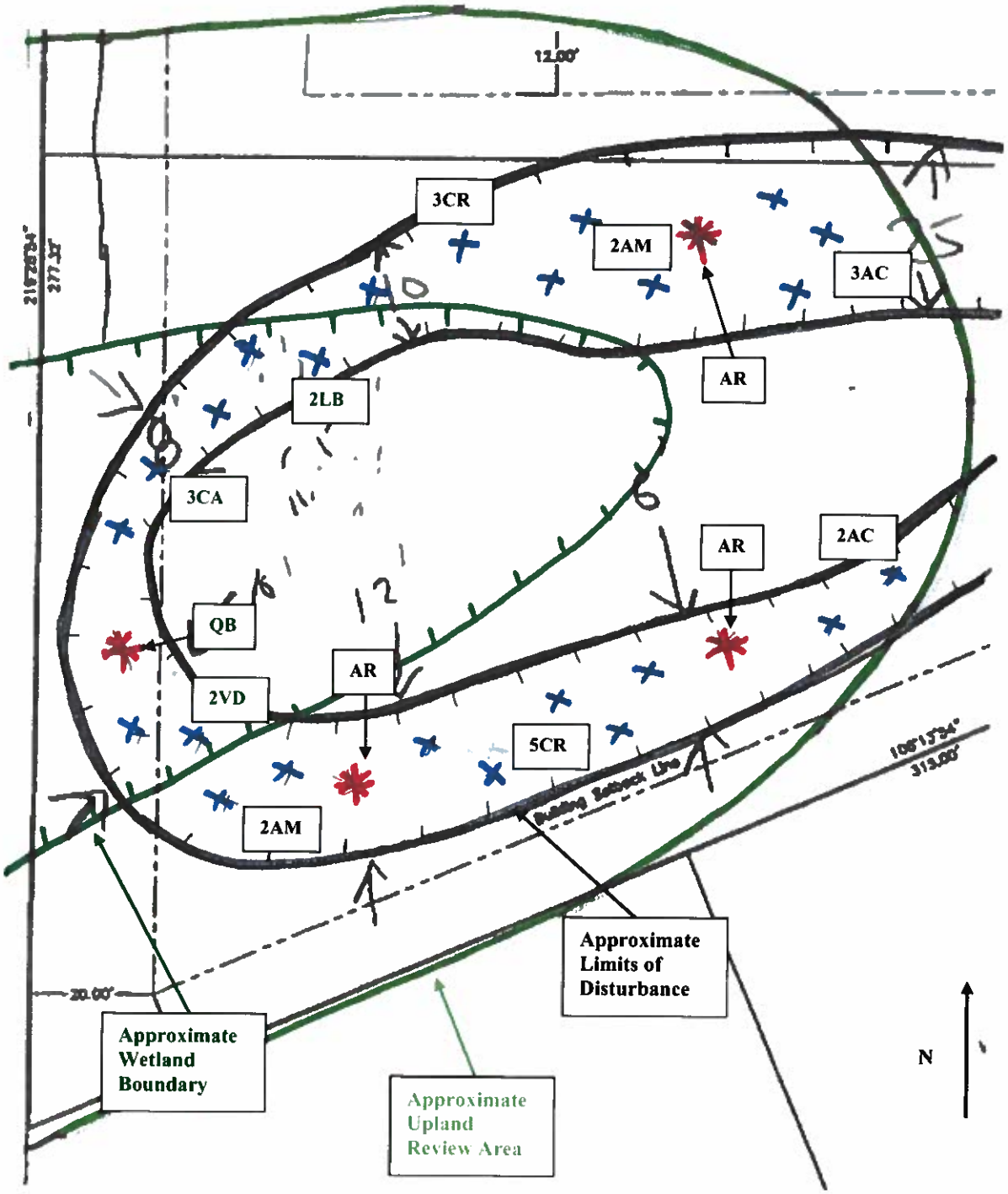

Figure 5 – Approximate Wetland and Upland Review Area Plantings Sketch Map

Example Seed Mixtures for Buffer Planting and Wetland Restoration

Wetland Restoration Area

New England Wetmix (Wetland Seed Mix) (or similar)

The New England Wetmix (Wetland Seed Mix) contains a wide variety of native seeds that are suitable for most wetland restoration sites that are not permanently flooded. All species are best suited to moist ground as found in most wet meadows, scrub shrub, or forested wetland restoration areas. The mix is well suited for detention basin borders and the bottom of detention basins not generally under standing water. The seeds will not germinate under inundated conditions. If planted during the fall months, the seed mix will germinate the following spring. During the first season of growth, several species will produce seeds while other species will produce seeds after the second growing season. Not all species will grow in all wetland situations. This mix is comprised of the wetland species most likely to grow in created/restored wetlands and should produce more than 75% ground cover in two full growing seasons. The wetland seeds in this mix can be sown by hand, with a hand-held spreader, or hydro-seeded on large or hard to reach sites. Lightly rake to insure good seed-to-soil contact. Seeding can take place on frozen soil, as the freezing and thawing weather of late fall and late winter will work the seed into the soil. If spring conditions are drier than usual watering may be required. If sowing during the summer months supplemental watering will likely be required until germination. A light mulch of clean, weed free straw is recommended.

APPLICATION RATE: 1 LB/2500 sq. ft
18 lbs/acre
PRICE: $135/bulk pound

SPECIES:

Fox Sedge, (*Carex vulpinoidea*), Lurid Sedge, (*Carex lurida*), Blunt Broom Sedge, (*Carex scoparia*), Blue Vervain (*Verbena hastata*), Green Bulrush, (*Scirpus atrovirens*), Hop Sedge, (*Carex lupulina*), Soft Rush, (*Juncus effusus*), Fringed Sedge, (*Carex crinita*), Bristly/Cosmos Sedge (*Carex comosa*), Nodding Bur Marigold, (*Bidens cernua*), Wool Grass, (*Scirpus cyperinus*), American Mannagrass, (*Glyceria grandis*), Boneset, (*Eupatorium perfoliatum*), Spotted Joe Pye Weed, (*Eutrochium maculatum*), Swamp Aster, (*Symphyptrichum puniceum*), Rattlesnake Grass, (*Glyceria Canadensis*), Mud Plantain, (*Alisma subcordatum*), Soft Stem Bulrush, (*Scirpus validus*), Square Stemmed Monkey Flower, (*Mimulus ringens*), Swamp Milkweed, (*Asclepias incarnata*).

We reserve the right to make changes to species in all mixes depending upon seed availability.

The functionality of each mix will remain unchanged, although mix composition may vary during the year.

Buffer Restoration Area

New England Conservation/Wildlife Mix (or similar)

The New England Conservation/Wildlife Mix provides a permanent cover of grasses, wildflowers, and legumes. For both good erosion control and wildlife habitat value. The mix is designed to be a no maintenance seeding, and is appropriate for cut and fill slopes, detention basin side slopes, and disturbed areas adjacent to commercial and residential projects.

APPLICATION RATE: 25lbs/acre | 1750 sq ft/lb
PRICE: $39.50/bulk pound
Minimum Order: 2 lbs

SPECIES: Virginia Wild Rye (Elymus virginicus), Little Bluestem (Schizachyrium scoparium), Big Bluestem (Andropogon gerardii), Red Fescue (Festuca rubra), Switch Grass (Panicum virgatum), Partridge Pea (Chamaecrista fasciculata), Panicledleaf Tick Trefoil (Desmodium paniculatum), Indian Grass (Sorghastrum nutans), Blue Vervain (Verbena hastata), Butterfly Milkweed (Asclepias tuberosa), Black Eyed Susan (Rudbeckia hirta), Common Sneezeweed (Helenium autunale), Heath Aster (Asterpilosus/Symphyotrichum pilosum), Early Goldenrod (Solidago juncea), Upland Bentgrass (Agrostis perennans).

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