

# FINAL WETLAND RESTORATION PLAN

**SOMERS PLATING  
58-60 SPRINGFIELD ROAD  
SOMERS, TOLLAND COUNTY, CONNECTICUT**

**PREPARED FOR:**



U.S. Environmental Protection Agency  
Region I  
1 Congress Street  
Suite 1100  
Boston, Massachusetts 02114

**PREPARED BY:**

Shaw Environmental, Inc.  
88C Elm Street  
Hopkinton, Massachusetts 01748

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## **1.0 Introduction**

### **1.1 Objective**

The objective of this plan is to ensure that an area, in which temporary impacts by remedial action mandated by Region 1 of the U.S. Environmental Protection Agency (EPA) have occurred, is properly stabilized and re-vegetated. The restoration project will be conducted by Shaw Environmental, Inc. (Shaw) in accordance with the EPA Emergency and Rapid Response Services (ERRS) Contract No. 68-W-03-037, Task Order No. 0041 (EPA 2005).

The mandate issued by the EPA stated that soils contaminated primarily with cadmium must be removed from the site and disposed into an EPA approved facility.

### **1.2 Background**

The property is owned by Barbara Lastrina and Joseph Gosselin. The property is located at 58-60 Springfield Road in Somers, Tolland County, Connecticut. Except for the eastern-most part of the property, the property is under upland cover. The eastern part of the property extends into wetland habitat (refer to Figure 1 in Appendix A).

The property consists of two unoccupied one-story buildings on 153,471 square feet (3.523 acres) of land. An asphalt paved area largely surrounds the western building and borders the eastern building on the western and northern sides. The property is bordered to the east by a wooded area and cornfield; to the south by residential properties, to the west by Springfield Road (Route 83), and to the north by a cornfield, a portion of which extends onto the site. Access to the property is currently unrestricted.

The property was formerly operated as a metal working shop/plating facility (Somers Plating), a gasoline service station, an ecumenical school, and a daycare center. Underground storage tanks (USTs) were reportedly used by the gasoline service station; however, the status of the USTs is unknown. Several former metal hydroxide sludge lagoons and other areas of contamination associated with the plating operation were addressed in a recent removal action conducted by Shaw under contract to the EPA. Two of the areas requiring soil removal were located in the vicinity of the eastern border of the property and were identified as Lagoons 3 and 3A. The primary contaminants of concern in all areas were cadmium, chromium, and cyanide.

Aerial photographs and reports from local residents suggest that Lagoon 3 may have been an overflow area from Lagoons 2 and 3A and not an actual Lagoon. The location of Lagoon 3A was not apparent on aerial photographs showing Lagoons 1 and 2, but was identified for the EPA by a local resident. Prior to removal of soils in the area of Lagoons 3 and 3A, the EPA conducted a soil boring investigation in the wetland areas to help determine the extent of contamination. Table 1 (Appendix B) provides the results of sampling in the wetland north of Lagoon 3 and Figure 1 (Appendix A) shows corresponding sample locations in the field. The removal of soil in Lagoon 3 was limited to the highest concentration area that could be easily reached with heavy equipment. Access further into the wetlands (to the north) was somewhat limited by the irregular topography and mature trees that were present in upland hummocks that exist throughout the wetlands. The EPA decided that the damage that would be done to the wetland ecosystem by further remediation outweighed the need to pursue the diminishing levels of contaminated soil further into the wetlands. Concentrations of cadmium and chromium in soil removed from the Lagoon 3 wetland area ranged up to 5,470 parts per million (ppm) and 8,200 ppm, respectively.

The boundaries of the contamination at Lagoon 3A were defined by soil borings conducted by the EPA, and were limited to an approximate area of 30 x 45 feet which was remediated.

As part of the removal action within and adjacent to the lagoons, approximately 6,700 square feet of wetland habitat was altered by vegetation removal and mechanical excavation of approximately 300 cubic yards of contaminated soil. Figure 1 shows the location of the wetland areas that were excavated and require restoration. In an effort to excavate the contaminated soils with the least impact to the wetlands, all of the necessary machinery accessed the excavation area from the upland area adjacent to the existing site buildings. Affected wetland habitat consisted of a forested system with a small emergent wetland component. An associated dendritic network of small streams courses within the wetland outside the affected area. A prominent unnamed stream begins at the confluence of the small streams at the north end of the wetland complex. Eventually, this wetland complex drains northward to Gillettes Brook via the resulting unnamed stream.

Vegetation and soils were also removed from approximately 19,850 square feet of upland habitat, dominated by mixed hardwood forest that was established within 50 feet of the wetlands.

The contaminated soils have been excavated and those areas have been filled with clean soils, but have not been graded and smoothed to final restoration contours. During late winter or early spring, 2006 the areas will be graded to pre-existing contours prior to revegetation activities.

### **1.3 Restoration Goals**

The goals of the restoration project are primarily to restore affected wetland functions through restoration of wetlands on and adjacent to the property, resulting in a forested wetland habitat and an associated 50-foot wide buffer zone. The restored wetlands will have numerous functional values for the area that include:

- An increase of high quality wildlife habitat;
- Flood flow attenuation;
- Maintaining and improving surface water quality; and
- An increase in vegetation diversity.

The goals of the restoration plan will be achieved by returning the excavated area to original contours and elevations, followed by the installation of native plant species, most of which are found within the existing wetland and upland forests. The target percentage of wetland vegetation, based on areal cover, is 80 percent. Wetland plants, or hydrophytes, are those that are assigned an indicator status by the U.S. Fish and Wildlife Service of “facultative” or wetter. The indicator status categories are as follows.

OBL Obligate Wetland, occur almost always (estimated probability >99%) under natural conditions in wetlands.

FACW Facultative Wetland, usually occur in wetlands (estimated probability 67% - 99%), but occasionally found in non-wetlands.

FAC Facultative, equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%).

FACU Facultative Upland, usually occur in non-wetlands (estimated probability 67% - 99%), but occasionally found in wetlands (estimated probability 1% - 33%).

UPL Obligate Upland, occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

NL Not Listed as a species that occurs in wetlands of the United States.

A positive sign (+) following an indicator indicates a frequency toward the higher (“wetter”) end of a category (e.g., FACU+ is toward FAC, FACW+ is toward OBL).

A negative sign (-) following an indicator indicates a frequency toward the lower (“drier”) end of a category (e.g., FACW- is toward FAC, FACU- is toward UPL).

An asterisk (\*) following an indicator indicates a tentative assignment to a category.

To summarize, the indicator statuses ranging from high probability in wetlands to low probability are:

(Higher Probability)	(Lower Probability)
OBL, FACW+, FACW, FACW-, FAC+, FAC, FAC-, FACU+, FACU, FACU- and UPL.	

## **2.0 Characteristics of the Site Buffer Zones**

The upland habitats near the wetlands were mostly under forest cover. The forest canopy of the site was predominantly eastern white pine, sugar maple and northern red oak. Many other trees such as black cherry, red maple, sweet birch, white ash, white oak and American beech were associate species forming the canopy. The understory was typically comprised of saplings of the dominant tree species, with multiflora rose, Allegheny blackberry, winged euonymus, Japanese barberry and maple-leaf viburnum. The herbaceous layer included common species such as partridge-berry, wild sarsaparilla, Schreber’s aster, Canada mayflower, Canada goldenrod, Christmas fern and clubmosses.

## **3.0 Characteristics of the Site Wetlands**

On October 17, 2005, Shaw identified and delineated wetlands and streams within an area located mostly east of the actual property limits of the former Somers Plating facility. The wetlands and waters were delineated in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Other wetland determination guidance was obtained from the Connecticut Inland Wetlands and Watercourses Act. The wetlands were classified in accordance with the methodology outlined in *The Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979). The wetland delineation report was submitted by Shaw to the EPA under separate cover.

### **3.1 Wetland Vegetation**

The wetlands associated with the remediation project are within the Palustrine system, which includes all non-tidal wetlands dominated by trees, shrubs, emergent vascular plants, emergent mosses or lichens, and tidal wetlands where the salinity is below 0.5%.

#### **3.1.1 Palustrine Forested, Broad-leaved Deciduous (PFO1)**

This was the dominant class of wetland identified during the October 2005 delineation. The canopy of this “wooded swamp” was predominantly vegetated with red maple, black gum and American elm. The shrub layer was comprised of northern arrow-wood, nannyberry, wild raisin, silky dogwood and northern spicebush. Several species of fern, false nettle, goldthread, skunk cabbage and many other plants were among those that formed the herbaceous community. Eastern white pine, northern red oak and sugar maple were found along the drier, upper reaches of the wetland forest, and within the wetland interior on raised hummocks.

### *3.1.2 Palustrine Emergent, Persistent (PEM1)*

The herbaceous species skunk cabbage, Canada clearweed, jewelweed, rough-leaf goldenrod, manna grasses, sedges and ferns were some of the dominant herbaceous plants comprising the wetland areas included in the class "PEM1." The PEM1 wetlands were established in a small portion of the west-central part of the wetland complex, near the eastern property corner of the former Somers Plating facility.

### *3.1.3 Riverine, Intermittent (R4)*

The Riverine system includes non-vegetated freshwater habitats that are contained within a channel (except for tidal rivers and lower perennial rivers, which may have emergent vegetation components). The channel, by definition, may be naturally or artificially created, periodically or continuously contains moving water, and/or forms a connecting link between two bodies of standing water. The channel may be bordered by upland or wetland habitats. Upland islands or Palustrine wetlands within stream channels are not included, by definition, in the Riverine system.

In the Riverine intermittent subsystem, the channel contains flowing water for only part of the year. There may be pooled water in the streambed when flowing water is not present. The minor tributaries that meander through the wetlands were classified as R4. The main stem of the unnamed tributary, from the point of confluence of the minor tributaries within the forested wetland and northward to Gillettes Brook was also classified as R4. Portions of the stream banks were deeply undercut and scoured and bordered by upland forest. Near this stream's mouth at Gillettes Brook, the banks were bordered by forested floodplain wetland habitat, outside the limits of this study. Although the stream was flowing strong at the time of the October 2005 delineation, it was assumed that the unusually high level of precipitation was the main source of the water budget for the stream. Site personnel have observed that this was the first time in several months that this stream was experiencing continuous flow.

The October 2005 delineation for this study did not extend northward and downstream to Gillettes Brook, which is a perennial stream (Riverine, upper perennial – R3).

## *3.2 Wetland Hydrology*

The hydrologic budget of the wetlands is supplied by groundwater discharge, direct precipitation and snowmelt, and overland flow from adjacent upland areas. As this restoration project was part of an ERRS contract with the EPA, the hydrology was not monitored prior to commencement of the required work.

## *3.3 Wetland Soils*

The topography of the project area is generally level. The soil profiles were variable throughout the wetland area. In general, the surface soils consisted of partly decomposed organic material over mucky and silty loams that gave way to subsoils of sandy loam. The upland soils possessed the expected dry organic duff layer of coarse, degrading biomass comprised of broad leaves and pine needles. The upland soil horizons were typically silt loam, with some areas of gravelly silt loam and sandy loams.

Information provided by the NRCS identified two soil phases (or map units) on the study area. The mapped soils are outlined below.

### **Manchester Soils**

Soils in the Manchester series consist of very deep excessively drained soils formed in sandy and gravelly glacial outwash and stratified drift. They are on outwash plains, terraces, kames, deltas and eskers. The Manchester series is represented by one soil mapping unit in the project area.

**Manchester gravelly sandy loam, 3 to 15 percent slopes (Mapping Unit 37C)** – This mapping unit is not listed as hydric by the NRCS, but the southern portions of the wetlands delineated for this study were associated with an area mapped with this soil. This is likely due to past disturbance of the site, both agricultural and industrial, which has resulted in changes to the naturally occurring soils in these areas.

### **Timakwa Soils**

Soils in the Timakwa series consist of very deep, very poorly drained soils formed in woody and herbaceous organic materials over sandy deposits in depressions on lake plains, outwash plains, till plains, moraines, and flood plains. These soils have moderate to very rapid permeability in the organic material and rapid to very rapid permeability in the sandy material. Slope ranges from 0 to 2 percent. These soils were previously mapped in Connecticut as the Adrian series.

### **Natchaug Soils**

Soils in the Natchaug series consist of very deep, very poorly drained soils formed in woody and herbaceous organic materials overlying loamy deposits in depressions on lake plains, outwash plains, till plains, moraines, and flood plains. These soils have moderate to very rapid permeability in the organic material and moderately slow to moderately rapid permeability in the loamy material. Slope ranges from 0 to 2 percent. These soils were previously mapped in Connecticut as the Palms series.

The Natchaug and Timakwa series are represented by one soil mapping unit in the project area. They are combined in one mapping unit as the soils are similar in engineering characteristics and are commingled in such a way as to not be separable at the scale used in mapping.

**Timakwa and Natchaug soils (Mapping Unit 17)** – This soil phase is mapped within the low lying areas that convey site drainage toward Gillettes Brook via wetlands and small tributaries. This mapping unit is listed as hydric by the NRCS and the main body of the wetlands delineated for this study is associated with it. Field investigations resulted in the determination that these soils extend further south than as mapped by the NRCS, into areas mapped as Manchester soils.

**Udorthents-Urban land complex (Mapping Unit 306)** – This soil phase is mapped along the Springfield Road corridor, and associated developed land along the road frontage. This mapping unit is too variable to be described in detail, and the components cannot be classified at the series level. The Udorthents component of the complex is formed through alteration of the landscape, such as cut-and-fill activities, and the Urban land component is covered by impervious surface for a large percentage of area. This mapping unit is listed as “unknown” in regard to a rating as a hydric soil. For areas mapped as “306”, onsite investigations must be undertaken in order to determine the presence of areas of hydric soils. For this particular study area, no hydric soils were associated with the area mapped with this complex.

## **3.4 Site Drainage**

The project area drains into an unnamed tributary of Gillettes Brook, part of the Connecticut River watershed. The headwaters of this tributary originate within forested wetlands, where a few shallow intermittent streams flow through the wetland before merging to form a main stem that flows north to



Gillettes Brook. Gillettes Brook runs in a westerly direction and feeds the Scantic River. The mouth of the Scantic River is at the Connecticut River in South Windsor, Hartford County, Connecticut.

#### **4.0 Natural Resource Impacts**

##### **4.1 Buffer Zone**

A total of about 19,850 square feet of uplands within 50 feet of the wetlands received temporary impacts in the form of forest clearing and soil excavation as a result of the mandated activities. The impacts involved the removal of canopy layer and understory trees, as well as vegetation in the shrub and herbaceous layers. The felled canopy layer trees included mature eastern white pine, black cherry, sweet birch, northern red oak, tree-of-heaven, sugar maple and red maple. The removed shrubs and small trees included nannyberry, staghorn sumac, gray birch, multiflora rose, Japanese barberry and Allegheny blackberry. Every effort was made to limit the clearing of the upland areas to those areas with high cadmium levels in the soils. Several individual mature trees and small tree clusters were left intact along the upland area to prevent undue erosion of new soils into the wetlands, as well as to function as a seed bank and for aesthetics. Approximately 4,150 square feet of the affected upland area was comprised of an existing dirt road that passed between two sections of the wetlands.

##### **4.2 Wetland Resources**

The impacts to the wetlands associated with the excavated area involved the removal of canopy layer trees, as well as vegetation in the shrub and herbaceous layers. The excavation of cadmium-contaminated soils affected about 6,700 square feet of freshwater wetlands. Tree removal included species such as eastern white pine, box elder, red maple, black gum, gray birch and American elm. The removed shrubs included northern arrow-wood, nannyberry, wild raisin, silky dogwood and northern spicebush. Every effort was made to limit the clearing of the wetland areas to those areas with high cadmium levels in the soils.

##### **4.3 Riverine Resources**

None of the remedial activities encroached into any of the intermittent streams or the perennial stream into which the smaller streams drain.

##### **4.4 Site Hydrology Impacts**

No permanent impacts to the site topography will result, with the exception of the removal of the dirt road. As such, it is expected that no permanent impact to the existing hydrology will occur from the remedial action.

#### **5.0 Restoration**

The project area for this restoration plan incorporates the affected area in the east part of the former Somers Plating facility, and extending eastward into the wetlands, including wetlands outside the metes and bounds of the former Somers Plating property. In an effort to restore the pre-remediation vegetative cover and diversity, the restoration includes the installation of canopy trees, understory trees, shrubs and herbaceous vegetation indigenous to the area. Prior to planting and seeding, the excavated areas will be

returned to preexisting grades with approved, clean fill material. Figure 1 in Appendix A shows the wetland and buffer area impacted by the removal action that will be restored.

The installation of trees and shrubs and the broadcasting of seed mixes will occur during the spring of 2006 soon after the final grading of soils and the placement of cover sources are complete. The exact placement of each individual plant is not specified, although general areas have been located that will be reserved for certain species. The plant placement should blend with the adjacent assemblage, with an emphasis on natural community spacing and grouping. The following sections describe the structure and components of the restored wetlands.

### **5.1 *Habitat Structure***

Natural and supplemental cover sources will be installed throughout the restoration areas to create a number of microhabitats within the wetland community. Cover sources will include installation of debris piles, snags and stumps that will be recycled from the cleared areas. The piles, snags and stumps will be distributed throughout the upland buffer zone and wetlands prior to vegetation installation and seeding.

#### **5.1.1 *Debris Piles***

Several debris piles consisting of large branches and brush remaining from the tree and shrub clearing activities will be placed within the wetland areas to provide a supplemental cover source for reptiles, birds and small mammals and habitat for invertebrates. One benefit the debris piles will provide prior to their ultimate decomposition will be a feeding area for animals that feed on invertebrates as well as hunting areas for small predators such as snakes.

#### **5.1.2 *Snags***

Snags, also known as standing dead-wood, will be erected in the restored wetland. All snags will be at least 80 percent covered with bark and will measure between eight and twelve inches in diameter. Preference will be given to snags with branches. The source of the snags will be from the forest clearing. The snags will provide perching areas for raptors and songbirds, natural cavity opportunities for woodpeckers and other cavity nesters, microhabitat for decomposers, feeding areas for insectivores, and a nutrient bank through the decomposition process. Several felled trees are staged near the restoration area and will be used for this aspect of the restoration.

#### **5.1.3 *Stumps***

Previously removed stumps from the forest clearing were set aside for future use within the restored wetland. Stumps will be installed in the lowest landscape position (such that approximately six inches will be buried in the soil) of the restored wetland area. The intent of installing the cut stumps, with a portion of their root system exposed, is to provide shade habitat for amphibians as well as a perching area for peripatetic birds such as eastern towhees, dark-eyed juncos and white-throated sparrows. In addition, it is anticipated that mosses, ferns and fungi will pioneer onto the degrading cellulose, thereby adding a valuable microhabitat to the restored wetland systems over time.

### **5.2 *Buffer Zone Vegetation Restoration***

The proposed remediation plan will restore approximately 15,700 square feet of uplands associated with the excavated area. There will be a net loss in upland habitat as approximately 4,150 square feet of former non-wetland habitat will be converted to wetlands upon completion of the restoration effort. Refer to Figure 1 in Appendix A.

The following table outlines the specified vegetative species planned for installation. In an effort to diversify the buffer zone, the restoration species have been selected for their beneficial wildlife qualities.

**Table 5.2**  
**Planned Vegetation for the Buffer Zone**

<i>Scientific Name</i>	<i>Standard USDA Symbol</i>	<i>Common Name</i>	<i>Indicator Status †</i>	<i>Size</i>	<i>Quantity</i>
<b>Canopy (Density = 530 trees/acre)</b>					
<i>Acer saccharum</i>	ACSA3	Sugar maple	FACU-	18-24"	45
<i>Betula papyrifera</i>	BEPA	Paper birch	FACU	4-5'	15
<i>Fagus grandifolia</i>	FAGR	American beech	FACU	12-18"	30
<i>Pinus strobus</i>	PIST	Eastern white pine	FACU	18-24"	50
<i>Quercus rubra</i>	QURU	Northern red oak	FACU-	18-24"	30
<b>Shrubs and Understory (Density = 1920 shrubs/acre)</b>					
<i>Cornus racemosa</i> *	CORA6	Gray dogwood	FAC-	6-12"	250
<i>Corylus americana</i> *	COAM3	American hazelnut	FACU-	12-18"	205
<i>Rhus typhina</i> (= <i>R. hirta</i> )*	RHTY	Staghorn sumac	NL	18-24"	30
<i>Viburnum lentago</i>	VILE	Nannyberry	FAC	18-24"	215

† See Section 1.4 for a description of Indicator Status categories.

\*These species will be installed in clusters of three to five individuals.

In addition to the above referenced species, the buffer zone area shall receive an application of seed as specified in Section 5.4.1, Conservation/Wildlife Seed Mix for Buffer Zone. Specific to this area will be a Conservation/Wildlife Mix that will provide erosion control and wildlife habitat value through a permanent cover of grasses and forbs. Every effort to use native species or observed species within appropriately similar relevant site areas was considered to minimize the introduction of ornamental, exotic or invasive species.

### 5.3 Wetland Area Vegetation Restoration

The proposed remediation plan will restore an estimated 6,726 square feet of wetlands associated with the excavated area. In an effort to minimize impacts to the existing wetlands, access to the affected wetlands shall only be through upland habitat. A dirt road formerly ran through the western part of the wetland complex. This road was removed during the soil excavation activities and will not be rebuilt. An additional upland area at the southern end of the dirt road will be converted to wetland, thereby increasing the size of the project area wetlands by an estimated 4,148 square feet upon completion of the restoration project. The resultant wetland area is estimated to be 10,874 square feet. Refer to Figure 1 in Appendix A.

The following table outlines the specified native trees and shrubs planned for installation. In an effort to diversify the wetlands, the restoration species have been selected for their beneficial wildlife qualities.

**Table 5.3**  
**Planned Vegetation for the Wetlands**

<i>Scientific Name</i>	<i>Standard USDA Symbol</i>	<i>Common Name</i>	<i>Indicator Status †</i>	<i>Size</i>	<i>Quantity</i>
<b>Canopy (Density = 530 trees/acre)</b>					
<i>Acer rubrum</i>	ACRU	Red maple	FAC	18-24"	60
<i>Nyssa sylvatica</i>	NYSY	Black gum	FAC	18-24"	60
<i>Quercus bicolor</i> **	QUBI	Swamp white oak	FACW+	2-3'	10
<b>Shrubs and Understory (Density = 1920 shrubs/acre)</b>					
<i>Alnus incana</i> ssp. <i>rugosa</i> *	ALINR	Speckled alder	FACW	6-18"	70
<i>Cornus amomum</i> *	COAM2	Silky dogwood	FACW	12-18"	75
<i>Ilex verticillata</i>	ILVE	Common winterberry	FACW+	12-18"	30
<i>Rhododendron viscosum</i>	RHVI2	Swamp azalea	FACW+	18-24"	30
<i>Sambucus canadensis</i> *	SACA12	American elder	FACW	18-24"	70
<i>Vaccinium corymbosum</i>	VACO	Highbush blueberry	FACW-	12-18"	70
<i>Viburnum nudum</i> var. <i>cassinoides</i>	VINUC	Wild raisin	FACW	18-24"	105

† See Section 1.4 for a description of Indicator Status categories.

\*These species will be installed in clusters of three to five individuals.

\*\*Not observed in project area wetlands, but indigenous to Tolland County wetlands.

In addition to the above referenced species, the restored wetland area shall receive an application of seed as specified in Section 5.4.2, Wetland Mix.

#### 5.4 Associated Seed Mixtures

In order to provide a supplemental herbaceous layer within all the restoration areas that are not inundated, the application of appropriate seed mixes is required. An additional benefit of the seed mix application is the added extra degree of erosion control inherent with the vigorous root systems of the proposed species. The application of seed is the most cost effective method to ensure any degree of herbaceous cover. It should be noted that 100 percent herbaceous cover should not be expected from any application. Typically, a seeded area will only achieve 75 percent herbaceous cover over a two-year period under ideal conditions. This difference is due primarily to the fact some seeds will not germinate in all wetland or upland situations, the season of sowing and any atypical regional climatic changes. Additionally, some of the species in the seed mixes are biennial and some are perennial, which exhibit different growth patterns and germination rates; therefore different degrees of vegetative cover can be expected.

As the areas to be seeded are not comparatively large, the areas should be sown by hand. Each seed mix should be thoroughly mixed by hand prior to application. This is typically best performed in small quantities using a five-gallon bucket or equivalent. After ensuring that the seeds are thoroughly mixed, they should be uniformly broadcast by hand onto the specific restoration areas. After uniform sowing, all seeded areas should be raked lightly with a leaf rake to ensure proper soil contact of the seeds. The timing of the seed application should take into consideration the local weather forecast for several days to prevent the application just before or after a rain event. To allow adequate time for the seed application to set, seed applications cannot occur three days prior to a forecasted rain event. If seeding occurs after a rain event, any inundated areas will not receive an application of the seed mix at that time. Seed will be applied after the inundated areas have evaporated and/or infiltrated into the ground.

In order to capitalize on the higher water table and to avoid the requirement of supplemental watering, the seed applications must be performed prior to early summer, if not by late spring. Since a majority of the areas to be seeded are provided protection from direct sunlight by the existing canopy layer of the

adjacent forest, except during peak mid-day sun, it is anticipated that the soil moisture levels in the restoration areas will remain sufficiently high enough in early summer to allow for adequate germination. Provided that the seed application is performed within the suggested time frame, no nurse, or cover crop should be added to the seed mixes. Nurse crop species of annual ryegrass, perennial ryegrass or Kentucky bluegrass typically possess aggressive growth patterns and will out-compete the intended seeds for the soil moisture and adequate light required for germination. Even if the seed application is performed within the suggested time frame, some mulch cover (either hydro or straw) may be required.

The following seed mixes, or their functional equivalent, are guidelines for the specific restoration areas. No exact percentages of seed is specified, as it is the species content that is the critical ingredient to promote a diverse herbaceous layer that will increase the wildlife habitat value and subsequent usage of the seeded areas.

#### 5.4.1 Conservation/Wildlife Seed Mix for Buffer Zone

This mix, or functional equivalent, is comprised of seed species that provide a permanent cover of grasses and forbs that will also increase wildlife habitat value. This mix is to be applied in the buffer zone portions of the restoration at an application rate of 25 pounds per acre for a total of nine pounds. The mix will include the following species, or their ecological equivalent.

**Table 5.4.1**  
**Conservation/Wildlife Seed Mix for Buffer Zone**

Scientific Name	Common Name	Indicator Status †
<i>Andropogon gerardii</i>	Big bluestem	FAC-
<i>Asclepias syriaca</i>	Common milkweed	FACU-
<i>Aster laevis</i> (= <i>Symphyotrichum laeve</i> var. <i>laeve</i> )	Smooth blue aster	UPL
<i>Aster umbellatus</i> (= <i>Doellingeria umbellata</i> var. <i>umbellata</i> )	Flat-top aster	FACW
<i>Carex vulpinoidea</i>	Fox sedge	OBL
<i>Elymus villosus</i>	Silky wild rye	FACU-
<i>Panicum clandestinum</i> (= <i>Dichanthelium clandestinum</i> )	Deer-tongue witch-grass	FAC+
<i>Panicum virgatum</i>	Switch-grass	FAC
<i>Polygonum pensylvanicum</i>	Pennsylvania smartweed	FACW
<i>Schizachyrium scoparium</i>	Little bluestem	FACU-

† See Section 1.4 for a description of Indicator Status categories.

#### 5.4.2 Wetland Mix

This mix, or functional equivalent, is comprised of seed species that will increase the wildlife habitat value by providing an herbaceous layer rich in food sources, as well as cover in the wetland restoration areas. As the majority of the wetland areas to be seeded are not beneath a forest canopy, the application rate should be at the “wet meadow” rate of one pound per 2,500 square feet. The wetland area will receive an application of four pounds of the Wetland Mix. The mix will include the following species, or their ecological equivalent.

**Table 5.4.2**  
**Wetland Seed Mix**

Scientific Name	Common Name	Indicator Status †
<i>Alisma subcordatum</i>	Water plantain	OBL
<i>Aster umbellatus</i> (= <i>Doellingeria umbellata</i> var. <i>umbellata</i> )	Flat-top aster	FACW
<i>Bidens cernua</i>	Nodding bur-marigold	OBL
<i>Carex comosa</i>	Bearded sedge	OBL
<i>Carex crinita</i>	Fringed sedge	OBL
<i>Carex lupulina</i>	Hop sedge	OBL
<i>Carex lurida</i>	Sallow sedge	OBL
<i>Carex vulpinoidea</i>	Fox sedge	OBL
<i>Eupatorium maculatum</i>	Spotted Joe Pye-weed	FACW
<i>Eupatorium perfoliatum</i>	Common boneset	FACW+
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	FAC
<i>Juncus effusus</i>	Soft rush	FACW+
<i>Scirpus acutus</i> (= <i>Schoenoplectus acutus</i> )	Hard-stem bulrush	OBL
<i>Scirpus atrovirens</i>	Dark-green bulrush	OBL
<i>Scirpus cyperinus</i>	Woolgrass	FACW+
<i>Verbena hastate</i>	Blue vervain	FACW+

† See Section 1.4 for a description of Indicator Status categories.

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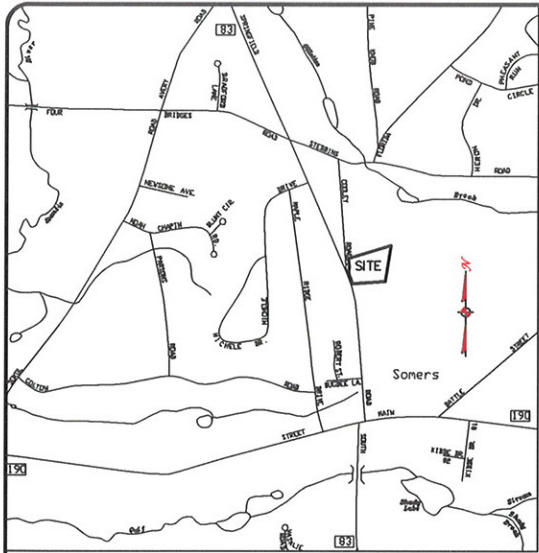
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## **Appendix A**

### **Figure 1 – Restoration Overview Plan**

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NOTE:  
INDICATED UNDERGROUND UTILITIES ARE BASED ON ACTUAL FIELD LOCATIONS  
AND AVAILABLE NOTES AND MAPPING BY OTHERS. THE LOCATIONS ARE APPROXIMATE  
AND ALL UTILITIES MAY NOT BE SHOWN. PRIOR TO ANY CONSTRUCTION THE  
CONTRACTOR SHALL CALL 1-800-922-4455 AND HAVE ALL UTILITIES MARKED  
ON THE GROUND.

SYMBOLS		LEGEND	
●	Iron Pin	□	'CL' CB
□	Monument	□	'C' CB
⊕	Hydrant	⊙	Manhole
○	Post	⊛	Deciduous Tree
○	Utility Post	⊛	Evergreen Tree
○	Water Valve	257x75	Spot Grade
—	Guy Anchor	—	Property Line
—	Sign	—	Contour Line
△	Soil Sample Location	△	Wetland Boundary
EXCAVATED WETLAND		■	= 6726 sft.
50 ft BUFFER ZONE		■	= 15689 sft.
EXCAVATED BERM/ROADWAY		■	= 4148 sft.
RESTORED WETLAND		■	= 10874 sft.

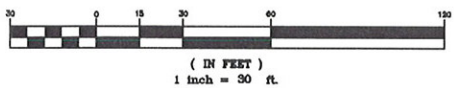
#### NOTES

- 1) PARCEL AREA = 153,471 SQ. FT., 3.523 ACRES.
- 2) ELEVATIONS BASED ON NAVD 1988.
- 3) COORDINATES AND NORTH ORIENTATION BASED ON CONNECTICUT GRID SYSTEM NAD 83.

N/F  
GORDON A. & LEETHIE L. SCHLAK  
72 SPRINGFIELD ROAD  
VOL. 81 P. 588

N/F  
GORDON A. SCHLAF  
39 BATTLE STREET  
VOL. 97 P. 304

#### GRAPHIC SCALE



#### REFERENCE:

- 1) "TOPOGRAPHIC/BOUNDARY MAP" PREPARED BY MARTINEZ COUCH & ASSOCIATES LLC, DATED 08/03/05. DWG# 25-218 TB.DWG

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY



#### RESTORATION PLAN OVERVIEW

58-60 SPRINGFIELD ROAD  
SOMERS, CONNECTICUT

DRAWING NO.

1

PROJECT NO.  
116263

## **Appendix B**

### **Table 1 – Cadmium Results - Wetland Soil Samples**



**Cadmium Results - Wetland Soil Samples**  
**Somers Plating - Lagoon 3 Area**  
**Somers, CT**

Sample ID	Date Sampled	Depth (ft)	Cadmium Result (ppm)	
			XRF Field Screening	Laboratory Confirmation
WAC (15)	9/15/2005	0	231	
WAC (15)	9/15/2005	1	263	
WAB 90	9/16/2005	0	<23	
WAB 45	9/16/2005	0	<22	
WAB 45	9/16/2005	1	32	
WAB 30	9/16/2005	0	<25	
WAB 30	9/16/2005	1	<25	
WAB (15)	9/15/2005	0	2040	
WAB (15)	9/15/2005	1	728	
WAB (105)	9/15/2005	0	(<19)	
WAB (120)	9/21/2005	0	<19	
WAB (120)	9/21/2005	1	<22	
WAA/WAB (75)	9/15/2005	0	1020	
WAA/WAB (90)	9/15/2005	0	374	
WAA/WAB (105)	9/15/2005	0	120	130
WAA 0	9/16/2005	0	<21	
WAA 0	9/16/2005	1	<22	
WAA (15)	9/15/2005	0	5470	
WAA (15)	9/15/2005	1	381	
WAA (45)	9/15/2005	0	1060	
WAA (45)	9/15/2005	1	379	
WAA (120)	9/21/2005	0	56	
WAA (120)	9/21/2005	1	<22	
WAA (135)	9/21/2005	0	25	
WAA (150)	9/21/2005	0	30	
WAA (150) lab dup	9/21/2005	1	<21	
WAA (165)	9/21/2005	0	31	
WAA (180)	9/21/2005	0	30	15
WA/WAA (30)	9/15/2005	0	2490	
WA/WAA (30)	9/15/2005	1	542	
WA 135	9/22/2005	0	<20	
WA 120	9/22/2005	0	<21	
WA 105	9/22/2005	0	<22	
WA 90 swale	9/16/2005	0	48	
WA 90 swale	9/16/2005	1	39	
WA 75	9/22/2005	0	99	
WA (120)	9/22/2005	0	373	510
WA (120)	9/22/2005	1	<22	
WB 135	9/22/2005	0	<22	
WB 135	9/22/2005	1	<18	
WB 120	9/22/2005	0	<19	
WB 105	9/22/2005	0	26	
WB 90	9/22/2005	0	<15	
WB 90 lab dup	9/22/2005	0	<22	
WB 75 swale	9/16/2005	0	321	
WB 75 swale	9/16/2005	1	401	
WB (60)	9/15/2005	0	980	

Shaded samples are from areas that were excavated. Non shaded areas were not excavated.



**Cadmium Results - Wetland Soil Samples**  
**Somers Plating - Lagoon 3 Area**  
**Somers, CT**

Sample ID	Date Sampled	Depth (ft)	Cadmium Result (ppm)	
			XRF Field Screening	Laboratory Confirmation
WC 75 swale	9/16/2005	0	<22	
WC 75 swale	9/16/2005	1	1200	1100
WC 45	9/16/2005	0	35	
WC 45	9/16/2005	1	<19	11
WC 45 lab dup	9/16/2005	1	<24	
WC (30)	9/15/2005	0	1870	
WC (30)	9/15/2005	1	105	
WC (45)	9/15/2005	0	287	
WC (60)	9/15/2005	0	554	
WC (90)	9/27/2005	0	<21	4.1
WC (120)	9/27/2005	0	252	
WC (150)	9/27/2005	0	<16	
WD (30)	9/15/2005	0	351	
WD (30)	9/15/2005	1	<25	
WD (75)	9/15/2005	0	850	
WD (75) lab dup	9/15/2005	0	777	
WD (90)	9/27/2005	0	198	
WD (120)	9/27/2005	0	139	370
WD (150)	9/27/2005	0	<24	
WE (15)	9/15/2005	0	109	
WE (15) lab dup	9/15/2005	0	105	
WE (15)	9/15/2005	1	<22	
WE (30)	9/15/2005	0	279	
WE (30)	9/15/2005	1	<22	
WE (45)	9/15/2005	0	501	
WE (90)	9/27/2005	0	64	
WE (120)	9/27/2005	0	593	
WE (150)	9/27/2005	0	423	
WF (15)	9/15/2005	0	55	
WF(60)	9/15/2005	0	746	
WF (75)	9/15/2005	0	890	
WF (105)	9/23/2005	0	1050	
WF (105)	9/23/2005	1	68	
WF (120)	9/23/2005	0	547	
WF (120)	9/23/2005	1	<22	
WF (135)	9/23/2005	0	407	430
WF(135)	9/23/2005	1	<19	
WF (150)	9/27/2005	0	61	
WF(165)	9/27/2005	0	263	
WF (180)	9/28/2005	0	235	
WF (195)	9/28/2005	0	<22	
WF/WG (90)	9/15/2005	0	743	
WG (15)	9/15/2005	0	39	
WG (60)	9/15/2005	0	517	
WG (105)	9/23/2005	1	278	
WG (120)	9/23/2005	0	608	
WG (120)	9/23/2005	1	80	

Shaded samples are from areas that were excavated. Non shaded areas were not excavated.

**Cadmium Results - Wetland Soil Samples  
Somers Plating - Lagoon 3 Area  
Somers, CT**

Sample ID	Date Sampled	Depth (ft)	Cadmium Result (ppm)	
			XRF Field Screening	Laboratory Confirmation
WG (135)	9/23/2005	0	256	
WG (135)	9/23/2005	1	<22	
WG (150)	9/23/2005	0	591	
WG (165)	9/27/2005	0	205	
WG (180)	9/27/2005	0	459	
WG (195)	9/28/2005	0	65	
WG (210)	9/28/2005	0	<16	
WH (15)	9/15/2005	0	44	55
WH (60)	9/23/2005	0	482	
WH (60)	9/23/2005	1	29	
WH (105)	9/27/2005	0	186	
WH (120)	9/27/2005	0	256	
WH (165)	9/28/2005	0	47	
WH (195)	9/28/2005	0	<19	
WI (15)	9/15/2005	0	30	48
WI (60)	9/23/2005	0	210	
WI (60)	9/23/2005	1	222	
WI (75)	9/28/2005	0	65	
WI (90)	9/28/2005	0	23	21
WI (120)	9/28/2005	0	212	
WI (150)	9/28/2005	0	<21	
WJ (45)	9/28/2005	0	294	
WK (45)	9/28/2005	0	201	

Shaded samples are from areas that were excavated. Non shaded areas were not excavated.