nationalgrid

Lockport-Batavia Line #112
Rebuild Project

Appendix F

Forestry Practices

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1.0 SELECTIVE CLEARING AND SLASH DISPOSAL

1.1 Policy for Initial Clearing and Slash Disposal on Electric Transmission ROWs

National Grid employs selective clearing and slash disposal procedures when clearing a new or existing ROW, utilizing techniques which are consistent with the safe, reliable transmission of electric energy in an economic manner and compatible with the environment.

1.2 Objectives of Initial Clearing and Slash Disposal

The objectives of the initial clearing program include:

- Initial clearing and slash disposal should leave the ROW in such a manner that the electric facility is free from interruptions from trees and brush, and accessible for various line-construction and maintenance activities. Specifically, the ROW should be cleared of trees and brush at access-road and construction workspace locations such that work can be conducted in a safe and unrestricted manner.

- Initial clearing and slash disposal should be conducted such that compatible, low-growing tree and shrub species, which tend to be self-sustaining over long periods of time and thereby tend to foster the natural development of "dense" and relatively stable plant communities, will be selectively retained wherever such species exist in sufficient quantity to economically warrant retention. The selective retention of compatible low-growing species will also promote vegetative diversity on the ROW, thereby improving the total wildlife benefits of the ROW.

- Initial clearing and slash disposal, to the extent practicable, should be conducted in a manner that is compatible with environmentally sensitive areas and areas with high visual sensitivity and that minimizes impact to environmental resources aesthetic values. The selective retention of vegetative buffer zones to minimize impact to sensitive areas should be considered provided that the operational integrity and reliability of the electric transmission facility is not compromised.

- Initial clearing and slash disposal, to the extent practicable, should be conducted in a manner that is compatible with surrounding land uses (e.g. active agricultural, residential, recreational, and other multiple-use activities). Where possible, clearing and slash disposal techniques should be selected to leave the ROW compatible and harmonious with the ongoing land use.

- Initial clearing, to the extent practicable, should be conducted in a manner to utilize the wood resources generated by the clearing activities. Clearing and slash disposal techniques should be prescribed recognizing the value of the wood resource where it exists in quantities that make recovery economically and environmentally viable.

1.3 Clearing and Slash Disposal Methods

National Grid recognizes and considers the use of five (5) clearing and seven (7) vegetation disposal (slash disposal) methods to accomplish its objectives. During the development of the EM&CP, a detailed site-by-site analysis of the ROW is conducted to select the appropriate clearing and slash disposal method for each site. The EM&CP includes a set of detailed drawings which show the location and extent of each prescribed clearing and slash disposal method.

1.3.1 Definition of Clearing Methods

Type I Clearing

Type I clearing consists of clearing the designated areas of all woody plants, including desirable species (desirable species are those species of trees and shrubs that do not have the potential of violating minimum clearance distance). All plants will be cut as close to the ground as practicable, and after cutting the height of plants will not exceed six (6) inches above ground line, unless otherwise directed by the Forester. Type I clearing will be utilized in circumstances where woody plants would hinder access and construction activities (i.e., in connection with clearing access roads, structure work areas, and wire- pulling sites). All clearing will be Type I on Sheets A&B unless otherwise indicated.

Type II Clearing

Type II clearing consists of clearing the designated areas of all undesirable species and any woody plant species which have the potential to violate minimum clearance distance. All growth will be cut as close to the ground as practical, but in no case will after-cutting height exceed six (6) inches above ground line, unless otherwise directed by the Forester.

Reasonable care will be taken, insofar as is practical, to retain desirable species found within Type II clearing zones. The Forester will make a field determination as to whether such retention would impose an unreasonable burden on clearing or construction activities.

NOTE: Minimum Clearance Distances are at maximum rated operating conditions.

Type III Clearing

Type III clearing consists of clearing the designated areas of only those tall-growing species which can be expected to violate minimum clearance distance over the course of the routine maintenance cycle. Additionally, based on conductor clearances and species characteristics, in absence of sufficient densities to manage desired vegetation in the ROW where there are particular circumstances such as unique landowner agreements, pre-determined habitat-management areas, desirable stream-buffer-cover types or water supply protection areas, “young” trees may be retained temporarily. Those woody plants which are removed will be cut as close to the ground as practical, but in no case will the after-cutting height exceed six (6) inches above ground line, unless otherwise directed by the Forester.

Type IV Clearing

Type IV clearing consists of selectively removing or pruning, in the designated areas, those tall-growing species which can be expected to violate minimum clearance distance over the course of the routine maintenance cycle.

Type V Clearing

Type V clearing consists of selectively removing or pruning, in the designated areas, those tall-growing species that violate National Grid’s calculated desirable clear width or are at reasonable risk of falling into the ROW and contacting a conductor.

Pruning Procedures

When a tree is specified to be pruned, the specified portion(s) will be removed to prevent excessive broken limbs or other serious damage to the portion of the tree left in place or to adjacent or nearby trees and shrubs.

Off-ROW trees that are not danger trees, but that have branches that can grow to violate the minimum clearance distance, also need to be managed. These trees will be pruned or removed to achieve desired clearances. National Grid's strategic approach to managing danger trees is to prune or remove them where property rights allow, and to seek permission from landowners for such pruning or removal where such rights are limited.

All pruning will be done in accordance with ANSI A-300 arboricultural standards.

Danger Trees

A danger tree is a tree off the ROW that, if cut or if it failed, would contact electric lines. A hazard tree is a danger tree which due to species and/or structural defect is likely to fail and fall into the electrical facility. Danger trees will be removed along the entire Project ROW and will be selected and marked by the Company representative at least two weeks prior to clearing in any given area and accepted by DPS Staff and removed as follows:

a) Danger trees whose branches extend into Type I, II or III clearing areas, but whose trunks are outside such areas will be removed. Danger trees whose branches extend into a Type IV clearing area will be pruned or removed, as necessary, to ensure system reliability.
b) If conditions of disease, lean, unstable soils, weak variety, or other conditions which may cause a tree to fall and thereby have a reasonable risk of contacting a conductor are observed, that tree will be removed.

As far as practical, all danger trees will be removed at the time of initial clearing and as part of the normal clearing activities. The slash from these danger trees will be disposed of in accordance with the slash disposal method designated for the section of ROW adjoining the area from which the danger trees have been removed. If an adjoining ROW area has no designated slash disposal method, the slash from danger trees adjacent to those areas will be dropped and lopped (Type D) in wooded areas and chipped (Type E) and/or removed (Type G) in residential, commercial or agricultural areas.

1.3.2 Definition of Slash Disposal Methods

Type A Slash Disposal

Type A slash disposal consists of separating, tree-length skidding, and yarding the merchantable timber (larger than 12" diameter on the large end) in designated areas along the ROW. Where, in the opinion of the Forester, a site may be damaged by tree-length skidding, the timber will be bucked into logs. Type A disposal will not occur in wetlands unless it is designated on the EM&CP Drawings as an area that timber can be removed with tracked equipment.

Type A slash disposal method may be utilized under the following conditions:

- Soil and terrain conditions allow mechanized collection and skidding without the possibility of creating severe rutting or significantly increasing the erosion potential; and

- Sufficient merchantable volume exists on a given site to make doing so cost-effective; and
- Adequate log-hauling access roads exist between the nearest public road and the yarding area on the ROW, or yarding directly to a highway is desirable and economically feasible. (The load-bearing capacity of the access road or potential restoration costs may become limiting factors on merchantability.); and
- Logs would not be skidded for a distance in excess of one thousand (1,000) feet.

Type B Slash Disposal

Type B slash disposal consists of collecting and piling in designated areas along the ROW all unmerchantable wood less than 12 inches in diameter at the large end. Examples are tops, limb wood, and saplings. Type B disposal will not be used in wetlands.

Type C Slash Disposal

Type C slash disposal consists of collecting and piling in designated areas along the ROW all unmerchantable wood larger than 12 inches diameter at the large end. Unless otherwise directed by the Forester, the logs will be piled outside of wetlands and adjacent to the access road so as not to interfere with construction activities. Logs will not be permanently piled in wetlands.

The Type B and Type C (collect-and-pile) slash disposal methods may be utilized under the following conditions:

- The accumulation of slash is sufficiently removed from public view so as to minimize visual impacts;
- Slash accumulations of Type D wood disposal (see below) would be greater than twenty-four (24) inches in depth, thereby hindering construction or future maintenance operations;
- Soil and terrain conditions are such that merchantable collection could not occur without creating serious soil disturbance or erosion potential; or
- Logs would not be skidded for a distance in excess of twice the average distance between structures.

Type D Slash Disposal

Type D slash disposal consists of dropping and lopping trees so that the slash lies as close to the ground as practical, with branches and limb wood not exceeding an average depth of twenty-four (24) inches.

In wetlands and areas adjacent to streams, Type D slash disposal will adhere to the following additional conditions including:

a) Only a selective portion of vegetation, as needed to prevent the blocking of flow and the trapping of debris, is to be removed from the watercourse and floodway, and all cuttings (regardless of location) are to be cut and bucked to lie near ground level. However, where tree root bases are attached to the stream bank, they will be left in place. The remainder of the tree will be cut from the base prior to removal. Grubbing of tree roots in sensitive areas will be avoided to the greatest extent practicable; however, if grubbing is necessary, the appropriate erosion and sediment controls will be installed, and all disturbed areas will be stabilized by the end of the work day.

Type D slash disposal method may be utilized under the following conditions:

- Brush densities are such that this disposal type would result in an accumulation of slash less than two feet in depth over a significant area of the ROW, and the accumulation of slash is sufficiently removed from public view to minimize visual impact;
- Mechanized attempts to collect or remove slash would damage seriously or destroy large numbers of desirable species, and the accumulation of slash is sufficiently removed from public view to minimize visual impact; or
- Soil and terrain conditions are such that removal of the slash would create a serious rutting or erosion potential, and the accumulation of slash is sufficiently removed from public view to minimize visual impact.

In DEC wetlands and/or the Tonawanda Wildlife Management Area, Type D wood disposal will adhere to the following additional conditions:

a. No trees should be dropped on or near dikes, ditches, mowed administrative roads/areas, grassland/agricultural fields, or in emergent marsh/water areas where logs may end up blocking control boxes.

b. Trees should also not be dropped in phragmites areas because this will make control more difficult.

c. Trees should be dropped and/or dragged into dryer parts of woods. Placing logs on tops of invasive shrubs such as honeysuckle and autumn olive is also encouraged to help discourage these species.

d. In the area of woods between North/South Feeder Marshes and the Tonawanda Wildlife Management Area east boundary, trees should not be dropped in vernal pools.

Type E Slash Disposal

Type E slash disposal consists of chipping slash on site in designated areas.

All woody material smaller than 12 inches in diameter on the large end will be chipped into a layer of no more than 3 inches deep and may be disposed of on the entire Facility ROW or in the danger tree zone if the chipped material is from the slash originating from the danger tree removal, unless otherwise noted on the EM&CP Drawings. Chips shall be removed off-site to an approved location once a chip depth of three (3) inches has been achieved. No chips will be stored or disposed of in wetlands, active agricultural fields, or in close proximity (not within 50') of streams. All disposal methods on Sheets A&B will consist of Type E unless otherwise indicated.

Type E slash disposal may be utilized under the following conditions:

- For aesthetic reasons, any slash accumulation would create a negative visual impact upon residents or travelers;
- The volume of slash to be disposed of is small, and construction, environmental, or aesthetic constraints limit its disposition to on-site disposal; or
- Chipping will cost less than hauling and disposal at off-ROW locations.

Type F Slash Disposal

Type F slash disposal consists of removing from the ROW all slash that is less than six (6) inches in diameter at the large end. This includes tops, limb wood, and saplings. Large-diameter wood, six (6) inches or more in diameter at the small end, may be scattered or piled on the site. Slash may be moved to another portion of the ROW with a designated slash disposal method of other than Type F. No slash will be moved to wetlands or agricultural lands or to areas in close proximity (not within 50 ') of streams.
Note: No slash will be moved to another portion of the ROW unless verifed invasives free by the EM.

Type G Slash Disposal

Type G slash disposal consists of removing all slash from the ROW. In certain designated instances, this slash may be removed to another portion of the ROW with a designated slash disposal method of other than Type G. No slash will be moved to wetlands, regulated wetland adjacent areas, agricultural fields or to areas in close proximity (not within 50') of streams.
Note: No slash will be moved to another portion of the ROW unless verified invasives free by the EM.

Type F and Type G slash disposal may be utilized under the following conditions:

- Aesthetic considerations suggest that slash left on the site would create a negative visual impact;
- If the slash were chipped, chips to a depth of greater than three (3) inches would result over much of the site;
- On-site disposal would impact existing agricultural uses adversely;
- Species toxic to livestock must be removed from pastures in use; or
- Slash piled in stream buffer zones potentially could wash into stream channel during high water flow.

2.0 WETLANDS

Vegetation clearing within wetlands and the one hundred foot adjacent areas associated with state- regulated wetlands will be conducted as follows:

a) Only the minimum vegetation necessary to allow proper installation will be removed.

b) Slash that is cut may be left in place (drop and lop). Any slash that is not left in place will be removed from the wetland by manual means or tracked equipment in a manner to minimize disturbance to the wetland. No slash will be collected and permanently piled in wetland. Slash may be used for temporary corduroy road for clearing and construction equipment in place of mats but must be removed from the wetland upon the completion of construction activities. Use of slash for corduroy may only be done under the supervision of the EM and cannot be used for crossing streams.

c) For vegetation management, the cutting of all undesirable or non-compatible tall-growing tree species which could interfere with transmission lines, and the cutting - but not the elimination or destruction of - vegetation, is allowed.

d) Where “danger tree” clearing is required, the cutting of tall-growing tree species is allowed pursuant to selective clearing techniques. All work will be done in accordance with National Grid’s TROWMP. Low-growing tree species, shrub species, and herbaceous plants will remain to the extent possible.

3.0 DESIRABLE SPECIES ON THE ROW

Desirable species consists of typical shrub and low-growing tree species which may be considered to be compatible with the operation and construction of the line. These species will be retained, to the extent practicable, as they occur along the ROW. In general, desirable low-growing tree and shrub species that do not have the potential of violating minimum clearance distances will be retained except where all vegetation needs to be cleared or mowed for construction work areas or access routes. In situations where high densities of desirable species have begun to interfere with safe and efficient access, maintenance, or construction, the Forester may direct that some stands or locations of such desirable species be cleared.

During the preparation of the EM&CP, clearing and slash disposal methods will be selected on a site-by-site basis with the goal of maximizing the retention of desirable species. The personnel employed for the clearing operation will be fully informed of these vegetation-retention requirements, and directly supervised by a person or persons capable of identifying all compatible species native to the area of the ROW. The following small-to-medium trees and woody shrubs represent typical desirable low-growing species which will be retained where practicable along the transmission line ROW.

Small-to-Medium Trees

Following is a list of small-to-medium trees that may be compatible along the edges of the transmission line ROWs. These species will be removed from under wire areas except where the mature height would not invade the wire security zone, or local conditions do not warrant removal. Any plant on the ROW that invades the wire security zone may be removed. These smaller tree species may be preferred for retention in buffer areas and other sensitive sites rather than taller-growing tree species.

List of Small to Medium Trees

Species	Code
Apple	APP
Buckthorn * Common Buckthorn European Buckthorn	BUC
Dogwood Alternate Leaf Flowering	 ADG FDG
Cedars	CED
American Hornbeam “Ironwood”	HOR
Hawthorne	HAW
Mountain Maple	MOM
Pear	PER
Shadbush/Serviceberry	SHD
Shrub Willow	WIL
Speckled Alder	ALD
Staghorn Sumac	SUM

Witch Hazel	WIH
* listed as Invasive Species and historically managed as desirable ROW vegetation. However, if they need to be cut they should be treated to prevent regeneration when appropriate and practicable.	

Woody Shrubs

Following is a list of shrub species commonly found on ROWs across National Grid's service territory. While they are nearly always compatible in the border zone, several species may grow tall enough to enter the wire security zone. Any plant that enters the wire security zone may need to be removed.

The conductor-to-ground clearances, the wire security zone requirements, and the mature height for each species are key factors in determining which shrubs may be retained in the wire zone at each mid-span point. For example, a bulk transmission line, with mid-span conductor-to-ground clearances of thirty- eight (38) feet and a wire security zone of twenty-five (25) feet can have shrubs with a mature height of up to thirteen (13) feet. Shrubs that have invaded the wire security zone will be targeted for removal. As shrub densities in the wire zone exceed 80%, by span, taller-growing shrubs may be targeted for removal in effort to maintain the values and benefits of the herbaceous component.

List of Woody Shrubs

Species	**Code**
American Barberry	BAR
Chokeberry Black Chokeberry Red Chokeberry	 BCB RCB
Blueberry Low Highbush	 BLU HBL
Button Bush	BTN
Dewberry	DEW
Dogwood Red Osier " Stiff (similar to Red Osier) " Grey " Silky " Roundleaf "	 DOG
Elderberry	ELD
Hazelnut American Hazelnut " Beaked Hazelnut "	 HAZ
Honeysuckle *	HON
Huckleberry	

Juniper Dwarf “ Ground/Trailing “	GRJ
Mountain Holly	MOH
Mountain Laurel	MOL
New Jersey Tea	NJT
Northern Prickly Ash	NPA
Shrub Oak (Bear Oak)	SOK
Privet *	PRI
Gooseberry	RIB
Rose Domestic Multiflora *	 DOR MUR
Rubus Blackberry “ Raspberry “	RUB

Species	Code
Silverberry American	 SIL
Autumn Olive *	AUT
Sumac Smooth “ Winged “	SUM
Common Spicebush	SPB
Spirea Sweetfern “	SPI
Steeple Bush “	
Sweetfern	SWF
Viburnum	VIB
Arrowwood	ARR
Highbush Cranberry	HCR
Mapleleaf	MVB
Nannyberry	NAN
Northern Wild Raisin	RAI
Hobblebush	HOB
Winterberry Holly	WIN
American Yew	AMY
Climbing Vines Bitterwseet Grape	 CLB GRA
* listed as Invasive Species and historically managed as desirable ROW vegetation. However, if they need to be cut they should be treated to prevent regeneration when appropriate and practicable.	

4.0 HERBICIDE APPLICATION

National Grid and the certified herbicide applicator will utilize only registered herbicides, applied in accordance with sound ROW management principles and consistent with the TROWMP. All herbicide applications will be made in compliance with ECL Article 33, NYSDEC rules and regulations, the Occupational Safety and Health Administration (“OSHA”) Hazard Communication Standard 29 CFR 1910.1200, and label instructions.

All herbicide applications will be made in accordance with the following specifications:

a) Foliar spray units will be refilled with water from a supply vehicle. Water will not be pumped directly from a water source into the spray tank.
b) Herbicide concentrate will not be transported on a vehicle used for supplying water to foliar spray equipment.
c) Each vehicle used for herbicide application or for transportation of herbicide concentrate on the ROW will be equipped with a shovel and absorptive material for containing and controlling spills.

All herbicide spills will be reported immediately to National Grid and applicable agencies as specified in Appendix V of the EM&CP document.

The herbicide applicator will take the following precautions to protect equipment and materials from vandalism and unauthorized use when left unattended on the ROW or on National Grid property not within a locked fence:

a) Power-pack or back-pack sprayers will be emptied or stored in locked compartments.
b) Ignition keys will be removed for all vehicles used for herbicide treatment, vehicles containing herbicide concentrate, or herbicide solution.
c) Ignition keys will be removed from engines which provide power to pumps on power-driven spray equipment. Engines without lockable ignition systems will have the sparkplug wire disconnected or made inoperable in some similar fashion.
d) The opening to the spray tank, on power spray units, will be locked.
e) Drains on spray tanks will be fitted with lockable valves or threaded caps.
f) Valves or barrel pumps on containers carrying herbicide concentrate will be locked or removed and replaced with threaded plugs. Threaded plugs will be mechanically tightened to prevent removal by hand.
g) The pressure control valve will be closed.
h) Any equipment used for operations involving herbicide applications will not be left unattended within one hundred (100) feet of any stream, wetland, or waterbody.

Herbicides will not be used within one hundred (100) feet of a potable water supply.

Herbicides will be used for future vegetation management on the transmission line ROW in accordance with National Grid's TROWMP; however, no herbicides will be used during the construction of the Project.

5.0 UTILIZATION OF WOOD RESOURCES

National Grid may include the merchantable value of the trees on a landowner's property as part of the compensation it pays to a landowner for the real estate rights required for the project. To bring about the most efficient and cost effective disposition of those trees, National Grid may negotiate into its contract with the clearing contractor provisions that establish the contractor as the owner of all trees that are cleared. The contract price, as a result, would reflect the clearing contractor's right to receive the value of any commercially viable forest products.

To discourage trespassing on the ROW, all wood will be chipped or removed from the ROW except in wetlands or areas that cannot be accessed safely or without damage to sensitive resources. Some cut material may be temporarily used as corduroy to support clearing equipment prior to removal.

In all cases, trees and firewood removed from the ROW will be done in an environmentally acceptable manner and in compliance with the Invasive Species Management Plan in Appendix M of the EM&CP document.

Removal of all wood from the ROW will be completed prior to ROW restoration.

Off-site disposal of any material to a location other than that specified in the EM&CP document will require prior approval from National Grid and the DPS Staff

6.0 OFF-SITE REMOVAL OF STUMPS, CHIPS AND SLASH

Where off-site removal of stumps, chips or slash is necessary, all material will become the property of the Contractor. In all cases, all material that is removed from National Grid property will be disposed of in an environmentally acceptable manner and in compliance with all applicable rules and regulations including 6 NYCRR Part 192 and all other invasive species regulations.

Off-site disposal of any material to a location other than that specified in the EM&CP document will require prior approval by National Grid and the DPS Staff.

7.0 SCREENING AND BUFFER ZONES

Due to the lineal nature of a transmission line ROW, any given line is likely to traverse areas of significant environmental or visual sensitivity. While the selective retention procedure previously discussed will effectively minimize environmental or visual impacts in most areas, these normal clearing procedures may not be adequate in areas with potentially high sensitivity and sparse densities of compatible vegetation. Special consideration and greater selectivity may be considered to maintain environmental or aesthetic values in such areas. Included among the techniques for minimizing impacts in these areas is the retention of screens or buffer zones, provided the safety and reliability of the transmission facility is not compromised.

8.0 FORESTRY ACCESS

Access for Forestry work will be accomplished in the most efficient manner possible with the goal of minimizing ground disturbance. Low ground pressure equipment and matting will be used as necessary when maneuvering equipment off of the main access in areas that require clearing and slash disposal.