INVASIVE SPECIES CONTROL PLAN

BLUESTONE WIND PROJECT

Towns of Sanford and Windsor
Broome County, New York

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1.0 PROJECT DESCRIPTION

Bluestone Wind, LLC, is proposing to construct a wind energy generating facility (the Project) in the Towns of Windsor and Sanford in Broome County, New York. The Project will consist of up to 33 utility-scale wind turbines with a total generating capacity of up to 124 MW. Project components will include access roads, underground collection lines, temporary construction staging/laydown areas, permanent met towers, an operations and maintenance (O&M) building, a collection substation, and a point of interconnect (POI) substation.

Land use within the vicinity of the Project is generally dominated by forest, interspersed with rural residences and areas of active and reverting agricultural land. Forests within the Project are largely intact, although past and current disturbance from logging and mining activities is evident through the presence of roads and quarries.

2.0 PURPOSE AND GOAL

An invasive species is an organism that has been purposefully or accidentally introduced outside its original geographic range and is able to proliferate and aggressively alter its new environment, potentially causing harm to the economy, environment, or human health. Invasive species dispersal methods vary and include wind, water, wildlife, vegetative reproduction, and human activity. Invasive plant species typically establish most readily in places where the soil has been exposed due to excavation or other disturbance. The Project will utilize this Invasive Species Control Plan (ICSP) to minimize the spread of invasive plant species and invasive plant pests throughout the Project, including within federal and New York State Department of Environmental Conservation (NYSDEC) regulated wetlands, protected streams, and all areas affected by Project development.

The purpose of this ISCP is to facilitate the identification, control, and monitoring of invasive species within all areas that will be disturbed during construction, including staging and access areas. The goal of the ISCP is to prevent expansion of invasive species within all areas that are planned for disturbance, and will be considered successful if the absolute coverage of invasive species within these disturbed areas does not increase as a result of Project actions, when compared to baseline survey data.

3.0 LAWS AND REGULATIONS

The Environmental Conservation Law and the Agriculture and Markets Law authorize the NYSDEC and the NYS Department of Agriculture and Markets (NYSDAM) to regulate invasive species. Under the Environmental Conservation Law, the NYSDEC has regulatory authority regarding Lands and Forests (Article 9) and Fish and Wildlife (Article 11). Under the Agriculture and Markets Law, NYSDAM has the regulatory authority regarding the Inspection and Sale of Seeds (Article 9); Integrated Pest Management Program (Article 11); and Prevention and Control of Disease in Trees and Plants (Article 14).

The official State listing of *Prohibited and Regulated Invasive Species* was last updated on September 10, 2014 (Appendix A). Part 575 of 6 NYCRR includes: 1) a list of prohibited species which are unlawful to knowingly possess with the intent to sell, import, purchase, transport, or introduce; 2) a list of regulated species which are legal to possess, sell, purchase, propagate, and transport but may not be knowingly introduced into a free-living state; and 3) requirements for a permit for research, education, and other approved activities involving prohibited species and release of regulated species into a free-living state. These regulations are expected to help control invasive species by

preventing the introduction of new invasive species and the spread of existing populations. Species listed as prohibited and regulated by the State will be the focus of identification, treatment, and control for the Project, although control methods may also be applied to large populations of non-listed invasive species of special concern that occur within the Project.

4.0 BASELINE SURVEY

All areas to be disturbed during construction, including staging and access areas (hereafter referred to as the Survey Area), will be surveyed twice during the growing season prior to Project construction to document invasive plant species presence. The first of these two surveys was completed during the spring and summer of 2018, and an additional pre-construction survey will be completed within six months of Project construction. Data collected during these surveys will serve as a baseline against which post-construction conditions will be compared. Pre-construction survey methodology involves walking the Survey Area and visually estimating the foliar cover of NYSDEC-listed prohibited invasive plant species (see the *Invasive Species Survey Baseline Report* for a full description of pre-construction survey methodology). A GPS-enabled device is used to record polygons of the extent of invasive species populations, or to record point locations of individual or small groups of plants. Data collected during the first survey was used to create baseline maps of invasive species populations in the Survey Area. Photos were also taken to document pre-construction conditions, and were included in a photolog with the *Invasive Species Survey Baseline Report*.

5.0 PROPOSED CONTROL MEASURES

A central theme of the ISCP will be educating construction workers about invasive species and how to prevent their spread. This education will be accomplished through various contractor-training sessions provided by an independent, third party Environmental Monitor, who will be engaged as part of the Project's Environmental Compliance and Monitoring Program (EC&MP). The ISCP consists of the following control measures: 1) construction materials inspection; 2) target species treatment and removal; 3) construction equipment sanitation; and 4) restoration. Each of these measures is described in detail below:

1. <u>Construction Materials Inspection:</u> All imported construction material brought to the Project, such as seed mixes, mulch, topsoil, sand, gravel, crushed stone, rock, and packing materials, must be certified to be free of invasive plant materials and other deleterious material before entering the Project. In addition, at the earliest practicable time following construction activities, temporarily stockpiled soil and/or spoil materials will be spread and graded to match original contours. Soil and/or spoils excavated from areas free of invasive species will be stockpiled in designated staging areas with no invasive species. Proper methods for segregating stockpiled and spoil material will be implemented, and excavated soil will be reused to the maximum extent possible on the site that it was excavated from to limit opportunities for proliferation of non-native flora and other invasive species. Excess excavated material should be disposed of at a Regulated Waste Facility or treated by a process that destroys seeds or propagules to prevent the spread of invasive species. Appropriate sediment and erosion control measures outlined in the Project-specific Stormwater Pollution Prevention Plan (SWPPP) will also be implemented to limit the spread of invasive species from one area to another.

2. <u>Target Species Treatment and Removal:</u> If unavoidable areas containing target invasive species are encountered, then appropriate treatment and removal methods will be conducted. Equipment used in areas containing invasive plant species shall be cleaned before leaving the invasive-infested area, to prevent the

spread of seeds, roots or other viable plant parts to other portions of the work area. Specific disposal and treatment methods for removed plant material will be determined (through consultation with the Environmental Monitor) based on the density and quantity of invasive species encountered. Disposal and treatment methods may include herbicide treatment, placement in an interim designated secure container, transport in a sealed container and proper offsite disposal in a designated secure container, or leaving infested vegetative materials in the area that is already infested (provided that no filling of wetlands or adjacent areas will occur as a result). Any herbicide spot treatments would be applied by a Certified Commercial Pesticide Applicator, Commercial Pesticide Technician, or a Private Pesticide Applicator (i.e., individuals that meet the requirements set forth in 6 NYCRR Part 325, Application of Pesticides), in accordance with NYSDEC approved herbicide and treatment measures.

Appendix B contains species-specific control method recommendations from the NYSDEC for common invasive plant species. Per these recommendations, if any of the identified Japanese knotweed populations are subject to disturbance during construction, the entire root system of the plants should be excavated and placed directly into a container or truck bed, rather than being stockpiled on site. The excavated material should be disposed of at a Regulated Waste Facility or treated by a process that destroys all Japanese knotweed propagules (roots, rhizomes, etc.).

To prevent the spread of the hemlock woolly adgelid (*Adelges tsugae*), an invasive insect that has been documented in Broome County (NYSDEC, 2017a), the above treatment and removal methods should also be implemented where clearing of eastern hemlock (*Tsuga canadensis*) trees occurs. In addition, incidences of infected trees should be reported to the NYSDEC to aid in documenting the spread of this species in New York State.

The emerald ash borer (*Agrilus planipennis*) is an invasive insect that has caused widespread die-offs of ash (*Fraxinus spp*.) trees in Broome County and much of New York State. In order to prevent further infestations, any ash trees (*Fraxinus sp.)* removed during Project construction should be treated according to NYSDEC and NYSDAM regulations. These regulations prohibit the transport of ash trees or ash materials (wood or logs) outside of an established Restricted Area without a conditional permit from NYSDAM (Appendix C). The regulations also prohibit the transport of ash wood chips between April 15th and May 15th, when the emerald ash borer is likely to emerge. It is recommended that all materials from ash trees be chipped to smaller than 1-inch by 2-inch dimensions and used as a ground cover or stored in mulch piles within the Facility Site (NYSDEC, 2017b).

Please note that the Project is not located in an oak wilt protective zone; oak wilt has not been documented in Broome County.

3. <u>Construction Equipment and Personnel Sanitation:</u> The introduction of non-native invasive plant species will be controlled by assuring that all construction equipment and personnel are clean (free of mud, debris, vegetation, roots, debris, etc.) upon arrival and that equipment utilized in areas with invasive species is cleaned prior to moving out of the infested area. The intent is that equipment should arrive at the site clean and leave the site clean. Equipment/clothing cleaning stations will be established to ensure that invasive species seeds and other viable plant parts cannot spread through runoff or other means. Cleaning stations will be located only within areas currently infested with invasive species. Power-washing with clean water (no

soaps or chemicals) will be used to clean equipment, where feasible. If conditions do not allow the use of power washing, the equipment shall be cleaned of visible signs of plant material prior to exiting infested areas. Water used for cleaning equipment shall not come from surface waters that could contain invasive species. All personnel clothing, footwear, and gear should be cleaned of visible signs of plant material prior to exiting infested areas. Any wash water (including spray) shall not be discharged within 100 feet of any stream, wetland or adjacent area, or storm-water conveyance (ditch, catch basin, etc.). The Environmental Energy Alliance of New York Best Management Practices for Preventing the Transportation of Invasive Plant Species is also attached to this report, as an additional guidance document to minimize the spread of invasive species (Appendix D).

4. Restoration: Areas where soil is temporarily disturbed during construction will be graded, stabilized and restored in accordance with the Project-specific SWPPP. All fill material brought to the Project site will be free of non-native invasive plant species, and as an additional precaution primarily be used in areas that are free of invasive species. To minimize the chance of invasive species spreading or increasing in abundance, all disturbed soils within and adjacent to areas with invasive species should be stabilized with a native seed mix and weed-free mulch as soon as possible following construction.

6.0 CONSTRUCTION AND POST CONSTRUCTION MONITORING

Monitoring of the control of invasive species for the Project is proposed to have three phases, which are described in detail below:

1. Pre-construction Survey: To aid in the development of this ISCP, an initial pre-construction invasive species survey was conducted and the results were presented in the *Invasive Species Survey Baseline Report*. An additional pre-construction survey for invasive species will be conducted within six months prior to construction, the results of which will be used to modify the baseline report, as needed. The combined results of these surveys will serve as the baseline for post-construction monitoring and will be used to establish invasive species goals to be met post-construction.

2. Construction Monitoring: During construction, workers will be educated about Best Management Practices for controlling the spread of invasive species as described above, and the Environmental Monitor will confirm and maintain records that all required practices were implemented during construction activities.

3. Post-Construction Monitoring: Invasive species will be surveyed during the growing season for five years following the completion of post-construction restoration activities. Post-construction surveys will follow the same methods used in pre-construction surveys and will be carried out by an experienced biologist. Changes in invasive species coverage will be determined by comparing post-construction survey data to the baseline data collected in the pre-construction surveys. A report detailing the success of the ISCP will be prepared and submitted to NYSDEC at the end of each monitoring year. If goals established in the *Invasive Species Survey Baseline Report* are not met, a revised control plan containing additional control actions and an extended monitoring term will be developed.

7.0 REFERENCES

Montana State University Extension. 2006. *Inventory and Survey Methods for Nonindigenous Plant Species*. Available at: http://www.weedcenter.org/store/images/books/INVENTORYBOOK.pdf.

New York State Department of Environmental Conservation (NYSDEC). 2017a. *Hemlock Woolly Adgelid Map.* Updated October 2017. Available at http://www.dec.ny.gov/animals/86382.html.

NYSDEC. 2017b. *Emerald Ash Borer Regulations and Quarantines*. Updated May 2017. Available at: http://www.dec.ny.gov/animals/47761.html.

Appendix A

NYSDEC Prohibited and Regulated Invasive Species

6 NYCRR Part 575
Prohibited and Regulated Invasive Species
September 10, 2014

ALGAE AND CYANOBACTERIA

Prohibited:
Caulerpa taxifolia, Killer Green Algae
Didymosphenia geminata, Didymo
Prymnesium parvum, Golden Algae

Regulated:
Cylindrospermopsis raciborskii, Cylindro
Grateloupia turuturu, Red Algae

PLANTS

Prohibited:
Acer pseudoplatanus, Sycamore Maple
Achyranthes japonica, Japanese Chaff Flower
Alliaria petiolata, Garlic Mustard
Ampelopsis brevipedunculata, Porcelain Berry
Anthriscus sylvestris, Wild Chervil
Aralia elata, Japanese Angelica Tree
Artemisia vulgaris, Mugwort
Arthraxon hispidus, Small Carpet Grass
Berberis thunbergii, Japanese Barberry
Brachypodium sylvaticum, Slender False Brome
Cabomba caroliniana, Fanwort
Cardamine impatiens, Narrowleaf Bittercress
Celastrus orbiculatus, Oriental Bittersweet
Centaurea stoebe (C. biebersteinii, C. diffusa, C. maculosa misapplied, C. xpsammogena), Spotted Knapweed
Cirsium arvense (C. setosum, C. incanum, Serratula arvensis), Canada Thistle
Cynanchum louiseae (C. nigrum, Vincetoxicum nigrum), Black Swallow-wort
Cynanchum rossicum (C. medium, Vincetoxicum medium, V. rossicum), Pale Swallow-wort
Dioscorea polystachya (D. batatas), Chinese Yam
Dipsacus laciniatus, Cut-leaf Teasel
Egeria densa, Brazilian Waterweed
Elaeagnus umbellata, Autumn Olive
Euphorbia cyparissias, Cypress Spurge
Euphorbia esula, Leafy Spurge
Ficaria verna (Ranunculus ficaria), Lesser Celandine
Frangula alnus (Rhamnus frangula), Smooth Buckthorn
Glyceria maxima, Reed Manna Grass
Heracleum mantegazzianum, Giant Hogweed
Humulus japonicus, Japanese Hops
Hydrilla verticillata, Hydrilla/ Water Thyme
Hydrocharis morsus-ranae, European Frogbit
Imperata cylindrica (I. arundinacea, Lagurus cylindricus), Cogon Grass
Iris pseudacorus, Yellow Iris
Lepidium latifolium, Broad-leaved Pepper-grass
Lespedeza cuneata, Chinese Lespedeza
Ligustrum obtusifolium, Border Privet
Lonicera japonica, Japanese Honeysuckle
Lonicera maackii, Amur Honeysuckle
Lonicera morrowii, Morrow's Honeysuckle
Lonicera tatarica, Tartarian Honeysuckle
Lonicera x bella, Fly Honeysuckle
Ludwigia hexapetala (L. grandiflora), Uruguayan Primrose Willow
Ludwigia peploides, Floating Primrose Willow
Lysimachia vulgaris, Garden Loosestrife
Lythrum salicaria, Purple Loosestrife
Microstegium vimineum, Japanese Stilt Grass
Murdannia keisak, Marsh Dewflower
Myriophyllum aquaticum, Parrot-feather
Myriophyllum heterophyllum, Broadleaf Water-milfoil
Myriophyllum heterophyllum x M. laxum, Broadleaf Water-milfoil Hybrid
Myriophyllum spicatum, Eurasian Water-milfoil
Nymphoides peltata, Yellow Floating Heart
Oplismenus hirtellus, Wavyleaf Basketgrass
Persicaria perfoliata (Polygonum perfoliatum), Mile-a-minute Weed
Phellodendron amurense, Amur Cork Tree
Phragmites australis, Common Reed Grass
Phyllostachys aurea, Golden Bamboo
Phyllostachys aureosulcata, Yellow Groove Bamboo
Potamogeton crispus, Curly Pondweed
Pueraria montana, Kudzu
Reynoutria japonica (Fallopia japonica, Polygonum cuspidatum), Japanese Knotweed
Reynoutria sachalinensis (Fallopia sachalinensis, Polygonum sachalinensis), Giant Knotweed
Reynoutria x bohemica (Fallopia x bohemica, Polygonum x bohemica), Bohemian Knotweed
Rhamnus cathartica, Common Buckthorn
Rosa multiflora, Multiflora Rose
Rubus phoenicolasius, Wineberry
Salix atrocinerea, Gray Florist's Willow
Silphium perfoliatum, Cup-plant
Trapa natans, Water Chestnut
Vitex rotundifolia, Beach Vitex

Regulated:
Acer platanoides, Norway Maple
Clematis terniflora, Japanese Virgin's Bower
Euonymus alatus, Burning Bush
Euonymus fortunei, Winter Creeper
Miscanthus sinensis, Chinese Silver Grass
Robinia pseudoacacia, Black Locust

FISH

Prohibited:
Channa argus, Northern Snakehead

Channa marulius, Bullseye Snakehead
Channa micropeltes, Giant Snakehead
Clarias batrachus, Walking Catfish
Gambusia affinis, Western Mosquitofish
Gambusia holbrooki, Eastern Mosquitofish
Hypophthalmichthys harmandi, Largescale Silver Carp
Hypophthalmichthys molitrix, Silver Carp
Hypophthalmichthys nobilis, Bighead Carp
Misgurnus anguillicaudatus, Oriental Weatherfish
Mylopharyngodon piceus, Black Carp
Neogobius melanostomus, Round Goby
Petromyzon marinus, Sea Lamprey
Proterorhinus semilunaris (P. marmoratus), Tubenose Goby
Tinca tinca, Tench

Regulated:
Carassius auratus, Goldfish
Cyprinella lutrensis, Red Shiner
Cyprinus carpio, Common Carp/ Koi
Gymnocephalus cernuus, Ruffe
Monopterus albus, Asian Swamp Eel
Oreochromis aureus, Blue Tilapia
Oreochromis niloticus, Nile Tilapia
Pterois miles, Common Lionfish
Pterois volitans, Red Lionfish
Sander lucioperca (Stizostedion lucioperca), Zander
Scardinius erythrophthalmus, Rudd

AQUATIC INVERTEBRATES

Prohibited:
Bellamya chinensis (Cipangopaludina chinensis),Chinese Mystery Snail
Bellamya japonica, Japanese Mystery Snail
Bithynia tentaculata, Faucet Snail
Bythotrephese longimanus (B. cederstroemi), Spiny Water Flea
Cercopagis pengoi, Fishhook Water Flea
Corbicula fluminea, Asian Clam
Crassostrea ariakensis, Suminoe Oyster
Didemnum spp., Carpet Tunicate
Dreissena polymorpha, Zebra Mussel
Dreissena rostriformis bugensis, Quagga Mussel
Eriocheir sinensi, Chinese Mitten Crab
Hemigrapsus sanguineus, Asian Shore Crab
Hemimysis anomala, Bloody Red Shrimp
Orconectes rusticus, Rusty Crayfish
Potamopyrgus antipodarum, New Zealand Mud Snail
Rapana venosa, Veined Rapa Whelk
Styela plicata, Asian Sea Squirt

Regulated:
Carcinus maenas, European Green Crab
Daphnia lumholtzi, Water Flea
Hemigrapsus takanoi (H. penicillatus), Brush-clawed Shore Crab/ Grapsid Crab

TERRESTRIAL INVERTEBRATES

Prohibited:
Achatina achatina, Giant Ghana Snail
Achatina fulica (Lissachatina fulica), Giant African Land Snail
Adelges tsugae, Hemlock Woolly Adelgid
Agrilus planipennis, Emerald Ash Borer
Amynthas spp., Asian Earthworms
Anoplophora glabripennis, Asian Longhorn Beetle
Apis mellifera scutellata x A. mellifera ligustica/ A. mellifera iberiensis, Africanized Honey Bee
Archachatina marginata, Giant West African Snail
Cryptococcus fagisuga, Beech Scale
Lymantria dispar, Asian and European Gypsy Moth
Monochamus alternatus, Japanese Pine Sawyer
Pityophthorus juglandis, Walnut Twig Beetle
Sirex noctilio, Sirex Woodwasp

TERRESTRIAL AND AQUATIC VERTEBRATES

Prohibited:
Cygnus olor, Mute Swan
Lepus europaeus, European Hare
Myocastor coypus, Nutria
Nyctereutes procyonoides, Asian Raccoon Dog
Sus scrofa (excluding Sus scrofa domestica), Eurasian Boar

Regulated:
Alopochen aegyptiacus, Egyptian Goose
Cairina moschata, Muscovy Duck
Myiopsitta monachus, Monk Parakeet
Oryctolagus cuniculus, European Rabbit
Trachemys scripta elegans, Red-eared Slider
Xenopus laevis, African Clawed Frog

FUNGI

Prohibited:
Amylostereum areolatum, Sirex Wasp Fungus
Geomyces destructans, White-nose Syndrome
Geosmithia morbida, Thousand Canker Disease
Phytophthora ramorum, Sudden Oak Death

For the official regulations and species lists please see: http://www.dec.ny.gov/regulations/265.html.

New York State Department of Environmental Conservation
Part 575 Invasive Species Regulations
Questions and Answers

What are invasive species?
Invasive species means a species that is non-native to the ecosystem under consideration; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Why are invasive species a problem?
Invasive species have a detrimental effect upon the State's natural communities and systems by out-competing native species, diminishing biological diversity, altering community structure and, in some cases, changing ecosystem processes. They can even harm human health.

How will these regulations help?
The regulations were developed by the Department of Environmental Conservation, in cooperation with the Department of Agriculture and Markets. These regulations, once implemented, are expected to help control invasive species by reducing the introduction and spread of invasive species populations by limiting commerce in such species, thereby having a positive impact on the environment.

How were the lists of species in the regulations developed?
The lists of prohibited and regulated species were developed using the standardized species assessment and listing process outlined in the 2010 report "A Regulatory System for Non-native Species". Lists of candidate non-native invasive species were compiled by reviewing other state regulations, reports, lists and consulting with agency experts. A rapid assessment was conducted to determine if the species warranted listing and was already federally regulated. Ecological invasiveness assessments were conducted on each potential invasive species followed by a socio-economic assessment for those ranking High or Very High. The assessment team then placed the species in the appropriate regulatory classification of Prohibited or Regulated. The initial recommendations were submitted to the Invasive Species Advisory Committee (25 Non-Government Organizations) and Council (9 State Agencies) for review and comment. The lists were then incorporated into the regulations.

Why isn't a particular species included on the prohibited or regulated lists?
Due to staffing limitations and time constraints, the initial list of prohibited and regulated species is not all-encompassing. We anticipate that the regulations will be updated on a regular basis. The regulations include language for petitioning for addition or removal of species from the prohibited and regulated lists. Some species were assessed, but do not meet the criteria for prohibition or regulation.

Aren't some of the species listed as either prohibited or regulated already established?
Yes, however, there are areas of the State in which they have not yet established populations and these regulations are intended to slow the spread by reducing the number of individuals of a species released into a region, to which they are not native, associated with the sale and introduction of such species.

When did the regulation become final?
The part 575 invasive species regulations were proposed, and a 60 day to public comment held between October and December 2013. During this time, four public hearings were scheduled across the State. All comments received were reviewed and a summary of public comments and agency responses was compiled. Required changes were made to the final regulations. A summary of the final regulations was published in the State Register September 10, 2014 and the full express terms were published on the Department's website.

Once finalized, when will the regulations become implemented?
A summary of the final regulations was published in the State Register September 10, 2014. The part 575 regulations take effect 6 months later (March 10, 2015).

What is the difference between prohibited and regulated invasive species?
Prohibited invasive species cannot be knowingly possessed with the intent to sell, import, purchase, transport or introduce. In addition, no person shall sell, import, purchase, transport, introduce or propagate prohibited invasive species. Regulated invasive species, on the other hand, are species which cannot be knowingly introduced into a free-living state, or introduced by a means that one should have known would lead to such an introduction, although such species shall be legal to possess, sell, buy, propagate and transport.

What is considered a free-living state?
A species is considered in a free-living state if it is introduced to public lands or lands connected to public lands, natural areas, and public waters or waters connected to public waters.

Are there any exceptions to the definition of a free-living state?
Yes, such exceptions include artificial ponds and water gardens with no outlet to public waters, waters entirely within private land not connected to public waters, and water-use facilities with outflows not providing access to public waters.

Do the regulations require existing populations of species on the prohibited and regulated lists be managed or destroyed by the land-owner?
No, existing populations of non-native invasive species listed as prohibited or regulated and established prior to the implementation of the final part 575 regulations do not require management by the owner. However, once implemented, the final regulations do prohibit commerce involving those species listed as prohibited species and the release of regulated species into a free-living state.

What species have grace periods established in the regulations?
A one year grace period is included in the regulations for Japanese Barberry (*Berberis thunbergii*), during which existing stock of this species may be sold. In addition, a person may possess, sell, offer for sale, distribute, transport, or otherwise market or trade live Eurasian boars (*Sus scrofa*) until September 1, 2015. No person shall knowingly import, propagate or introduce Eurasian boars into a free-living state.

Will there be a fee for permits? No fee is anticipated for permits issued for research, education or other approved activity.

Who will enforce the final regulations?
The regulations will be enforced by the Department of Environmental Conservation, with assistance from the Department of Agriculture and Markets.

Appendix B

Control Methods for Select Invasive Plant Species

CONTROL METHODS FOR JAPANESE, GIANT AND BOHEMIAN KNOTWEED
(*Fallopia japonica ssp. japonica, F. sachalinensis, and F. x. bohemica*)

PLANT DESCRIPTION

The knotweeds are herbaceous perennials which forms dense clumps 1-3 meters (3-10 feet) high. Its broad leaves are somewhat triangular and pointed at the tip. Clusters of tiny greenish-white flowers are borne in upper leaf axils during August and September. The fruit is a small, brown triangular achene. Knotweed reproduces via seed and by vegetative growth through stout, aggressive rhizomes. It spreads rapidly to form dense thickets that can alter natural ecosystems. Japanese knotweed can tolerate a variety of adverse conditions including full shade, high temperatures, high salinity, and drought. It is found near water sources, in low-lying areas, waste places, and utility rights of way. It poses a significant threat to riparian areas, where it can survive severe floods.

MANAGEMENT OPTIONS

1. Digging

Effectiveness: This method is appropriate for very small populations.

Methods: Remove the entire plant including all roots and runners using a digging tool. Juvenile plants can be hand-pulled depending on soil conditions and root development.

Cautions: Care must be taken not to spread rhizome or stem fragments. Any portions of the root system or the plant stem not removed will potentially re-sprout.

Disposal: All plant parts, including mature fruit, should be bagged and disposed of in the trash to prevent re-establishment (dispose of in an approved landfill or incinerate with appropriate permits).

Sanitation: Clean all clothing, boots, and equipment to prevent spread of seed. See item #7 “Sanitation” in the General Practices section.

2. Cutting

Effectiveness: Repeated cutting may be effective in eliminating Japanese knotweed. Manual control is labor intensive, but is a good option where populations are small and isolated or in environmentally sensitive areas.

Methods: Cut the knotweed close to the ground at least 3 times a year. Plant native plant species as an alternative to continued treatment.

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[*] Stockpiling implies temporary storage prior to transfer to a permanent treatment facility.

Cautions: This strategy must be carried out for several years to obtain success. Both mechanical and herbicidal control methods require continued treatment to prevent reestablishment of knotweed.

Disposal: Bag and remove all plant parts from site (dispose of in an approved landfill or incinerate with appropriate permits).

Sanitation: Clean all clothing, boots, and equipment to prevent spread of seed. See item #7 "Sanitation" in the General Practices section.

3. Herbicide

Effectiveness: Glyphosate treatments in late summer or early fall are much more effective in preventing re-growth of Japanese knotweed the following year.

Methods: Use glyphosate formulations only. In late June/early July cleanly cut or mow down existing stalks/canes. Allow the knotweed to re-grow. After August 1, spray knotweed all re-growth with ROUNDUP®, RODEO®.

A cut-stem treatment utilizing glyphosate formulations can be an effective control for smaller colonies of knotweed. In early to mid-July cut the existing stems just below the 2nd or 3rd node above the soil surface. Immediately after cutting apply by swab or small spray bottle a 50% solution of glyphosate to the freshly-cut cross section and into the internodal cavity of each stalk/cane. Monitor treatment area by early to mid-August and repeat cut-stem treatment to any residual stems.

Stem injection is another promising control method for smaller colonies of knotweeds. Currently, a supplemental label for AQUAMASTER® (glyphosate) herbicide exists for this stem injection method. In late June/early July inject 5 mLs of AQUAMASTER® below the 2nd node above the ground of each stem in the clump. Use suitable equipment that must penetrate into the internodal region. JKInternational manufactures a stem injection tool that is suitable and recommended for this control method.

Cautions: Established stands of Japanese knotweed are difficult to eradicate even with repeated herbicide treatments. However, herbicide treatments will greatly weaken the plant and prevent it from dominating a site. Adequate control is usually not possible unless the entire stand of knotweed is treated (otherwise, it will re-invade via creeping rootstocks from untreated areas).

These herbicides are not selective (kills both monocots and dicots), thus should be applied carefully to prevent killing of non-target species. All tank mixes should be mixed with clean (ideally distilled) water because glyphosate binds tightly to sediments, which reduces toxicity to plants.

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[*] Stockpiling implies temporary storage prior to transfer to a permanent treatment facility.

Do not apply in windy conditions because spray will drift and kill other plants. Do not apply if rain is forecast within 12 hours because herbicide will be washed away before it can act. Choose Rodeo® formulation for applications in standing water or along a shoreline.

CONTROL METHODS FOR JAPANESE, MORROW'S, TATARIAN,
AMUR AND BELL'S HONEYSUCKLES
(*Lonicera morrowii, L. tatarica, L. japonica, L. maackii, L. x. bella*)

PLANT DESCRIPTION – JAPANESE HONEYSUCKLE

Japanese honeysuckle (*Lonicera japonica*) is a perennial trailing or climbing woody vine of the honeysuckle family (Caprifoliaceae) that spreads by seeds, underground rhizomes, and aboveground runners. It has opposite leaves that are ovate, entire (young leaves often lobed), 4-8 cm long, with a short petiole, and variable pubescence. In the southern part of the range the leaves are evergreen, while in more northern locales the leaves are semi-evergreen and fall off in midwinter. Young stems are reddish brown to light brown, usually pubescent, and about 3 mm in diameter. Older stems are glabrous, hollow, with brownish bark that peels in long strips. The woody stems are usually 2-3 m long, (less often to 10 m). *Lonicera japonica* creates dense tangled thickets by a combination of stem branching, nodal rooting, and vegetative spread from rhizomes.

Lonicera japonica (including the varieties) is easily distinguished from native honeysuckle vines by its upper leaves and by its berries. The uppermost pairs of leaves of *Lonicera japonica* are distinctly separate, while those of native honeysuckle vines are connate, or fused to form a single leaf through which the stem grows. *Lonicera japonica* has black berries, in contrast to the red to orange berries of native honeysuckle vines. The fruits are produced September through November. Each contains 2-3 ovate to oblong seeds that are 2-3 mm long, dark-brown to black, ridged on one side and flat to concave on the other.

The fragrant white (fading to yellow) flowers of *Lonicera japonica* are borne in pairs on solitary, axillary peduncles 5-10 mm long, supported by leaflike bracts. The species has white flowers tinged with pink and purple. Individual flowers are tubular, with a fused two-lipped corolla 3-4(-5) cm long, pubescent on the outside. Flowers are produced late April through July, and sometimes through October.

MANAGEMENT OPTIONS

1. Mowing and Pulling

Effectiveness: Removing the above-ground portion of *Lonicera japonica* reduces current-year growth but does not kill the plant, and generally stimulates dense regrowth. Cut material can take root and should therefore be removed from the site (not practical with most infestations).

Methods: Hand pulling is highly effective. Pull out Japanese honeysuckle by the roots in winter wherever it climbs, aim the roots upward and tie them in place. The absence of light energy causes the trailing vines to decline precipitously next year. This method greatly reduces spraying requirements.

Disposal: All plant parts, including mature fruit, should be bagged and disposed of in the trash to prevent re-establishment (dispose of in an approved landfill or incinerate with appropriate permits).

Cautions: Mowing is an ineffective control method, stimulating growth and encouraging formation of dense, albeit shorter, mats. Bush-hogging is an ineffective control, as *Lonicera japonica* re-invades within one growing season.

2. Herbicide

Effectiveness: In northern states, *Lonicera japonica* retains some leaves through all or most of the winter (semi-evergreen or evergreen), when most native plants have dropped their leaves. This provides a window of opportunity from mid-autumn through early spring when it is easier to spot and treat with herbicides, fire or other methods without damaging native species.

Controls: A foliar application of 1.5% glyphosate shortly after the first frost appears to be the most effective treatment, applied after native vegetation is dormant and when temperatures are near and preferably above freezing. Applications within 2 days of the first killing frost are more effective than applications later in the winter. *Lonicera japonica* is less susceptible to herbicides after the first hard frost (-4°C).

Cautions: Soil disturbance should be avoided in infested areas to minimize germination of seed in the seedbank. Treated plants should be re-examined at the end of the second growing season, as plants can recover from herbicide application.

These herbicides are not selective (kills both monocots and dicots), thus should be applied carefully to prevent killing of non-target species. All tank mixes should be mixed with clean (ideally distilled) water because glyphosate binds tightly to sediments, which reduces toxicity to plants.

Do not apply in windy conditions because spray will drift and kill other plants. Do not apply if rain is forecast within 12 hours because herbicide will be washed away before it can act.

PLANT DESCRIPTIONS – BUSH HONEYSUCKLES

Exotic bush honeysuckles (Morrow's, Bell's, Amur and Tatarian) are upright, multi-stemmed, oppositely branched, deciduous shrubs that range in height from 2 m to 6 m. The opposite leaves are simple and entire, and paired; axillary flowers are showy with white, pink, or yellow corollas. The fruits of *Lonicera spp.* are red, or rarely yellow, fleshy berries.

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[*] Stockpiling implies temporary storage prior to transfer to a permanent treatment facility.

In flower, exotic bush honeysuckles can be distinguished from all native bush honeysuckles except swamp fly-honeysuckle (*L. oblongifolia*) by their hirsute (hairy) styles. In fruit, the red or rarely yellow berries of the exotics separate them from the blue- or black-berried native waterberry (*L. caerulea*) and bearberry honeysuckle (*L. involucrata*). The exotic bush honeysuckles also generally leaf-out earlier and retain their leaves longer than the native shrub honeysuckles.

Within the exotic bush honeysuckles, *L. maackii* alone has acuminate, lightly pubescent leaves that range in size from 3.5 to 8.5 cm long and peduncles generally shorter than 6 mm. Its flowers are white to pink, fading to yellow, 15-20 mm long. Its berries are red or with an orange cast. Height ranges to 6 m.

In North America, there has been considerable confusion regarding the correct identification of *L. morrowii*, *L. tatarica*, and *L. x bella*, their hybrid. The literature contains a number of references to plants called by the name of one of the parents, but described as having characters more like those of the hybrid, *L. x bella*. The hybrid therefore, may be more common than the literature would indicate, and accurate field identification may be similarly problematic.

The two parent species of *L. x bella*, however, are dissimilar. *L. morrowii* has leaves that are elliptic to oblong gray-green, soft-pubescent beneath, and are 3-6 cm long. Its flowers are pubescent, white fading to yellow, 1.5-2 cm long, on densely hairy peduncles 5-15 mm long. The fruits are red. The height ranges to 2 m. *L. tatarica* has leaves that are ovate to oblong, glabrous, and are 3-6 cm long. Its flowers are glabrous, white to pink, 1.5-2 cm long, on peduncles 15-25 mm long. The fruits are red or rarely yellow. Height ranges to 3 m.

L. x bella has intermediate characteristics. The leaves are slightly hairy beneath. Flowers are pink fading to yellow, on sparsely hairy peduncles 5-15 mm. long. Fruits are red or rarely yellow. Height ranges to 6 m.

MANAGEMENT OPTIONS

1. Grubbing, Pulling, Cutting

Effectiveness: Mechanical controls include grubbing or pulling seedlings and mature shrubs, and repeated clipping of shrubs. Effective mechanical management requires a commitment to cut or pull plants at least once a year for a period of three to five years.

Methods: Grubbing or pulling by hand (using a Weed Wrench or a similar tool) is appropriate for small populations or where herbicides cannot be used. Mature *L. maackii* shrubs growing in shaded forest settings can be eradicated by clipping once a year, during the growing season, until control is achieved. Other bush honeysuckles growing in more open settings can be managed by clipping twice yearly, once in early spring and again in late summer or early autumn.

Disposal: All plant parts, including mature fruit, should be bagged and disposed of in the trash to prevent re-establishment (dispose of in an approved landfill or incinerate with appropriate permits).

Cautions: Any portions of the root system not removed can resprout. Because open soil can support rapid re-invasion, managers must monitor their efforts at least once per year and repeat control measures as needed. Winter clipping should be avoided as it encourages vigorous re-sprouting.

2. Herbicides

Effectiveness: Most managers report that treatment with herbicides is necessary for the control of *L. maackii* populations growing in full sun and may be necessary for all large bush honeysuckle populations.

Controls: Use formulations of glyphosate (brand names Roundup, and for use near water bodies, Rodeo) as foliar sprays or cut stump sprays and paints with varying degrees of success. Glyphosate is a non-selective herbicide which kills both grasses and broad-leaved plants. For cut stump treatments, 20-25% solutions of glyphosate can be applied to the outer ring (phloem) of the cut stem. A 2% solutions of glyphosate can be used for foliar treatments. Glyphosate should be applied to the foliage late in the growing season, and to the cut stumps from late summer through the dormant season.

Cautions: The subsequent flush of seedlings following all herbicide treatments must also be controlled.

These herbicides are not selective (kills both monocots and dicots), thus should be applied carefully to prevent killing of non-target species. All tank mixes should be mixed with clean (ideally distilled) water because glyphosate binds tightly to sediments, which reduces toxicity to plants.

Do not apply in windy conditions because spray will drift and kill other plants. Do not apply if rain is forecast within 12 hours because herbicide will be washed away before it can act.

[*] Stockpiling implies temporary storage prior to transfer to a permanent treatment facility.

Appendix C

NYSDEC Emerald Ash Restricted Zone Map

Emerald Ash Borer (EAB) Restricted Zone

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Created May 2017
Bureau of Invasive Species & Ecosystem Health

Appendix D

Environmental Energy Alliance of New York

Best Management Practices for Preventing the Transportation

of Invasive Plant Species

Best Management Practice for Preventing the Transportation of Invasive Plant Species

Environmental Energy Alliance of New York

4/26/12/2012

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Appendices

Appendix 1 - Best Management Practices (BMP's) for Invasive Species Transportation Prevention

Appendix 2 - DEC Revised Interim List of Invasive Plants Species in New York State, January 23, 2012

1.0 Introduction

Invasive species are non-native plant, animal, or microbial species that cause, or are likely to cause, economic or ecological harm or harm to human health (Presidential Executive Order 13112). Invasive species means, "A species that is nonnative to the ecosystem under consideration; and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Harm must significantly outweigh benefit" [New York Environmental Conservation Law §9-1703(10)(a)] Invasive species have been introduced by human action into a region outside their natural geographic range. Introductions occur along a variety of pathways or vectors, either intentionally such as intentional transport of a species for trade, or by accidental means, as in the case of stowaway species found in the ballast-water of ocean-going vessels.

Most scientists regard invasive species as second only to habitat loss as a threat to biodiversity. The presence of invasive species in a given region is one of the leading causes of endangerment to species native to that region. On a nationwide basis, about half of plant and animal species listed as federally Endangered or Threatened are at risk because of invasive species.

Currently, annual economic losses due to invasive species in the U.S. are estimated at over $138 billion (Pimentel et al. 2000). These losses include damage to crops and pasture, forest losses, damage from insect and other invertebrate pests, human diseases, and associated control costs.

In an effort, where feasible, to limit the introduction and spread of *invasive plant species*, this Best Management Practice ("BMP") will be employed when performing activities that occur in *jurisdictional areas* as authorized by the DEC. The BMP identifies procedures that will be incorporated into routine work practices to prevent the introduction and spread of *invasive plant species*.

2.0 Definitions

The following definitions are applicable to this BMP.

***Environmental Energy Alliance of New York (EEANY)* –** is an association of electric and gas Transmission and Distribution (T&D) companies and electric generating companies that provide energy services in the State of New York. This BMP was prepared by the Land Use Subcommittee of the T&D Committee, which currently represents the following members: Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Long Island Power Authority, National Grid USA Service Company, Inc., New York Power Authority, New York State Electric & Gas Corporation, Orange and Rockland Utilities, and Rochester Gas & Electric Corporation.

Invasive plant species – species that are non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Management Plan National Invasive Species Council, 2001). For purposes of this document, *invasive plant species* are those contained on the "Revised Interim List of Invasive Plants Species in New York State" dated January 23, 2012 developed by NYS DEC (Appendix – 2).

Invasive species plant material – seeds, roots, or pieces of plant material that could germinate into live plants.

Jurisdictional Area – lands under the statutory jurisdiction of the NYSDEC such as certain freshwater wetlands and adjacent areas, tidal wetlands, certain water bodies, and any protected and species habitat areas specified by natural resource supervisors.

NYSDEC General Permit – a NYSDEC permit authorizing certain utility line activities under Articles 15, 24, and 25 of NYS Environmental Conservation Law. These activities include: inspection, maintenance, repair, restoration, reconstruction of pre-existing structures, vegetation cutting and trimming, and emergency actions affecting tidal wetlands, protected waters, regulated freshwater wetlands, adjacent areas, and protected habitat areas.

Regulated Activity – an activity taking place within a *jurisdictional area* that requires authorization from the NYSDEC.

Utility Rights-of-Way - is an easement-acquired or fee-owned corridor in which gas or electric transmission facilities are located.

3.0 Purpose or Goal

This BMP provides guidance for inspecting and cleaning vehicles and equipment to help prevent the spread of invasive plant species. The procedures identified within this manual outline cost-effective and realistic practices that *Environmental Energy Alliance of New York (EEANY)* utility members will implement when conducting a *regulated activity* within a *jurisdictional area*.

4.0 Applicability

This management practice applies to all *EEANY* utility members performing NYSDEC *regulated activities* within *jurisdictional areas* with populations of *invasive plant species*.

5.0 Procedures

There are two procedural options for EEANY companies to follow; one is to conduct the BMPs as detailed in the following sections of this plan or to conduct vegetation surveys for invasive species as outlined in Section 5.6.Field crews will be provided a flowchart to assist with determining when to implement these best management practices (Appendix 1).

The following detailed practices will apply where feasible when invasive species are present and when the work is covered by a GP or individual wetland permit.

5.1 Equipment

a. Equipment must arrive clean without visible soil clumps, plant or animal material.
b. Equipment includes, but is not limited to, vehicles, trailers, machinery, matting, boats, barges, and other watercraft, tools, and other materials.
c. Transporting equipment will be cleaned before accepting a new load.
d. Consider tracking pads as a means to remove soil from equipment. If tracking pads are used they must be cleaned after each use in a specific area.
e. Equipment will be cleaned using one of the methods listed below (use the most effective method that is practical):
    - Brush, broom, shovel or other similar hand tools (used without water)
    - High pressure air (when feasible)
f. Equipment must be cleaned within one of the below areas:
    - the infested work area

- an area immediately adjacent to the work area that is itself currently infested with *invasive plant species*

g. Do not clean equipment in or near waterways as it may promote the spread of *invasive plant species* downstream.
h. Where possible, staging areas will be established in locations that are free of *invasive plant species*. Otherwise, all equipment will be cleaned using the techniques described in 5.3 before leaving the area.
i. When wetland matting is required, it will arrive on site visibly clean, be installed prior to any activities, and will be appropriately cleaned before leaving the area.

5.2 Inspection and Cleaning

a. Inspections and cleaning should be conducted especially when moving from an infested area to an un-infested area.
b. Prior to exiting work area clothing, footwear, and gear should be cleaned of visible signs of plant material.
c. Carry appropriate cleaning equipment (e.g. wire brush, small screwdriver, boot brush) to help remove soils, seeds, and plant material.
d. Preferred locations for cleaning are those where:
    - Work activities are taking place;
    - *Invasive plant species* are already established; or
    - An area immediately adjacent to the work site that is itself currently infested with *invasive plant species*.
e. No cleaning of clothing, footwear, gear in or adjacent to waterways – it may promote the spread of *invasive plant species* downstream.
f. Cleaning will include brushing or self "pat down" of clothing, footwear, and other personal gear within the infested work area.

5.3 Disposal of Impacted Material

a. Preferred locations for equipment cleaning are those areas where work activities are taking place or immediately adjacent areas currently impacted with *invasive plant species*.
b. Do not clean equipment, vehicles or trailers in or near waterways.
c. Do not dispose of soil, seeds, or plant material in storm drains.
d. Any plant materials that are incidentally removed after completion of steps a-c from site will be properly disposed of in a manner that prevents viable plant parts and propagules from being spread

5.4 Other Prevention Measures

a. Reasonable steps to avoid transportation of *invasive plant species,* including small, isolated, populations, will be taken.
b. As an alternative to cleaning, ancillary equipment such as spare tires and winches when feasible will be covered when entering *jurisdictional areas* containing populations of *invasive plant species*.
c. Vehicular access into areas containing populations of *invasive plant species* will be reduced or minimized to the maximum extent practical. When practical vehicles will be parked outside of the impacted area and crews will enter on foot.

5.5 Site Restoration

a. Minimize soil disturbances by reducing work areas and reducing activities that may result in soil disturbances.
b. Re-vegetate bare soils as soon as feasible to minimize the possible establishment of *invasive plant species*. When seeding, non-invasive or local native species must be used (seed mixes will vary from region to region). Seed will be broadcasted over all bare soil areas and covered with a mulch layer such as straw. Choose appropriate seed mixes based on site conditions.
c. On steep sloping areas (i.e. slopes exceeding 20 percent), soil erosion control matting (i.e. jute mesh or straw blankets) must be installed over the seeded area. The matting should be secured with biodegradable tacks.
d. Stabilize disturbed soils using appropriate erosion and sediment control procedures as soon as possible. Use invasive free materials such as straw or wood chips; avoid using hay.

5.6 Vegetation Survey (Optional)

If the above BMPS are not followed, then vegetation surveys of site(s) to detect populations of invasive species should be made in advance prior to any activities. If the optional vegetation survey is performed and no invasive species are found, then the procedures outlined above in section 5.1 through 5.5 will not be followed. Survey inspections can be integrated with other activities such as ROW inspections and should be kept as simple as possible to meet invasive species management objectives. If significant populations of invasive species are detected on surveys, then Sections 5.1 to 5.5 apply.

a. Prior to implementing activities scout for, locate and document significant invasive species infestations.
b. Consider the need for actions based on: 1) the degree of invasiveness; 2) severity of the current infestation; 3) amount of additional habitat or host at risk for invasion; and 4) feasibility of managing the spread.
c. Plan activities to limit the potential for introduction and spread of invasive species, prior to construction.

d. Provide appropriate resources in identification of known invasive species for corridor workers.

6.0 Training

A flowchart (Appendix 1) to assist field crews on when to implement the above procedures will be distributed to all field crews.

All transmission vegetation management planners, foresters, and ROW maintenance personnel will be trained in the procedures outlined in Section 5.0 above. Additionally, training sessions focused on the identification of *invasive plant species* identified in Appendix 3 will be conducted by the individual utility companies. This may take the form of hard copy materials, tail gate briefings and/or presentations during regular staff meetings.

7.0 Emergency Work

During emergencies, *EEANY* utility members will strictly comply with the Emergency Action condition protocol outlined in the *NYSDEC General Permit*. Appropriate site-specific *invasive plant species* controls and restoration efforts will be determined on an individual basis in conjunction with the regional NYSDEC office.

8.0 References

- Electric Power Research Institute, 2008 "Invasive Species and Utility Rights of Way: A Review of the Science". EPRI Publication number 1014032, Palo Alto, CA

- Pimentel, D., Lach, L., Zuniga, R. & Morrison, D**.** 2000. Environmental and economic costs of nonindigenous species in the United States. Bioscience, 50(1): 53-65.

- Presidential Executive Order 13112. Volume 64, Federal Register 1999. Invasive Species.

- Wisconsin Council on Forestry. 2010. *Invasive Species Best Management Practice for Transportation and Utility Rights-of-Way*.

BEST MANAGEMENT PRACTICES (BMP'S) for INVASIVE SPECIES TRANSPORT PREVENTION

PRIOR TO LEAVING THE RIGHT-OF-WAY

- Prior to loading vehicle/equipment/tools remove as much debris, vegetation, dirt and mud clinging to the equipment as feasible using a brush, broom, shovel or other similar hand tool.

- High pressure air can be used on site for cleaning debris, vegetation, dirt and mud off vehicles/equipment/tools.

- Pick-ups and other small road vehicles shall remove on the right-of-way, as much debris, vegetation, dirt and mud clinging to vehicle as feasible prior to entering the highway.

- Small equipment/tools/boots shall be cleaned on site before removal or storage.

- Arrangements can be made for onsite cleaning or washing of vehicles/equipment/tools if deemed necessary.

APPENDIX - 2

REVISED INTERIM LIST OF INVASIVE PLANT SPECIES IN NEW YORK STATE

23 January 2012

Purpose

This list was not prepared pursuant to ECL 9-1705 (5) (h), the so-called "four-tier system".

The primary purpose of this list to inform New York State agencies so they can incorporate invasive species management into their funding, regulatory and other activities pursuant to ECL 9-1705 (b) and especially ECL 9-1709 (2):

> "...[DEC] in cooperation with [DAM] shall have the authority...to... coordinate state agency and public authority actions to do the following: (a) **phasing out uses of invasive species**; (b) **expanding use of native species**; (c) **promoting private and local government use of native species as alternatives to invasive species**; and (d) wherever practical and where consistent with watershed and/or regional invasive species management plans, **prohibiting and actively eliminating invasive species at project sites funded or regulated by the state**;...."

It is intended to inform regulatory actions pursuant to existing statutory authorities, e.g., protection of waters (ECL Article 15), wetlands (ECL Articles 24 and 25), State Environmental Quality Review (ECL Article 8), biocontrol (ECL Article 11), and pesticides (ECL Article 33). This list is also intended to inform non-regulatory management decisions and actions, such as for planning and priority-setting, prevention, early detection, monitoring, rapid response, control and eradication, restoration, research, and public education.

This list does not include *all* plant species that are invasive or potentially-invasive in New York State. Rather, it includes many of those plant species that are widely-recognized as invasive or potentially-invasive in New York State. ECL 9-1703 (10) defines "invasive species" as:

> "...a species that is: (a) nonnative to the ecosystem under consideration; and (b) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. For the purposes of this paragraph, the harm must significantly outweigh any benefits."

Thus, when complying with the provisions of 9-1709, agency staff use professional judgment in assessing the potential environmental harm (or harm to human health) when considering particular species in particular contexts.

Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of Forests and Woodlands http://www.fs.fed.us/ne/newtown_square/publications/information_bulletins/NA-TP-05-04.pdf
Mistaken Identity? Invasive Plants and their Native Look-alikes: an Identification Guide for the Mid-Atlantic
http://www.nybg.org/files/scientists/rnaczi/Mistaken_Identity_Final.pdf

REVISED INTERIM LIST OF INVASIVE PLANT SPECIES IN NEW YORK STATE

Floating & Submerged Aquatic		
Common Name	**Scientific Name**	**Rank**
Water thyme	*Hydrilla verticillata*	Very High
Frog Bit	*Hydrocharis morsus-ranae*	Very High
Floating Primrose Willow	*Ludwigia peploides*	Very High
Broadleaf Water-milfoil	*Myriophyllum heterophyllum*	Very High
Eurasian Water-milfoil	*Myriophyllum spicatum*	Very High
Water Chestnut	*Trapa natans*	Very High
Rock Snot (diatom)	*Didymosphenia geminata*	
Carolina Fanwort	*Cabomba caroliniana*	High
Brazilian Waterweed	*Egeria densa*	High
Parrot-feather	*Myriophyllum aquaticum*	High
Yellow Floating Heart	*Nymphoides peltata*	High
Curly Pondweed	*Potamogeton crispus*	High

Emergent Wetland & Littoral		
Common Name	**Scientific Name**	**Rank**
Japanese Knotweed	*Fallopia japonica*	Very High
Purple Loosestrife	*Lythrum salicaria*	Very High
European Common Reed Grass	*Phragmites australis*	Very High
Tall Glyceria	*Glyceria maxima*	High
Yellow Iris	*Iris pseudacorus*	High
Marsh Dewflower	*Murdannia keisak*	High
Reed Canary-grass	*Phalaris arundinacea*	High

Terrestrial - Herbaceous		
Common Name	**Scientific Name**	**Rank**
Garlic Mustard	*Alliaria petiolata*	Very High
Slender False Brome	*Brachypodium sylvaticum*	Very High
Oriental Bittersweet	*Celastrus orbiculatus*	Very High
Black swallow-wort	*Cynanchum louiseae*	Very High
Pale Swallow-wort	*Cynanchum rossicum*	Very High
Japanese Stilt Grass	*Microstegium vimineum*	Very High
Lesser Celandine	*Ranunculus ficaria*	Very High
Wild Chervil	*Anthriscus sylvestris*	High
Mugwort	*Artemisia vulgaris*	High
Small Carpgrass	*Arthraxon hispidus*	High
Narrowleaf Bittercress	*Cardamine impatiens*	High
Spotted Knapweed*	*Centaurea stoebe ssp. micranthos*	High
Canada Thistle	*Cirsium arvense*	High
Chinese Yam	*Dioscorea polystachya*	High
Cut-leaf Teasel	*Dipsacus laciniatus*	High
Winter Creeper	*Euonymus fortunei*	High
Cypress Spurge	*Euphorbia cyparissias*	High
Leafy Spurge	*Euphorbia esula*	High

Giant Hogweed	*Heracleum mantegazzianum*	High
Japanese Hops	*Humulus japonicus*	High
Cogon Grass	*Imperata cylindrica*	High
Broad-leaf Pepper-grass	*Lepidium latifolium*	High
Chinese Lespedeza	*Lespedeza cuneata*	High
Garden Loosestrife	*Lysimachia vulgaris*	High
Chinese Silver Grass	*Miscanthus sinensis*	High
Wavyleaf Basketgrass	*Oplismenus hirtellus*	High
Cup-plant	*Silphium perfoliatum*	High

Terrestrial - Vines		
Common Name	**Scientific Name**	**Rank**
Japanese Honeysuckle	*Lonicera japonica*	Very High
Mile-a-minute Weed	*Persicaria perfoliata*	Very High
Kudzu	*Pueraria montana*	Very High
Porcelain Berry	*Ampelopsis brevipedunculata*	High
Japanese Virgin's Bower	*Clematis terniflora*	High

Terrestrial - Shrubs & Trees		
Common Name	**Scientific Name**	**Rank**
Norway Maple	*Acer platanoides*	Very High
Japanese Angelica Tree	*Aralia elata*	Very High
Japanese Barberry	*Berberis thunbergii*	Very High
Autumn Olive	*Elaeagnus umbellata*	Very High
Winged Euonymus	*Euonymus alatus*	Very High
Amur Honeysuckle	*Lonicera maackii*	Very High
Morrow's Honeysuckle	*Lonicera morrowii*	Very High
Uruguayan primrose willow	*Ludwigia grandiflora*	Very High
Common Buckthorn	*Rhamnus cathartica*	Very High
Black Locust	*Robinia pseudoacacia*	Very High
Multiflora Rose	*Rosa multiflora*	Very High
Wineberry	*Rubus phoenicolasius*	Very High
Gray Florist's Willow	*Salix atrocinerea*	Very High
Sycamore Maple	*Acer pseudoplatanus*	High
Porcelain Berry	*Ampelopsis brevipedunculata*	High
Smooth Buckthorn	*Frangula alnus*	High
Border Privet	*Ligustrum obtusifolium*	High
Amur Cork Tree	*Phellodendron amurense*	High
Beach vitex	*Vitex rotundifolia*	High

* Brown and Black Knapweed have also been known to be problematic in grassland habitats

~ END ~