ATTACHMENT 12
NORTHEAST-POCONO RELIABILITY PROJECT
VEGETATION MANAGEMENT

Specification For Initial Clearing and Control Maintenance Of Vegetation on Or Adjacent To Electric Line Right-of-Way through Use Of Herbicides, Mechanical, And Hand-clearing Techniques LA-79827-8

PPL ELECTRIC UTILITIES CORPORATION
Allentown, Pennsylvania

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I. SCOPE

This document describes methods and procedures for all transmission (69 kV and above) line right-of-way vegetation management practices, including: clearing, timber and slash disposal, use of herbicides, and specifying means of line access.

Methods and procedures for transmission line right-of-way erosion control practices, including access road construction, are contained in a separate document; Specification for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-Way (A-118231).

II. CLEARING REQUIREMENTS

A. Conductor-to-Vegetation Clearances and Right-of-Way Widths**Error! Bookmark not defined.**

PPL Electric Utilities Corporation ("PPL Electric") has established minimum conductor-to-vegetation clearances and right-of-way widths to be cleared for each transmission line voltage (Table 1). These conductor-to-vegetation clearances are defined by the conductor positions between maximum vertical sag ("max sag") and a 30° conductor blowout.

Any clearing or chemical treatment performed on the right-of-way must adhere to these requirements:

1. The entire right-of-way width, as listed in **Table 1**, shall be treated.

2. Any vegetation, which could grow into the wire security zone (defined in **Table 1**), shall be treated to remove this hazard[1]. As more fully discussed in **Section III**, the treatment could involve cutting to ground line, pruning, or applying herbicides, depending on the type of clearing specified. However, in any case, sufficient vegetation shall be removed to create an additional space beneath the wire security zone (defined in **Table 1**) to allow for growth that would occur between scheduled treatments.

   Figure 1 and **Figure 2** illustrate the security zone concept and how the right-of-way should be cleared or maintained to keep the zone intact.

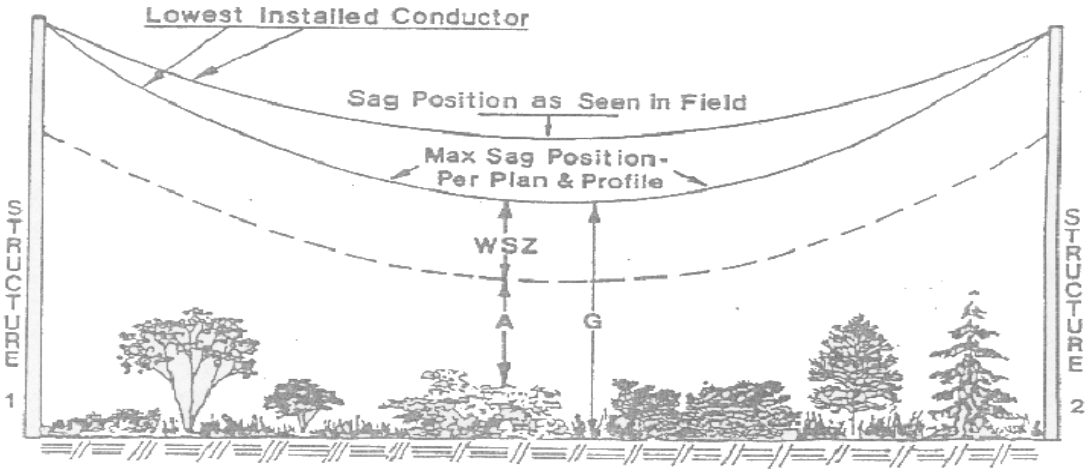
B. Danger Trees (**Figure 2** and **Table 2**)

To ensure line reliability, vegetation management operations must extend to trees located outside the clearing widths given in **Table 1**, which present a hazard to the line. These "danger trees" are those that, in falling, would either strike the

[1] No corrective remediation pruning actions required for encroachments of WSZ (only) where maximum-sag conductor conditions have been identified, species acceptability- per PPL EU Specification LA-79827-8 confirmed, and vegetation growth has been determined to be maximized or vegetation is dead.

conductor or pass within the minimum conductor clearances noted in **Table 2** and shown on **Figure 2**. Danger trees should be removed or pruned as specified at the time of treatment. The PPL Electric representative identifies all danger trees during line clearing/maintenance operations.

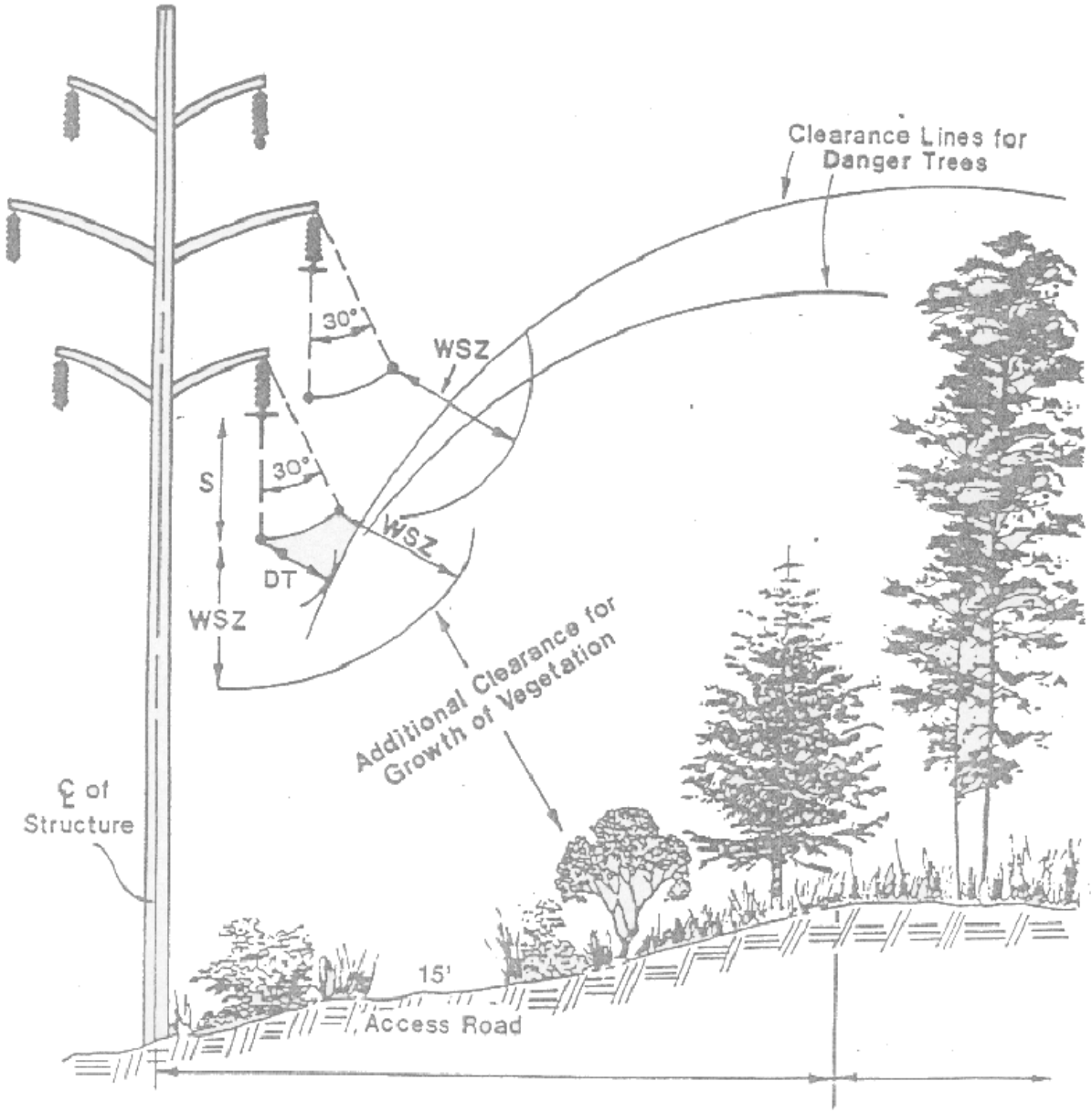
FIGURE 1: TRANSMISSION LINE PROFILE
WIRE SECURITY ZONE AND VEGETATION CLEARING



G = Max Sag Ground Clearance – Determined from Line Plan & Profile
WSZ = Wire Security Zone (Table 1)
A = Additional Clearance to allow for Growth of Vegetation
A = 5' per year apical (Under), 2' per year lateral (Around)
(WSZ + A) = Minimal Acceptable Clearance from Vegetation to Conductor at Time of Maintenance (Table 1)

FIGURE 2: TRANSMISSION LINE CROSS SECTION[1]
WIRE SECURITY ZONE AND DANGER TREE CLEARING

S = Maximum Sag of Conductor
WSZ = Wire Security Zone (Table 1)
DT = Danger Tree Clearance (Table 2)



Required R/W Clearing Width (**Table 1**)
[1]To avoid repetition only one-half of the R/W is shown.

Danger Tree Width Limit

TABLE 1: Right-of-Way Clearing Widths And Conductor-to-Vegetation Clearances

Line Voltage	Clearing Width[1]	IEEE Distance[2]	Wire Security Zone (Figure 1, "WSZ)	Minimum Acceptable Clearance from Vegetation to Conductor at Time of Maintenance[3][4] Figure 1, (WSZ + A) Under / Around
69-138 kV	100'		7'	22'/ 13'
230 kV	150'	5.2'	10'	25'/ 16'
500 kV	200'	8.9'	17'	32'/ 23'

(1) Older lines may have right-of-way agreements specifying different widths. These agreements shall either be followed as written or renegotiated to meet the tabled clearing widths given above.

(2) Radial clearance to be maintained between vegetation and conductors under all rated electrical operating conditions.

(3) Clearance to be achieved at the time of vegetation maintenance work wherever possible (see **Table 1**, WSZ and 'A' in **Figure 1**). This distance is necessary to allow for vegetation growth until the next maintenance cycle and to maintain the minimum wire security zone separation. Compatible vegetation (defined in **Table 3**) that will never grow into the Wire Security Zone is excluded from this minimum clearance requirement

(4) No corrective remediation pruning actions required for encroachments of WSZ (only) where maximum-sag conductor conditions have been identified, species acceptability- per PPL EU Specification LA-79827-8 confirmed, and vegetation growth has been determined to be maximized or vegetation is dead.

TABLE 2: Clearance for Danger Trees

Line Voltage	Danger Tree Clearance (Minimum Conductor Clearance – Falling Vegetation)
69-230 kV	5'
500 kV	10'

III. CLEARING PROCEDURES

A. Specific Procedures for Each Clearing Method

Starting in 2010, PPL Electric will be implementing the Wire Zone/ Border Zone (WZ/BZ) method of managing our transmission rights of way. This method of vegetation management is to be applied where practical and is not meant to be the sole management technique used on the transmission facilities.

1. Changes to Incorporate WZ/BZ

Clearing requirements as defined below are to be applied to those Right-of-Way conditions that are currently being treated with herbicide and re-clearing treatment applications.

Wire Zone – **Figure 1&2** (above) and WZ/BZ diagram below

- Defined as that area of the right of way corridor that extends from the centerline to a distance ten (10) feet from the outer most conductors. All species listed in Table 3 under the headings of "Small Shrubs" and "Native Grasses, Ferns, and Herbaceous Plants" shall be preserved to the greatest extent possible in the Wire Zone.

Border Zone – **Figure 1&2** (above) and WZ/BZ diagram below

- Defined as that area of the right of way corridor that extends from the limits of the Wire Zone (see **Section III** Clearing Requirements A.1. Wire Zone) to the cleared limits of the established right of way.

- All compatible species (**Table 3**) or other species noted to not pose a clearance threat shall be preserved where possible. Those, which would violate the wire security zone before the next scheduled treatment, shall be removed.

- As can be seen from **Figures 1 and 2**, in most cases, more of the taller compatible species can be retained at the right-of-way edges and closer to the line structure locations, where distance to the lowest conductor is usually greatest.

- All "noncompatible" or other species that exhibit growth characteristics that pose clearance concerns species shall be removed to the greatest extent possible.

- All trees and brush—both compatible and noncompatible species—shall be removed from access roads (15' width); in work areas (stringing cuts, vegetation disposal areas, structure erection areas); and within a 15' perimeter of a tower or immediately adjacent to any structure location.

Exceptions may occur where landscaped plantings have been propagated adjacent to facilities and these plantings do not interfere with accessibility to such facilities.

Wire Zone-Border Zone Vegetation Management

- With the Wire Zone-Border Zone VM, the typical right of way is show as below. Two distinct zones are identified:

1. The wire zone is typically defined as that area from centerline to 10' past the outer most set of conductors in either direction. The total width of the wire zone will vary by voltage class and easement definitions.
2. The border zone is that area of the right of way that extends from the wire zone to the limits of the defined width row.
3. The areas outside of the border zone are managed for hazard trees.

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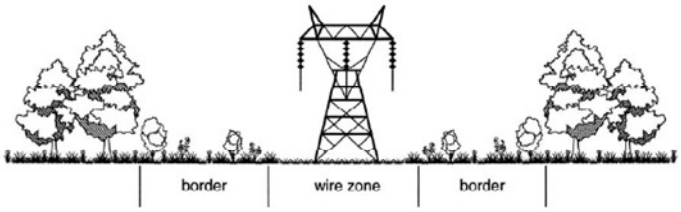
Bramble and Byrnes Wire Zone – Border Zone
(From Yahner, Bramble and Byrnes, 2000)



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Where wire zone/ border zone is not appropriate as previously described or cannot be applied due to easement restrictions or other limitations such as site or environmental concerns, the follow procedures shall be followed

2. Selective Clearing

- All compatible species (**Table 3**) shall be preserved to the greatest extent possible. Those, which would violate the wire security zone before the next scheduled treatment, shall be removed[1].

- As can be seen from **Figures 1 and 2**, in most cases, more of the taller compatible species can be retained at the right-of-way edges and closer to

[1] No corrective remediation pruning actions required for encroachments of WSZ (only) where maximum-sag conductor conditions have been identified, species acceptability- per PPL EU Specification LA-79827-8 confirmed, and vegetation growth has been determined to be maximized or vegetation is dead.

the line structure locations, where distance to the low conductor is usually greatest.

- All "noncompatible" or other species that exhibit growth characteristics that pose clearance concerns species shall be removed to the greatest extent possible.

- All trees and brush—both compatible and noncompatible species—shall be removed from access roads (15' width); in work areas (stringing cuts, vegetation disposal areas, structure erection areas); and within a 15' perimeter of a tower or immediately adjacent to any structure location.

- Exceptions may occur where landscaped plantings have been propagated adjacent to facilities and these plantings doo not interfere with accessibility to such facilities.

3. Restricted Clearing

- All compatible species shall be preserved, wherever possible. Those which would violate the wire security zone before the next scheduled treatment shall be pruned or removed to obtain required "Desired Clearance from Vegetation to Conductor at Time of Maintenance" (defined in Table 1).

- Any non-compatible species, which have violated or would violate the wire security zone before the next scheduled treatment shall be removed[1].

- The remaining non-compatible species shall be preserved until the time comes when they can be removed without causing adverse impacts. This means that smaller (young) trees of noncompatible species are temporarily retained. As an adequate compatible cover becomes established over time, these non-compatible species may be removed.

- The only exception to the above applies to non-compatible trees growing in ravines or gullies or on side hills, where topography is such that they will never reach the wire security zone. In these areas, the non-compatibles, which are originally preserved, should be retained over the life of the line.

- All trees and brush—both compatible and non-compatible—shall be removed from access roads, work locations, or near structures, as described under Selective Clearing.

[1] No corrective remediation pruning actions required for encroachments of WSZ (only) where maximum-sag conductor conditions have been identified, species acceptability- per PPL EU Specification LA-79827-8 confirmed, and vegetation growth has been determined to be maximized or vegetation is dead.

TABLE 3

Compatible Species List*(does not include Horticultural plant varieties)

1. SMALL TREES

   a) Flowering Dogwood *(Cornus florida)*

   b) Redbud *(Cercis canadensis)*

   c) Hawthorn *(Crataegus spp.)*

   d) Blue Beech (American Hornbeam) *(Carpinus caroliniana)*

   e) Shadbush (Juneberry, Serviceberry) *(Amelanchier spp.)*

   f) Eastern Red Cedar *(Juniperus virginia)*

   g) Northern White Cedar *(Thuja occidentalis)*

   h) American Chestnut *(Castanea dentata)*

   i) Dwarf Willow *(Salix spp.)*

   j) Deciduous Holly (Winterberry) (Ilex *verticillata)*

2. LARGE SHRUBS

   a) Alder (Alnus spp.)

   b) Witch-hazel *(Hamamelis virginiana)*

   c) Spicebush *(Lindera benzoin)*

   d) Common Chokecherry *(Prunus* virginiana)

   e) Elderberry *(Sambucus spp.)*

   f) Rhododendron *(Rhododendron maximum)*

   g) Virburnum *(Viburnum spp.)*
   h) Dogwood *(Cornus spp.)*

   i) Smooth (Dwarf) Sumac *(Rhus glabra)*

j) Staghorn Sumac *(Rhus typhina)*

k) Chokeberry *(Pyrus arbutifolia)*

3. SMALL SHRUBS (does not include horticultural varieties)

a) Mountain Laurel *(Kalmia latifolia)*

b) American Yew-Ground Hemlock (Taxus *canadensis)*

c) Sweetfern *(Comptonia peregrina)*

d) Honeysuckle *(Lonicera spp.)*

e) Huckleberries *(Gaylussacia spp.)*

f) Blueberries *(Vaccinium spp*.)

g) Viburnum *(Viburnum spp.)*

h) Meadowsweet *(Spirea spp*.)

i) Wintergreen *(Gaultheria procumbens)*

j) Trailing Arbutus *(Epigaea repens)*

k) Blackberry *(Rubus allegheniensis)*

l) Raspberry *(Rubus occidentalis)*

m) Hazlenut *(Corylus spp.)*

n) Scrub Oak *(Quercus spp*.)

4. ALL NATIVE GRASSES, FERNS AND HERBACEOUS PLANTS.

*These species are to be preserved wherever possible. Some of the taller trees and shrubs may be removed or pruned to establish the "Minimum Acceptable Clearance from Vegetation to Conductor at Time of Maintenance" as defined in **Table 1**. Woody growth must also be removed around structures, on access roads, and in construction activity areas (e.g., vegetation disposal areas. stringing cuts, structure erection areas).

4. Tree Pruning

Tree pruning is not considered the preferred management technique to provide clearances for vegetation located within an active right of way. Removal of vegetation that poses a clearance concern is the preferred method of management.

All trees will be pruned by the guidelines detailed in the most current revision of the American National Standard for Tree Care Operations-Tree, Shrub and Other Woody Plant Maintenance – Standard Practices (ANSI A300). All pruning cuts should be made back to lateral branches at least one-third the diameter of the limb being removed or to the branch collar at the parent stem.

No dead wood shall be removed unless it either endangers the reliability of the line or such action is authorized by PPL Electric's designated representative.

Every effort shall be made during the pruning process, to prevent damage to surrounding property and/or the tree itself. Tree climbers or hooks will not be permitted in any urban tree to be pruned. They will, however, be permitted in any tree to be removed or in rural trees to be pruned, unless objected to by the property owner.

Every effort shall be made to prune trees by the following acceptable methods:

If pruning is to be considered, the following guidelines are given:

Directional Pruning (only to be completed with PPL EU authorization)
This is the preferred pruning technique to be utilized when a tree is located directly under the conductor or located within the right of way corridor. In order to achieve "Minimum Acceptable Clearance from Vegetation to Conductor at Time of Maintenance" (defined in Table 1), entire branches and/or branches that have laterals growing towards the conductor(s) should be removed. All cuts should be made back to lateral branches that grow away from the conductor(s).

Crown Reduction (only to be completed with PPL EU authorization)
This technique is to be utilized when a tree is located under the conductors and directional pruning is not feasible. In this situation, all top branches must be pruned back to lower the crown of the tree to achieve the "Minimum Acceptable Clearance from Vegetation to Conductor at Time of Maintenance" (defined in Table 1). When feasible, entire branches that have sprouts from old topping cuts growing towards the lines should be removed.

Side Pruning (only to be completed with PPL EU authorization)
This method of pruning is utilized when a tree grows adjacent to the conductors. In this situation, it is necessary to remove the side branches extending into the right of way zone. When the parent stem of a tree is at the edge of the right-of-way, limbs protruding into the right-of-way should be removed at the branch bark collar on the main stem.

Any exceptions to the above methods of pruning will only be performed at the discretion of and with the approval of the appropriate Company representative.

B. General Procedures for All Clearing Methods

For all types of clearing specified, the following procedures should be followed:

- All cutting shall be done selectively
- Trees shall be felled in a manner to minimize damage to those trees or shrubs, which are to be preserved. This is particularly essential in performing Restricted Clearing.
- In cutting, all stumps shall be cut as low as possible to the ground. Stump heights should not exceed 3" for smaller trees (less than 1' diameter), while stump heights of 6" or less are acceptable for larger trees or where physical obstructions prevent cutting next to the ground (e.g., rocks, fencing). Stumps shall be cut parallel to the ground, with no sharp splinters or points remaining.
- Special care shall be taken in clearing near ornamentals or any type of cultivated tree, shrub, or vine.
- If areas are encountered that have already been cut over, any tree stubs of an excessive height shall be re-cut to the heights specified above.
- Danger trees shall be pruned or removed, as previously described under "Clearing Requirements".

IV. DISPOSAL OF CLEARED VEGETATION

In accordance with state and federal environmental regulations and policies, it shall be the policy of PPL Electric that no vegetation disposal (e.g.. piling, drop and lop, chipping, burning, etc.) shall occur in known or suspected wetland areas.

Wetlands are defined as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

A. Specific Procedures for Each Disposal Method

1. Piling and Slash

(a) Timber (6" or larger in diameter).

- All timber shall be placed in neat piles along the edge of the right-of-way, away from areas of preserved compatible vegetation. Under normal conditions timber piles will be interspersed with slash piles.

- Timber shall be stacked in tree length piles unless otherwise specified, in piles not greater in length than the longest tree length. A separation of at least 10' shall be provided on either side of each pile.

- All access roads, trails and streams (including their banks) shall be kept clear. Piling shall not be done where piles would be highly visible from any improved road.

(b) Slash

- All slash (i.e., trees less than 6" in diameter, tree tops, limbs) shall be stacked in flattened mounds along the edge of the right-of-way, away from areas of preserved compatible vegetation.

- Slash piles shall be dressed of excessively protruding limbs and compacted to keep visual obstruction to a minimum. Generally, they should not exceed 5-6' in height, except where site conditions are such that higher piles are acceptable (e.g., depressions, rough terrain in remote areas). Compaction of piles may be facilitated by use of equipment employed in the associated clearing operation.

- The length of a slash pile should not be any greater than a tree length timber pile, and its width limited so as not to interfere with access road construction or conductor stringing. A separation of at least 10' shall be provided on either side of each pile.

- All roads, trails, and streams (including their banks) shall be kept clear. No piling shall be undertaken where piles would be highly visible from any improved roads, at other locations involving high public visibility, or near tower or pole sites.

2. Drop and Lop

- All noncompatible vegetation shall be cut so that it falls toward the edge of the right-of-way, away from any designated access paths. After trees are felled, all long limbs shall be removed from the trunk, and the tree shall be bucked in order to keep the vegetation as close to the ground as possible.

- If necessary, trees and/or slash shall be moved to create a clear way for access and wire stringing, as needed.

3. Chipping

- All timber shall be stacked, according to the procedure described under "Piling," above.

- All slash shall be fed through a mechanical chipper immediately after cutting.

- Unless otherwise specified, chips shall be randomly scattered on the right-of-way, except in the following areas: fields, along city streets, park areas, or on the banks of streams, or ponds. In such areas, chips must be disposed of at an acceptable site, either on or off the right-of-way.

4. Burning

- All burning shall be undertaken only when safe burning conditions exist. Burning is not permitted within any air basin designated by the Pennsylvania Department of Conservation and Natural Resources. If outside an air basin, local ordinances shall be reviewed for restrictions.

- In starting fires, the use of rubber tires is prohibited. During burning

operations, careful watch (patrols) shall be maintained, so long as a fire hazard exists and hot embers are present in the bum piles. If burning conditions deteriorate, burning operations shall cease.

- When a fire is reduced to charcoal and ash, it shall be raked open to prevent hot embers from *remaining in* the ash piles. This shall only be done when fire danger is low.

B. General Procedures for all Disposal Methods

- The procedure and equipment used should minimize disturbance to both the right-of-way soil cover and to the vegetation that is to remain on the right-of-way.

  Specifically:

  Wheeled or tracked vehicles shall be equipped with brush rakes or forks with teeth protruding at least 8" below any bar or cutting edge. The use of bulldozer blades to handle slash or timber shall not be permitted.

  Track vehicles shall be equipped with grouser pads and operable winches with at least 50' of cable.

- All vehicles shall be equipped with cabs, to protect the operator from falling limbs and trees and to ensure the vehicle can withstand rolling accidents

- All felled trees, logs, slash, brush, and chips shall be removed beyond designated flood areas wherever possible with minimal disturbance to the soil and remaining tree roots. Where not possible, slash will be compacted in such a manner that it will not be carried away by high water. Chips should be spread and covered with soil. Every effort should be made to see that marketable wood is salvaged, and at least moved beyond normal flood areas.

- All disposal operations shall closely follow (by no more than 3 days) clearing operations to keep work confined to one area and to prevent unsightly and unsafe conditions.

V. HERBICIDE APPLICATION

A. Methods of Application

1. Four methods are currently accepted by PPL Electric as tools in its vegetation management program: Stump Treatment, Basal Application, and Foliage Application, and Cut –Stubble application.

B. Procedures

1. Specific Procedures and Precautionary Measures for Each Treatment Method

Stump Treatment

Used for the prevention of re-sprouting, stump treatment involves treating cut stumps with either an oil-based mixture or a ready-mixed non-oil solution. This type of treatment is prescribed when vegetation is cut to ground line. Therefore, its primary use is for initial clearing where it is applied to stumps of selectively cleared noncompatible species. However, it is also used for maintenance clearing, when trees have grown too tall for foliage application, and a decision is made to re-cut them to ground line.

Oil-based Stump Treatment

Using hand-held applicators, all newly cut stumps and all exposed roots shall be thoroughly treated as soon as possible after the tree is cut; or, if the label includes this method, all basal bark and root crowns of the trees shall be treated prior to cutting (at least one hour but not more than one day before the tree is cut). In either case, the stump, bark, and exposed roots shall be thoroughly wet to the ground line, unless the label directs otherwise. This type of stump treatment may be done any time during the year, except when snow or ice prevents contact of the herbicide with the stump as required for effective treatment.

Ready-Mix Non-Oil Stump Treatment

Using a hand-held applicator, the sapwood and cambium area of all newly cut stumps shall be thoroughly wet immediately after the tree is cut.

This type of stump treatment may be done any time during the year, except when snow or ice prevents contact of the herbicide with the stump.

Foliage Treatment

Using hand-held applicators, all foliage and stems of noncompatible

vegetation shall be thoroughly wet to the point of runoff, unless the label directs otherwise.

For most applications, treatment must be done from the time the plant is fully developed until it begins dormancy. For any foliage treatment which acts as a growth inhibitor (e.g., prevents budding), treatment must be made during late summer or early fall.

Adequate precautions shall be taken when wind direction is toward non-target vegetation, especially sensitive crops. Foliage application shall not be done during high or gusty winds, which will cause drift problems.

To minimize drift of foliage application the applicator shall:

Stand as close as possible to the target vegetation, keeping the spray gun low. If necessary, the target species should be bent over to avoid applying the herbicide solution high into the air.

Use a thickening agent to produce a coarse spray.

Use a nozzle type and pressure, which produce a coarse spray.

Application will be parallel to or toward the center of the right-of-way, not toward right-of-way edges.

Basal Treatment

The lower 12" to 15” of the stem and all the root crowns of noncompatible vegetation shall be completely saturated with the solution, unless the label directs otherwise.

Basal treatment may be done any time during the year, except when snow or ice prevent contact of the herbicide with the roots or stems as required for effective treatment

Cut-Stubble Treatment

This method of application is primarily applied following mechanical mowing operations, but may follow hand-cutting operation as well. Treatment may include low volume Thinvert applications or low volume basal treatment applications with Brown-Brush monitor type equipment.

2. General Procedures and Precautionary Measures for all Treatment Methods

- To ensure that herbicides are applied correctly and safely, all label instructions and precautions must be followed.

- To ensure effective treatment, the target areas of noncompatible species shall be thoroughly treated, as previously described for each treatment method.

- Herbicides shall not be applied during inclement weather, preventing the need for reapplication and reducing the chance of runoff into non-target areas. If rain does occur, application shall not begin until one hour after runoff has stopped. Early morning dew, when foliage is extremely wet, will be allowed to dry before application.

- Herbicides shall not be applied in the following areas (with the exceptions as noted):

  (1) Pasture areas.

  (2) Within 50' of any water body, except stump treatments and herbicides approved for watershed/aquatic use.

  (3) Within any actively maintained orchard or cultivated planting.

  (4) Near susceptible crops or other non-target vegetation, where drift, runoff, or vapors can cause injury. Exact safety distances shall be determined based on wind conditions, topography, soil type, vegetation (crop) type, and label instructions.

  (5) In cases where weather conditions create excessive drift, applications will be temporarily suspended until improved conditions warrant the continuation of the application.

  (6) On rights-of-way under jurisdiction of the Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, and the U.S. Park Service unless prior approval is granted by the Department or Commission.

  (7) On watershed properties, or in the vicinity of springs, irrigation ditches, or other potable water sources, unless prior approval is granted by the property owner for use of a watershed/aquatic approved herbicide.

  (8) In gullies or ravines where tree clearing is minimal.

- Contractor shall have sample or extra labels and material safety data sheets for all herbicides and surfactants being used at the job site at all times.

- Only herbicide application alternatives approved by PPL EU will be used by the Contractor in any given situation.

- For all treatments, used herbicide containers (other than returnable/refillable containers) shall be properly disposed of, in accordance with label instructions and/or applicable regulations.

- Contractor's personnel shall not be permitted to ride on any vehicles while applying herbicides except with prior approval of PPL Electric's representative.

TABLE 4

Approved Herbicides and Spray Mixtures

I. HERBICIDES

Trade Name	*Common Name*	*Carrier*
Garlon 3A	Triclopyr	Water
Garlon 4 Ultra	Triclopyr	Arborchem Basal Oil or Water
Tordon 101	Picloram/2,4-D	Water
Pathway	Picloram/2,4-D	None (Ready Mix)
Escort XP	Metsulfuron Methyl	Water
Krenite S	Fosamine Ammoniurn	Water
Rodeo	Glyphosate	Water
Accord Concentrate	Glyphosate	Water
Arsenal - Powerline	Imazapyr	Water
Habitat	Imazapyr	Water
Stalker	Imazapyr	Basal Oil or Water
Pathfinder II	Triclopyr	None (Ready Mix)
Milestone	Aminopyralid	Water

II. SPRAY MIXTURE ALTERNATIVES

Alternative 1

- Hydraulic (High Volume stem foliar) Application

Garlon 3A	½% (2 Quarts)
Tordon 101	½% (2 Quarts)
Arborchem Clean Cut or Approved Equivalent	¼% (1 Quart)
Water	98-3/4 Gallons
Drift Control Agent[1]	

or

- Back Pack - Power/Hand Operated (Low Volume) Application

Garlon 3A	3%
Tordon 101	3%
Arborchem Clean Cut or Approved Equivalent	1%
Water	93%
Drift Control Agent[1]	

Approximate Spray Season :[2] on or about first week of June through the middle of September.

Application: Hydraulic - Thorough wetting (leaves, stems, and root collars) to point of runoff, of all undesirable species of trees.

Back Pack - Hand or power operated (low-volume) - Wetting of leaves and stems of all undesirable species of trees.

Alternative 2

- Hydraulic (High Volume) Application

Krenite S	1.5% (6 Quarts)
Arsenal - Powerline	4 Ounces/100 gal
Arborchem Clean Cut or Approved Equivalent	¼% (1 Quart)
Water	98-1/4 Gallons
Drift Control Agent[1]	

or
- Back Pack- Power/Hand Operated (Low Volume) Application

Krenite S	5% (5 Gallons)
Arsenal – Powerline or Habitat	½% (2 Quarts)
Arborchem Clean Cut or Approved Equivalent	1% (4 Quarts)
Water	93-1/2 Gallons

or Ultra Low Volume Thinvert Backpack Application

Krenite S	7% (7 Gallons)
Arsenal – Habitat	1% (4 Quarts)
Escort XP	4 ounces/ 100 gal
Thinvert RTU	92 Gallons

Approximate Spray Season:[2] On or about the first week of June to the beginning of fall leaf coloration.

Application: The foliage of all undesirable species of trees must be thoroughly wet.

Alternative 3

- Low Volume
  Basal Application

Garlon 4 Ultra	25% (25 Gallons)
Stalker	1% (1 Gallon)
Arborchem Basal Oil	74 Gallons

- Low Volume
  Basal Application

Garlon 4	25 Gallons
Arborchem Basal Oil	75 Gallons

Approximate Spray Season [2] Apply at any time during the year except when snow or water prevents spraying to ground line.

Application: Spray the basal parts of all undesirable species of trees to a height of 12-15 inches from the ground. Spray to wet, no run-off.

Alternative 4

- Hydraulic (High Volume) Application

Accord Concentrate	1% (4 Quarts)
Arsenal – Habitat	4 ounces /100 gal
Arborchem Aquatic Surfactant or Approved Equivalent	2 Quarts
Water	98-1/2 Gallons
Drift Control Agent[1]	

or • Back Pack- Power/Hand Operated (Low Volume) Application

Accord Concentrate	5 Gallons
Arsenal – Habitat	½ % (2 Quarts)
Chemsurf 90 Surfactant or Approved Equivalent	1% (4 Quarts)
Water	93-1/2 Gallons
Drift Control Agent[1]	

or • Back Pack- Power/Hand Operated (Ultra Low Volume Thinvert) Application

Accord Concentrate	7% (7 Gallons)
Arsenal – Habitat	1% (4 Quarts)
Escort XP	4 ounces / 100 gal
Thinvert RTU	92 Gallons

Approximate Spray Season [2] Mid to late June until the end of September.

Application: The foliage of all undesirable species of trees must be sprayed to attain uniform coverage, although not necessarily to run-off.

Alternative 5

- Hydraulic (High Volume) Application

Garlon 3A	¾ % (3 Quarts)
Escort XP	1 Ounce/100 gal
Arborchem Clean Cut or Approved Equivalent	¼% (1 Quart)
Water	99 Gallons
Drift Control Agent[1]	

or • Back Pack- Power/Hand Operated (Low Volume) Application

Garlon 3A	4% (4 Gallons)
Escort XP	2 Ounces
Arsenal - Powerline	½% (2 Quarts)
Chemsurf 90 or Approved Equivalent	1% (4 Quarts)
Water	94 -1/2 Gallons
Drift Control Agent[1]	

Approximate Spray Season: On about the first week of June until the beginning of fall leaf coloration.

Application: Apply as a full coverage spray to foliage, stems, and limbs or all undesirable species of trees.

Alternative 6

- Hydraulic (High Volume) Application

Krenite S	1.5% (6 Quarts)
Arsenal - Powerline	4 Ounces/100 gal
Escort XP	1 Ounce/ 100 gal
Arborchem Clean Cut or Approved Equivalent	¼% (1 Quart)
Water	98-1/4 Gallons
Drift Control Agent[(1)]	

- Back Pack - Power/Hand Operated (Low Volume) Application

Krenite S	5% (5 Gallons)
Arsenal – Powerline or Habitat	½% (2 Quarts)
Escort XP	4 Ounces/100 gal
Arborchem Clean Cut or Approved Equivalent	1% (1 Gallon)
Water	93-1/2 Gallons
Drift Control Agent[(1)]	

or Ultra Low Volume Thinvert Backpack

Krenite S	7% (7 Gallons)
Arsenal – Habitat	1% (1 Gallon)
Escort XP	4 ounces/100 gal
Thinvert	92 Gallons

Cut-Stubble Applications:

Alternative 7

- Thinvert Application
(applied at 5 Gallons /ac)

Tordon K	(2 Quarts)
Arsenal - Habitat	1 pint (16 ounces)
Milestone	7 ounces
Thinvert RTU	4.3 Gallons

- Low Volume
Basal Application

Garlon 4	25 Gallons
Arborchem	75 Gallons
Basal Oil	

Alternative 8

- Thinvert Application
  (applied at 5 Gallons /ac)

Arsenal - Habitat	24 ounces
Milestone	7 ounces
Thinvert RTU	4.75 Gallons

- Low Volume Basal Application

Garlon 4	25 Gallons
Arborchem Basal Oil	75 Gallons

Alternative 9

- Thinvert Application
  (applied at 5 Gallons /ac)

Garlon 4	1.5 Gallons
Tordon K	1 Quart
Milestone	4 ounces
Arsenal - Habitat	12 ounces
Thinvert RTU	3.12 Gallons

- Low Volume Basal Application

Garlon 4	25 Gallons
Arborchem Basal Oil	75 Gallons

Approximate Spray Season [(2)]: On or about the first week of June to the beginning of fall leaf coloration.

Application: The foliage of all undesirable species of trees must be thoroughly wet.

(1) A Drift Control Agent must be added to this alternative at the manufacturer's recommended label rate.

(2) Spray seasons are approximate and subject to change and variation by geographical area.

Note: PPL Electric reserves the right to modify spray formulations within permissible limits set forth in the manufacturer's labeled instructions.

VI CONTRACTOR RESPONSIBILITIES

Contractor shall:

- Conduct all work as specified by PPL Electric (in the Clearing Plan and accompanying information) and as documented in right-of-way agreements.

- Follow the specific procedures contained in both this specification and PPL Electric's Specification for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-Way (A-118231).

- Notify the Company representative of any changes that may be required in the Clearing Plan, including requests made by property owners.

- Make changes to Clearing Plan only upon Company written authorization.

- Provide all supervision, labor and equipment necessary for execution of the work. All equipment must meet PPL Electric specifications as described on page 17. All personnel must be adequately trained in the vegetation management techniques they practice, including species identification skills.

- Notify all property owners prior to start of any work involving initial clearing and maintenance procedures on previously cleared lines.

- Contractor personnel directly involved in contacting customers are required to have identification, complete with photograph, associating them with their employer.

- This identification will be prominently displayed while engaged in customer contact activities.

- Begin operations only after notification to proceed is received from PPL Electric. (The Company representative reserves the right to reject any personnel or equipment that does not meet Company's standards.)

- Maintain copies of all permits required by regulatory agencies at the job site, as provided by PPL Electric.

- Confine all activities to the limits shown on the Clearing Plan, or as detailed by PPL Electric, except for approved off-line access and Company-specified danger tree clearing. This includes storage of

equipment and materials, and exercise of proper care to avoid damage and litter outside these limits.

- Keep all roads open to traffic, as per the Pennsylvania Department of Transportation's "Work Zone Traffic Control" (67 PA Code, Chapter 203).

- Keep PPL Electric apprised of the progress of work on a daily basis, either verbally and/or through a daily work activity report as required by the Company representative.

- Regrade and seed according any deep cuts, ruts, stump holes, mounded areas, or general soil disturbance caused by the vegetation management operations when, in the opinion of the Company representative, they could cause future ground erosion or interfere with line access.

- Clean up all slash and rubbish resulting from work as the work progresses, leaving the area in a condition satisfactory to the Company representative.

- Provide adequate liability coverage, as specified by PPL Electric in the request for bids.

Clearing

- Prune or remove all danger trees as directed by a Company representative.

- Take precautions to preserve all surveyed stakes, hubs, and property comers. Those destroyed shall be replaced at Contractor's expense.

Herbicide Applications

- Possess an appropriate Commercial Applicator/Technician certification and pesticide application business license, in compliance with the Pennsylvania Pesticide Control Act of 1973, amended in 1986, Act 167.

- Maintain a record of all required property owner contacts on log sheets provided by PPL Electric. These records will be submitted to the appropriate Company representative at: (1) his request and (2) the completion of each line.

- Mix the herbicide solution according to Company specifications and label instructions.

- All target species will be adequately treated to produce the necessary control. A responsible Contractor Representative will review all prior year herbicide applications for quality control. The Contractor shall retreat at his own expense until the desired results are obtained.

- Vehicles used for application and property owner contacts must have Contractor identification of suitable size lettering as approved by the Company representative.

- Provide herbicide samples to the Company representative.

Vegetation Disposal

- Haul chips to acceptable disposal sites, either on or off the right-of-way, if specified by the Company.

- Assure that marketable wood is piled on its respective property.

- Assume responsibility for damage or injury resulting from burning operations

- Meet these safety requirements when burning:

  (1) Perform burning only upon Company authorization.

  (2) Notify the local Fire Department, Bureau of Forestry (District Office) of the Pennsylvania Department of Conservation and Natural Resources, and the Company representative prior to conducting a burning operation on a daily basis.

  (3) Provide adequate fire fighting equipment at the site of any burning activity. This equipment shall include Indian Fire Tanks and Rich Fire Rakes (or equivalent) mechanized fire fighting equipment (motor driven high-pressure pump and tank units), and a quantity of water sufficient to extinguish any outbreaks.

  (4) Provide continuous patrolling (day and night) as long as fire danger is high and hot embers exist in any of the bum piles.

  (5) Report to the Company representative any fire which burns beyond the right-of-way limits, and notify the Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry, (District Office) if additional help is needed to regain control of the fire.

Line Access

- Comply with all pertinent provisions of applicable local, state, and federal environmental regulations whenever using/constructing access roads.

- If access is required through a visual screen, the access road shall cross the screen at an angle to prevent a direct view down the right-of-way.

- Access roads along the right-of-way shall stay as close to the centerline as possible, to avoid clearing larger vegetation that may remain at the right-of-way edges.

- Access roads shall attempt to avoid springs, seeps, or other bodies of water found along the right-of-way.

- If temporary access is required prior to the completion of permanent access construction, all work shall be done so as to minimize erosion, ground disturbance, and siltation. Temporary bridges or culverts shall be constructed across streams, and corduroy roads used in wet areas.

- Review with the Company representative all existing roads, culverts, or bridges (either private or public) that form a portion of Contractor's means of access to the right-of-way. The Contractor shall take whatever steps the Company representative deems necessary to ensure that these facilities are restored to at least as good a condition after the Contractor's use as they were originally. At the request of the Company representative, contractor shall immediately repair damaged roads or bridges that would hinder or prevent the owner's or tenant's use.

- Immediately repair or replace all fences or gates damaged by Contractor at Contractor's expense. Any required addition of fence wire, brace posts, gate posts, or associated fence material shall be of new quality and of similar design as existing fence material. Install gates if so noted in the contract. The type of gate shall be specified by PPL Electric, which shall provide all gates or gate materials. Work shall be done under an hourly rate, according to the specifications provided by PPL Electric.

- Where existing usable fences are attached to trunks of trees to be felled, the trees shall be cut at a length approximately 6" above the top wire strand, unless otherwise specified. The continuity of all electric fences shall be maintained.

- Adequate care shall be taken to assure that gates are not left open or fences left in such condition that the property owner's livestock can escape. If existing fences or gates along a right-of-way are in a state of disrepair prior to the start of clearing and could allow livestock to escape, the property owner shall be so notified.

- The Contractor will take the necessary safety precautions to prevent injury to human life or damage to property and shall carry on his operations with a minimum of interference to traffic or inconvenience to the public. All applicable rules and regulations of OSHA and the Pennsylvania Department of Transportation shall be strictly adhered to. Any and all accidents or incidents resulting in injury to workmen or the public or damages to Company facilities (whether causing an interruption or not) will be reported to PPL Electric immediately.

- In the event of a work related interruption or upon identification of an imminent threat, the contractor shall:

1. If needed, call 911 for medical assistance.
2. Contact PPL VM, i.e. Forester or LCI with location and nature of event
3. If PPL VM personnel can not be contacted, contact the regional PPL S.O., or P.D.
4. Contact contractor management as needed.
5. If required, keep bystanders out of harms way and remain clear of any downed conductors until PPL crews isolate any safety concerns.