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Bruce Freeman Rail Trail Project - Sudbury Invasive Plant Management Plan

Submitted: December, 2022

Prepared For:

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Introduction

AA Will Corporation under contract to MA DOT will be conducting construction activities related to the construction of an approximate 5.0 mile segment of the Bruce Freeman Rail Trail (4.4 miles in Sudbury and 0.5 miles in Concord). This segment will run from south of Powder Mill Road in Concord south to the Mass Central Rail Trail located just west of Union Avenue.

Per Special Conditions 'b' and 'c' of Part II - Project Specific Conditions within the Order of Conditions issued by the Sudbury Conservation Commission, requires mapping of invasive species populations, designation of a minimum of 4.0 acres of mitigative invasive plant control outside of the Limit of Work, but within the MA DOT Rail Division Right of Way (ROW), and submission of a Invasive Species Management Plan prior to any land disturbance within the project area. The following sections of this document are intended to provide documentation of the pre-construction invasive species composition and distribution throughout the project corridor, proposed management locations and strategies, as well as ongoing management requirements, monitoring, and reporting.

Existing Pre-Construction Invasive Species Conditions

A baseline survey was conducted along the subject section of the ROW in late November and early December of 2022 to identify invasive species present and map the extent of these populations and assemblages. GIS based maps resulting from in-field GPS data collection are provided in Attachment A. Although effort was made to provide species specific polygons to illustrate the true extent of each species, many of the species were too intermixed for this to be accurately delineated. As such, some of the more heavily commingled areas have been reported as an invasive species assemblage. In addition, single waypoints were recorded to document the occurrence of a single invasive plant or small cluster of the same species located within a larger population of a different invasive plant population.

A list of the invasive plant species documented within the ROW are provided in Table 1. These species are listed in order of relative abundance throughout the site from most abundant to least abundant.



Common Name	Scientific Name	Total (sq-ft)	LOW-ROW (sq-ft)
Glossy buckthorn	Rhamnus frangula	431,842	79,118
Asiatic Bittersweet	Celastrus orbiculatus	91,612	25,932
Morrow's honeysuckle	Lonicera morrowii	72,375	25,245
Burning bush	Euonymus alatus	53,908	20,196
Multiflora rose	Rosa multiflora	51,312	8,503
Common reed	Phragmites australis	25,092	19,865
Japanese barberry	Berberis thunbergii	25,033	8,746
Porcelain berry	Ampelopsis brevipedunculata	12,233	1,004
Garlic mustard	Alliaria petiolata	7,803	1,898
Wineberry	Rubus phoenicolasius	5,121	2,161
Norway maple	Acer platanoides	420	50
Autumn olive	Elaeagnus umbellata	210	56
Purple loosestrife	Lythrum Salicaria	186	150
Total Invasive Species I	Extent	777,1479	192,924

Table 1 - Existing Invasive Species List

Invasive Species Management Plan

The goal of this invasive species management plan is two fold, 1) to control and prevent the spread/expansion of existing invasive plant populations within the LOW that may result from the permitted construction activities. 2) invasive species management to restore/enhance wildlife habitat characteristics in areas outside of the LOW and within the greater ROW limits as a means of mitigation for wetland and/or riverfront disturbance associated with construction. As result, this plan is broken into two sections that lay out specific management strategies for these separate management functions.

Initial Management Methods within the LOW

Prevention of spread will be the primary focus of invasive management within the LOW. The order of construction operations and physical invasive plant control methods will be utilized to minimize the potential for spreading the existing invasive plant infestation(s)



within the LOW corridor and adjacent areas within the larger ROW. Throughout these activities the contractor will employ best management practices to prevent the spread and/or transport of viable plant material/propagules such as cleaning equipment of visible plant material prior to start of work and at the completion of each work day.

<u>Site Clearing</u>

Prior to any soil disturbance general clearing of the LOW area will be conducted. All invasive species growth within the LOW work will be cut above the existing grade and stockpiled in distinct piles within the LOW, but beyond the footprint of the existing railway ties. Once this clearing is completed the metal rail system will be removed (embedded rail ties will remain undisturbed and in place) in order to facilitate access for a rubber tired truck and chipping equipment. Once the rails are removed, the stockpiled plant biomass will be collected and chipped directly into a truck for transport to an offsite landfill or composting facility.

Grubbing

Following the cutting and chipping of the above ground invasive plant biomass the remaining invasive plant root material will be removed from the ground. To the extent possible these activities will occur during plant dormancy to mitigate the presence of fruiting bodies and the possible transport/spread of viable plant propagules. Removed plant material will be loaded into a truck and transported off-site.

Low-Volume Herbicide Treatment

Following clearing and grubbing activities, occurrences of invasive species regrowth will be spot-treated using one of the following application techniques; low-volume foliar, cut stump/stem, and/or basal bark. The most appropriate technique will be employed based on target species location, density, and abundance. USEPA and MA DAR registered and aquatic labeled products will be applied at approved label rates. We anticipate that the following products will be required for the management of the target species - triclopyr (Renovate 3, Garlon 3A, Garlon Ultra), Glyphosate (Rodeo, Aquaneat, AquaPro), and Imazamox (Clearcast, Imox, Raptor). A sticker/spreader surfactant will be combined with the herbicide solution for foliar applications to maximize target plant absorption and efficacy. Foliar treatments will be conducted during active



growth periods when existing vegetative regrowth has sufficient leaf surface to facilitate proper herbicide uptake.

Management Methods Outside LOW and Inside ROW

As you can see in the table above the vast majority of the observed invasive plant growth exists within the footprint of the rail bed and the LOW. A total of 4.42 acres of invasive species growth exists outside the LOW. Per Special Condition 'c' of Part II of the Order of Conditions a total of 4 acres of invasive species management is required outside the LOW. As such, all of the documented invasive plant growth within the ROW but beyond the LOW will be managed.

Low-Volume Herbicide Treatment

Following clearing and grubbing activities, occurrences of invasive species regrowth will be spot-treated using one of the following application techniques; low-volume foliar, cut stump/stem, and/or basal bark. The most appropriate technique will be employed based on target species location, density, and abundance. USEPA and MA DAR registered and aquatic labeled products will be applied at approved label rates. We anticipate that the following products will be required for the management of the target species - triclopyr (Renovate 3, Garlon 3A, Garlon Ultra), Glyphosate (Rodeo, Aquaneat, AquaPro), and Imazamox (Clearcast, Imox, Raptor). A sticker/spreader surfactant will be combined with the herbicide solution for foliar applications to maximize target plant absorption and efficacy. Foliar treatments will be conducted during active growth periods when existing vegetative regrowth has sufficient leaf surface to facilitate proper herbicide uptake.

Given the observed invasive plant growth conditions we anticipate utilizing the following management strategies; however, specific site conditions will dictate the approach employed.

Management Strategy	Plant Species	General Description
Cut Stump/Stem	 Norway Maple Lg. Morrow's honeysuckle Lg. burning bush Lg. Asiatic bittersweet 	Any specimen greater than 8ft. tall will be managed using cut stump. plants will be cut at ground level and the stump treated with triclopyr and



	Lg. Glossy buckthornLg. Autumn Olive	basal oil mixture. Cut biomass will be chipped and removed from the site
Management Strategy	Plant Species	General Description
Low-Volume Foliar Spray	 Multiflora rose common reed Japanese barberry Porcelain berry Garlic mustard Purple loosestrife Sm. Glossy buckthorn Sm. Morrow's honeysuckle Seedling Asiatic bittersweet Sm. Burning bush Sm. Autumn olive 	Any specimen less than 8ft. tall will be treated using a low-volume foliar spray (back-pack sprayer). Woody species will be treated with triclopyr and a non-ionic surfactant. Multiflora rose, common reed, porcelain berry, garlic mustard, and purple loosestrife will be treated using glyphosate or imazamox and a methylated seed oil (MSO)I surfactant

Manual Removal/Hand-Pulling

Small seedling single stem specimens will be manually hand-pulled, bagged onsite and removed for final disposal at an approved off-site compost or landfill facility. To the extent possible hand removal will be conducted when no fruits/seeds are present.

Invasive Plant Monitoring

Ongoing monitoring of the invasive plant populations will be important to understand the impacts of construction activities and active management alike. As such, the species identification and GPS mapping methods employed during the pre-construction survey will be replicated annually for the duration of the construction activities. Annual monitoring/mapping would be conducted during the late summer-early fall period. A report will be submitted outlining the changes in invasive plant cover, an updated map set, and recommended ongoing management requirements.

Follow-up and Ongoing Management

Ongoing spot application of herbicides and manual removal of individual plants, as described, will continue annually for the duration of the construction activities. Active



management will be conducted during active plant growth, but prior to the development of propagules.



























rose

⊐Feet

------ Sheet Boundary





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ROW
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Burning bush Bittersweet

Glossy buckthorn

Garlic mustard Honeysuckle

Catalpa tree



----- Sheet Boundary















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COLD TRACK

ROW
 LOW
 Tracks
 Wetland
 Sheet Boundary

