TENNESSEE GAS PIPELINE COMPANY, L.L.C.

(A KINDER MORGAN Company)

COMMONWEALTH OF MASSACHUSETTS

FIVE-YEAR VEGETATION MANAGEMENT PLAN

(To manage vegetation in the Kampoosa Bog Drainage Basin and to protect workers from poisonous plants throughout the Commonwealth)

2022-2026

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SECTION 1: INTRODUCTION

Since 2002, Tennessee Gas Pipeline Company, LLC (Tennessee), a Kinder Morgan Company, has implemented an Integrated Vegetation Management Plan (IVM) to manage vegetation at the Kampoosa Bog Drainage Basin in Stockbridge and to control noxious[1] plants including invasives and poisonous plants along its pipeline rights-of-way (ROW) in the Commonwealth of Massachusetts. Not only is vegetation management essential to maintaining reliable gas pipeline rights-of-way, but it is also a matter of safety and the protection of critical natural resources. With these goals in mind, an IVM driven plan is a flexible, proven management approach at Tennessee.

Tennessee's ROWs currently comprise over 600 miles of high-pressure natural gas pipeline and associated facilities in the Commonwealth of Massachusetts (Appendix 1). It maintains its pipelines on easements ranging from twenty feet in width (on its laterals) up to 120 feet in areas of multiple pipelines.

Tennessee must maintain its ROWs and related facilities for reliability, accessibility, and mandated inspections in support of Tennessee's mission: the efficient, uninterrupted delivery of natural gas. To manage vegetation on its ROWs in the Commonwealth of Massachusetts, therefore, Tennessee herby submits this Vegetation Management Plan (VMP) to the Massachusetts Department of Agricultural Resources in compliance with 333 CMR 11.00, *Rights of Way Management* regulations (Appendix 2).[2]

It is particularly important to consider federal regulations that guide the language and operational guidelines of this VMP. Tennessee must comply with applicable federal regulations including, but not limited to, the *Endangered Species Act*, *Migratory Bird Treaty Act*, all applicable Federal Energy Regulatory Commission (FERC) standards and the *FERC Wetland and Waterbody Construction and Mitigation Procedures*, Federal *Occupational Safety and Health Act* (OSHA) regulations, all applicable Department of Transportation (DOT) and Environmental Protection Agency (EPA) regulations. In particular, Tennessee must maintain its ROWs free of encroaching vegetation that may impede visual and physical access to the pipeline.

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[1]"NOXIOUS WEED.—The term ''noxious weed'' means any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment." (PUBLIC LAW 106–224—JUNE 20, 2000, TITLE IV—PLANT PROTECTION ACT).

[2]Additional pertinent Massachusetts regulations and laws include, but are not limited to: Chapter 132 B, *Control Act* (Appendix 3); all pertinent clauses in *Chapter 85 of the Acts of 2000* (Appendix 4); MESA; MGL c.131, *Massachusetts Endangered Species Act* and its regulations, 321 CMR 10.00, *Massachusetts Endangered Species Regulations;* 310 CMR 10.00, *Wetlands Protection* regulations and 310 CMR 22.00, *Drinking Water* regulations of the Massachusetts Department of Environmental Protection.

Pursuant to the *Federal Natural Gas Act*, 15 U.S.C. §§ 717 et seq.; the *Federal Natural Gas Pipeline Safety Act*, 49 U.S.C. §§ 60101 et seq., and the *Federal Hazardous Materials Transportation Act*, 49 C.F.R., Part 192 (Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards), Tennessee is required to adopt and implement an ongoing Operations and Maintenance Plan for purposes of maintaining the integrity and safety of its pipeline facilities.

In compliance with 49 CFR, Part 192, Subpart L (Operations), Tennessee must maintain its easement to allow for aerial surveillance of pipeline conditions; to enhance its Damage Prevention Program; to facilitate planned cathodic protection surveys, and to allow access for both routine pipeline maintenance and emergency repairs. In compliance, Tennessee conducts periodic mechanical vegetation maintenance activities on its permanent easements and selective herbicide applications as necessary.

At this time, the Kinder Morgan pipeline groups, including Tennessee, will continue to rely primarily on mechanical methods to control vegetation on its pipeline easements. At the same time, Tennessee will continue its IVM program that combines mechanical, chemical, and biological (formerly natural) controls to deal with issues that require a periodic application of herbicides from the Massachusetts *Sensitive Area Materials List*[3] at selected sites under two specific programs.

The first is an ongoing three-five-year treatment program to control invasive plant species and other incompatible species in the Kampoosa Bog Drainage Basin (Kampoosa) on approximately 14 acres of Tennessee's ROW. This unique natural resource has been designated an *Area of Critical Environmental Concern*, therefore, in a cooperative effort, Tennessee, the Massachusetts Division of Fisheries and Wildlife, the Nature Conservancy, and the Kampoosa Stewardship Committee produced a joint *Resource Management Plan*. Among other concerns, the management plan identifies invasive plants as a significant threat to the preservation of the drainage basin. To achieve this goal the plan suggests implementation strategies to monitor invasive plant populations and to identify appropriate times and strategies to reduce or eradicate them without damaging this special ecosystem.

By using selective herbicide applications, Tennessee has minimized the negative impact associated with mechanical mowing and clearing activities within the drainage basin and has successfully managed the pipeline easement through the basin with an IVM program that protects the basin's fragile ecosystem from invasive species.

The second is an annual program to control poisonous plants thereby reducing exposure and OSHA incidents. Tennessee personnel are required to maintain installations and appurtances including rectifiers, magnesium groundbeds and test stations along the buried steel pipelines. The plant communities around many of these facilities tend to be dominated by poison ivy which is not effectively or safely controlled by mechanical methods. Tennessee, therefore, contracts spot herbicide treatments for poison ivy at sites identified by operations personnel as having a high risk of exposure.

[3]In a cooperative agreement, the Massachusetts Department of Agricultural Resources ("MDAR") and the Massachusetts Department of Environmental Protection review and evaluate the environmental fate and toxicological data, including eco-toxicological data, of the active ingredients of herbicides before including them for use in *sensitive areas*.

SECTION 2: GOALS AND OBJECTIVES

The primary goal of this VMP is to outline the standard vegetation management operating procedures on Tennessee's Massachusetts ROWs. In full compliance and philosophical agreement with 333 CMR 11.01, Tennessee "…establish[ed] a statewide and uniform…process which will minimize the uses of, and potential impacts from herbicides in rights-of-way on human health and the environment while allowing for the benefits to public safety provided by the selective use of herbicides."

This plan provides guidance for both Tennessee and contract personnel and serves as a communication link for state and municipal officials, property owners, abutters and the public-at-large. This objective will be accomplished through this VMP, Yearly Operational Plans (YOP) and the appropriate notification documentation and procedures under 333 CMR 11.06-11.07, and with professionalism and courtesy on the part of Tennessee and contract field personnel.

The following are individual objectives of Tennessee's vegetation management program:

1. To maintain ROWs and pipelines ensuring the safe and dependable delivery of natural gas.

2. To minimize and control vegetation that impedes inspections or interferes with the ability to access the ROWs for maintenance or emergencies.

3. To utilize, where appropriate, an IVM program combining the use of herbicides from the Massachusetts *Herbicides Recommended for Use in Sensitive Areas List* (*Sensitive Area Materials List*) with mechanical operations to control noxious and invasive plant species.

4. To encourage stable early successional ecological communities of primarily lower growing grasses and forbs.

5. To encourage the establishment of wildlife habitat that is compatible with and does not interfere with pipelines' function.

6. To protect the Priority Habitat of State-Listed species.

7. To control invasive, poisonous and other noxious plant species.

8. To follow all sensitive areas restrictions listed in 333 CMR 11.04.

9. To ensure that all vegetation management operations are conducted in a safe, effective manner and in conformity with applicable federal and state laws, regulations, and permit conditions.

10. To use experienced, trained vegetation management personnel with all appropriate licenses and certifications.

11. To maintain the flexibility necessary to accommodate unique situations and the need for more appropriate techniques in accordance with new regulations, scientific advances, operational experience and/or comments from municipalities, state agencies and contractors (when necessary, following the procedures in 333 CMR 11.05(4)(d)).

SECTION 3: TARGET VEGETATION

Tennessee's goal to establish stable, predominately grass or forb communities along its ROWs requires the management of incompatible vegetation. The primary targets under this VMP are incompatible noxious vegetation species, including invasive plant species and poisonous plants. At Kampoosa, all woody vegetation is also considered targets to protect the bog.

According to Title 49, Part 195.146 of the Federal Code of Regulations, Tennessee must regularly patrol its pipelines by ground and/or aerial inspections. Tall, dense vegetation impedes the detection of potential problems, and woody vegetation obstructs the visibility of and access to valve sites, pipe corrosion test stations, mile marker posts, and other pipe location markers. The need to identify and reach the pipeline quickly, especially during an emergency situation is vital. Additionally, the routine removal of tall vegetation renders the ROWs, and its buried high pressure natural gas pipeline, distinguishable from adjacent properties.

IDENTIFICATION OF INCOMPATIBLE VEGETATION

Incompatible vegetation will be identified and removed by contractors with experienced, trained, appropriately licensed and certified, professional personnel. The primary target vegetation on Tennessee's ROWs includes, but is not limited to:

1. ***Trees*** such as Aspen, Beech, Birch, Cherry, Maples, Oak and Pines.

2. ***Shrubs*** such as Dogwood, High Bush Blueberry, Mountain Laurel, Speckled Alder, Sumac, Viburnum and Witch Hazel.

3. ***Woody vines and other vegetation*** such as Bittersweet, Greenbrier, wild grapes, and blackberries.

4. ***Invasive plant species*** such as Oriental Bittersweet, Japanese Knotweed, Multiflora Rose, Autumn Olive, Buckthorn, Honeysuckle, Purple Loosestrife and Phragmites.

5. ***Poisonous plant species*** such as Poison Ivy, Poison Sumac, Poison Oak and Giant Hogweed.

Very low growing woody vegetation, grasses and herbaceous vegetation that compete with taller woody vegetation are generally compatible with the functioning of the pipeline. These early successional ecological communities are also excellent wildlife habitat for many plant, mammal, bird, reptile, amphibian and invertebrate species, including a number of Federal and/or state-listed rare, endangered or threatened species.

A partial list of compatible early successional plants includes, but is not limited to, Low-bush Blueberry, Huckleberry, Sweet Fern, grasses, ferns and wildflowers.

INVASIVE PLANT SPECIES

Invasive plant species pose a significant threat to the natural diversity of native plants, animals and insects.

Invasive plants are characterized by their ability to spread rapidly, especially in abandoned fields, disturbed areas, along watercourses and ROW corridors. Typically, invasive plants possess one or more of the following characteristics:

1. Aggressive growth and maturity
2. Spread quickly by seed, rhizomes (creeping underground stems) and/or adventitious roots (a root that originates from stem or leaf tissue)
3. Have little or no natural pests, pathogens or predators
4. Tolerate or thrives in many environments
5. Can be difficult to remove or control.

Some examples of invasive plants commonly found on Tennessee's ROWs include, but are not limited to:

1. Japanese Knotweed (*Fallopia japonica)*
2. Multiflora Rose (*Rosa multiflora)*
3. Oriental Bittersweet (*Celastrus orbiculata)*
4. Phragmites (*Phragmites australis)*
5. Purple Loosestrife (*Lythrum salicaria)*
6. Autumn Olive (*Elaeagnus umbellate)*.

Many of the non-native, "exotic" invasive plant species were planted intentionally by gardeners, horticulturists and land management organizations for their showy flowers, vigorous growth and fruiting abundance in an effort to attract wildlife, and/or for erosion control. Due to their aforementioned behavior, however, they have spread well beyond their planted areas overwhelming native species and reducing their diverse richness. Many natural habitats are being impacted by multiple invasive species, which accelerates the decline of natural plant and wildlife communities.

Recognizing this serious threat to the natural landscape ecology, Tennessee has developed an IVM strategy to control invasive plants utilizing both mechanical and/or chemical techniques as appropriate.

Our flagship invasive plant control project is at Kampoosa. This unique natural resource has been designated as an *Area of Critical Environmental Concern*, therefore, in a cooperative effort, Tennessee, the Massachusetts Division of Fisheries and Wildlife, the Nature Conservancy, and the Kampoosa Stewardship Committee produced a joint *Resource Management Plan*. Over the past twenty years, under this program Tennessee has incorporated all reasonable and effective techniques including the selective use of herbicides from the Massachusetts *Sensitive Area Materials List*, to successfully control invasive plants and protect the basin's fragile ecosystem.

Tennessee wishes to retain the option to work cooperatively with other parties, agencies, commissions and abutting landowners to reduce, contain, or otherwise limit the spread of invasive plant species on its ROWs as part of regional or local invasive plant management plans.

POISONOUS PLANTS

Tennessee personnel are required to maintain a variety of facilities along the buried steel pipelines. Among other duties, this entails regular maintenance of unfenced installations and appurtances such as rectifiers, magnesium groundbeds and test stations. The plant communities around many of these installations and appurtances are prone to be dominated by poison ivy which creates unsafe working conditions.

Currently over one hundred unfenced locations may require treatment for poisonous plants. Each identified location requires applications with backpack or hand-held equipment along the ROW access path and up to 400 square feet surrounding the cathodic protection device. These sites are only treated upon request of the operations department as needed.

SECTION 4: INTEGRATED VEGETATION MANAGEMENT AND JUSTIFICATION OF HERBICIDE APPLICATIONS

This VMP takes into consideration all factors involved in the maintenance and operation of pipeline ROWs. It reflects Tennessee's intent to prevent any unreasonable adverse effects to the environment and to human safety while supporting Tennessee's primary obligation of transporting natural gas.

The current industry definition of IVM in the ANSI A300 (Part 7), Tree, Shrub, and Other Woody Plant Management –Standard Practices (Integrated Vegetation Management) is "A system of managing plant communities in which compatible and incompatible vegetation are identified, action thresholds are considered, treatment methods are evaluated, and selected treatments are implemented to achieve specific objectives."

Following these standards, Tennessee's IVM program combines mechanical (including manual), chemical and biological (previously natural) methods that support the ability of early successional ecological communities to regulate themselves. This IVM program works in concert with certain stages of ecological succession. Plant life is governed by a relatively predictable process of change in composition or structure known as ecological succession. In New England, succession strives towards the climax forest, but is interrupted by ecological or man-made disturbances both intentional and accidental. Natural gas pipeline IVM programs are intentional man-made disturbance that support the delivery of natural gas by encouraging the stabilization of early successional ecological communities.

New England early successional ecological communities are compatible with Tennessee's ROWs. These include grasslands, fields, meadows, wetlands, vernal pools and heaths. All support diverse, well-dispersed plant, animal and insect species populations, including many that are threatened or endangered. However, all these will disappear in time if succession is not interrupted by intervention.

Mechanical and chemical controls are the direct techniques used to manage vegetation (for example, mowing, hand-cutting and herbicide applications). As a result of utilizing these two direct techniques, Tennessee provides desirable, lower growing plants an opportunity to form dense and robust communities that compete with the seed germination and survival of taller, incompatible plants. This serves as the biological control component of IVM. Many decades of on-going field observation and research by multiple organizations demonstrate that these low growing plant communities inhibit the germination and growth of tree seedlings through competition (for light, moisture, nutrients), assisted by depredation by wildlife (browsing/feeding) and possibly by allelopathy. In other words, biological controls lower the dependence on chemical and mechanical controls, but also depend upon synergistic application alongside the selective use of chemical and mechanical controls for efficacy. [4]

Mechanical methods are a key component of an IVM programs. For example, most conifers do not resprout and can be controlled by mechanical methods. Mechanical methods are used in chemical restricted sensitive areas (333 CMR 11.04). They are also the appropriate treatment method for vegetation over twelve feet in height (per 333 CMR 11.03(5)) and to control areas of thick impenetrable vegetation that restricts access to the ROW.

[4] A short list of examples includes: W.C. Bramble and W.R. Burns. *A long-term ecological study of game food and cover on a sprayed utility right-of-way*. Purdue University. 1974. Bulletin No. 918:16; Richard H. Yahner. *Wildlife Response to More than 50 years of Vegetation Maintenance on a Pennsylvania U.S., Right-of-Way*. Journal of Arboriculture 30(2), March 2004: 123; James S. Marshall and L.W. Vandruff. *Impact of Selective Herbicide Right-of-Way Vegetation Treatment on Birds*. Environmental Management, December 2002. Vol. 30, No. 6: 801-806.

Mowing is not planned for Kampoosa as these methods can contribute to the spread of invasive plants capable of reproducing from rhizomes or by adventitious roots. Mowing is also the least selective of the mechanical methods. As such, it can impact non-target organisms, eliminating food, cover and nesting sites for some wildlife species and also presents the potential for direct takes of slow moving wildlife, nestlings and others not able to get out of the way.

Thoughtful, carefully planned, selective herbicide applications, in combination with more selective mechanical controls actually promote wildlife habitat by encouraging plant species diversity.[5] There is little soil disturbance associated with herbicide applications and the entire target plant, including the roots or rhizomes, is controlled, stopping their spread. Selective herbicide applications are, therefore, much less destructive than mowing to nesting sites and the vegetation cover necessary for food and concealment by wildlife.

In particular, invasive and poisonous plants are best managed by early recognition, before a little intrusion becomes a large infestation. A quick response with the flexibility to use the appropriate control methods reduces the likelihood of a severe invasion. When aggressive invasive plant root systems are controlled, other desirable native vegetation has an opportunity to reestablish dominance on the site. For example, the health of Kampoosa depends on controlling the root system of Phragmites which spread by rhizomes. With the addition of herbicide applications, this has led to the reestablishing of thriving cattails and associated native wildlife populations. This native ecological community requires a continued commitment on the part of Tennessee and its partners to maintain the bog because of the aggressive nature of Phragmites and other encroaching invasive species. This is particularly true since the bog is adjacent to the Massachusetts Turnpike which is a corridor for the constant re-introduction of invasive species of all types: plant, animal, and insect.

The first herbicide application at Kampoosa was in 2002 when the ROW was covered in target vegetation both incompatible and invasives. Thereafter, due to target reduction, the program's herbicide rates per acre follow the trend of other long-term New England IVM programs. Over the last 15 years the average rate per acre at Kampoosa is under 1 ½ pint of active ingredient per acre per treatment year under a 3-5 year treatment cycle.[6] Studies in New York have documented similar reductions in herbicide use through stable plant community management (biological control).[7]

In fact, the average at this site is within the lowest range of electric and gas transmission ROW rates per acre which range from one pint to two quarts. This is due to controlling target density by using the appropriate monitoring, treatment cycle duration, treatment methods and herbicides. Additionally, as part of this cooperative efforts, the Commonwealth of Massachusetts has also reduced invasive populations on state property, contributing to the low herbicide rates on Tennessee's ROWs. Conclusion: reduced invasive populations in the whole bog results in less expansion and movement of these aggressive plants.

Along with reduced rates per acre, herbicides, particularly when applied selectively by low-volume methods, dry quickly on the plant surface, thereby significantly restricting the greatest potential for dermal exposure. The use of anti-drift adjuvants in all foliage applications allows technicians to

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[5] Ibid.

[6] *Utility Transmission Forestry Herbicide Use Summary Records* for Vermont Electric Power Company, TransCanada Hydro Northeast, Inc and National Grid USA Electric Companies (see National Grid *5 year VMP 2009-2013*, p. 9).

[7] C.A. Nowak and L.P. Abrahamson, *Vegetation Management on Electric Transmission Line Rights-of-Way in New York State: The Stability Approach to Reducing Herbicide Use*, Proceedings of the International Conference on Forest Vegetation Management, Auburn University, April 1993.

adjust to accommodate changes in wind velocity and further limits the likelihood of unintentional exposure to non-target organisms. No applications are made in situations when there is a reasonable expectation that herbicides will drift from the target, or during measurable precipitation.

Tennessee's Massachusetts ROW IVM program considers sensitive areas under 333 CMR 11.04 as areas that require special attention (See Section 6). The treatment of these areas takes careful thought and planning on the part of Tennessee and its contract personnel. The flexibility of an IVM program is, therefore, perfectly suited to managing sensitive areas because of the ability to apply different control techniques to the appropriate areas. For example, while surface waters require herbicide setbacks, wetlands, such as Kampoosa, are best treated with herbicides (except within 10 feet of standing or flowing water). Herbicide applications have less negative impact on the wetlands than mechanical methods according to the results of multiple studies including two ROW wetland impact studies conducted pursuant to 333 CMR 11.04(4)(c) (Appendix 5).[8]

Tennessee's also accounts for cultural considerations, or instances in which culturally sensitive areas including those listed in 333 CMR 11.04 (inhabited and agricultural areas) prescribe that the IVM techniques and control methods are adapted or limited. These are areas of a right-of-way in which the economic, agricultural, social and recreational use of the landscape affect the decision making processes. Examples include golf courses, residential areas, Christmas tree farms, active pasture and crop lands, or where unique situations warrant this consideration. This does not preclude the use of chemical and mechanical controls. Instead, these landscapes can limit or alter their application; for example, poisonous vegetation might not grow in well-kept lawns but may still grow around pipeline facilities.

In conclusion, Tennessee will continue to monitor the most current research in treatment methods and vegetation management products. Furthermore, because of the requirement to maintain early successional ecological communities of very low growing vegetation, Tennessee will also continue to support the habitat of invertebrates, vertebrates and plants that require this type of habitat, many of which are state listed as endangered, threatened, or rare.[9]

[8]Environmental Consultants, Inc. *Study of the Impact of Vegetation Management Techniques on Wetlands for Utility Rights of Way in the Commonwealth of Massachusetts*. Final report prepared for New England Electric et.al, 1989; Environmental Consultants, Inc. *Determination of the Effectiveness of Herbicide Buffer Zones in Protecting Water Quality on New York State Powerline Rights-of-Way*. Final report for the Empire State Electric Energy Research Corporation, 1991; K.H. Deubert. *Studies on the Fate of Garlon 3A and Tordon 101 Used in Selective Foliar Application in the Maintenance of Utility Rights of Way in Eastern Massachusetts*. Final Report prepared for New England Electric et. al.,1985; N.H. Nickerson, G.E. Moore and A.D. Cutter. *Study of the Environmental Fates of Herbicides in Wetland Soils on Electric Utility Rights-of-Way in Massachusetts over the Short Term*, Final Report prepared for New England Electric et.al, December 1994; Matt Hickler, NHESP approved Review Biologist, Reports for TransCanada, National Grid, NSTAR Electric, and Northeast Utilities under 321 CMR 10.00 Massachusetts Endangered Species Act Regulations, 2006-2010.

[9]There are many texts on this subject, some of which are listed in the short bibliography in Appendix 7, this is just one excellent example: James D. Oehler ed., Darrel F. Covell, ed, Steve Capel, ed and Bob Long, ed. *Managing Grasslands, Shrublands and Young Forests for Wildlife; A Guide for the Northeast*. The Northeast Upland Habitat Technical Committee, 2006.

SECTION 5: INTENDED VEGETATION MANAGEMENT METHODS

The following is a descriptive listing of Tennessee's intended vegetation management methods detailing the individual techniques available: hand cutting, mowing, foliar treatments, low volume basal treatments, cut stump/surface treatments (CST) and selective trimming. The treatment methods used on any given ROW are based on site sensitivity, regulatory mandates, target species composition, density and height, site access and topography. Except for the mechanical methods, this section only considers the two types of locations included in this VMP: Kampoosa and spot treatments for poisonous plants. It, therefore, does not include most of Tennessee's system in Massachusetts.

GENERAL REQUIREMENTS:

11 FERC *Wetland and Waterbody Construction Mitigation Procedures* may restrict mowing in sensitive areas such as wetland and water body crossings. For wetland and waterbody crossing, including one of the three pipelines on the ROW through Kampoosa, Tennessee must restrict vegetation maintenance over the full width of the permanent ROW:

11 A corridor centered on the pipeline and up to ten feet wide can be maintained in an herbaceous state

12 Trees within fifteen feet of the pipeline and greater than fifteen feet with roots that could compromises the integity of pipeline coating may be selectively cut and removed from the permanent ROW

13 For water body crossings, Tennessee must limit vegetation management to allow a riparian strip at least twenty-five feet from the mean high-water mark to revegetate with native plant species across the entire ROW

14 FERC Certificated Projects restrict routine vegetation management along the ROW between April 15th – August 1st.

1. The ROW must be accessed through established roadways or access point whenever possible.

2. Permission to enter a ROW by any other means must be obtained from the landowner by Tennessee or its contractor(s).

3. Unreasonable site damage or destruction during any phase of the vegetation management operation by the contractor, his agents, or employees, must be repaired.

CHEMICAL (HERBICIDE) CONTROL METHODS:

Chemical control methods consist of herbicides applied as mixtures/solutions consisting of herbicide(s), adjuvants, carriers and additives.

The following guidelines are observed in all herbicide applications:

a. Herbicide applications follow all restrictions in 333 CMR 11.00.

b. Herbicide applications follow all sensitive area restrictions in 333 CMR 11.04.

c. All herbicide applications are performed by experienced, trained vegetation management personnel with Massachusetts pesticide applicator licenses working under the direct supervision of a Massachusetts Category 40 certified pesticide applicator.

d. The contractor is responsible for the proper disposal of all excess materials and solutions in accordance with all applicable Federal and State laws, regulations, and guidelines.

e. The contractor is responsible for the proper calibration of equipment and/or herbicide application mixes.

f. Mixing takes place according to all restrictions contained in 333 CMR 11.00.

g. Herbicide applications follow the target vegetation restrictions in the FERC *Wetland and Waterbody Construction Mitigation Procedures.*

h. Herbicides are not applied to active pastureland unless permission is granted from the owner of the livestock. With permission, the only herbicides that may be used must be appropriately labeled for use in active pastureland.

FOLIAR: The application of herbicides to fully developed leaves, stems, needles, or blades of a plant:

1. The herbicide concentrate is usually mixed or diluted with water and applied as a uniform spray over the plant's foliage.
2. Applicators use two types of equipment for foliar treatments: backpack and vehicle mounted.
3. Both treatments use low pressure at the nozzle during applications. The application period usually extends from early June through the beginning of leaf abscission in the fall when not restricted by regulations.
4. This technique is generally the most economical and effective method, particularly in medium and high brush densities and to control noxious and poisonous vegetation that presents a hazard to inspection and maintenance crews.

Low Volume Backpack Foliar Techniques utilize hand-operated pumps or motorized backpack sprayers:

1. Hand-operated pumps use water to deliver the herbicide mixture.
2. Motorized, backpack sprayers work the same way or produce an air current that delivers the herbicide mixture in small droplets from portable 3-5 gallon spray tanks.
3. Both techniques require the applicator to dampen or lightly wet the target leaf area, not to the point of runoff:
    1. To minimizes the amount of excess herbicide drip from target species onto desirable ground cover.
    2. To eliminate the need to bring heavy equipment on the ROW for the transportation of large quantities of herbicide solution.

Vehicle Mounted Techniques generally utilize a 100-500 gallon hydraulic sprayer mounted on a truck, tractor, ATV, or tracked vehicle equipped with hand-held spray guns.

1. The herbicide mixture is directed at individual targets or broadcast for uniform coverage.
2. This technique is capable of delivering uniform, penetrating spray coverage to dense, tall, target vegetation such as Phragmites and Japanese Knotweed.
3. When using recommended specially designed showerhead type nozzles, decreased spray volumes and limit droplet fines reduce the potential for spray drift off-target: showerhead nozzles deliver effective spray coverage at relatively low spray pressures.

4. This technique is particularly useful for sites where total weed control or pre-emergent herbicide applications are required for fire safety, such as at pumping stations and valve sites, for poisonous plants, or for initial treatment of high-density invasive plant communities.

The following guidelines are observed in foliar applications:

11.03 Anti-drift agents are added to the mix or solution in all foliage applications to reduce the potential of herbicide drift beyond target vegetation. Drift control agents reduce the break-up of sprays into fine droplets and offer increased selectivity, leaf tissue penetration, and herbicide deposition on target plants.

11.04 Foliar applications are not made:

1. To target vegetation over twelve feet in height
2. To target vegetation standing in surface water
3. Within chemical restricted *sensitive areas* per 333 CMR 11.04
4. During periods of wind, which are strong enough to bend the tops of the main stems of tree species on the ROW
5. During periods of moderate or heavy rain fall (where leaf runoff can wash the herbicide off the target plants)
6. Where landowner agreements preclude their use.

11 Foliar treatments are allowed in wetland areas where no standing water is present, per the Department of Food and Agriculture *Decision Concerning the Wetland Impact Study Conducted Pursuant to 333 CMR 11.04 (4)(C)(2)*, October, 1995 (Appendix 5).

CUT STUMP/SURFACE TREATMENTS (CST): The application of an herbicide mixture directly to the cut surface of a stump immediately following or during a cutting operation to prevent resprouts and root suckering:

1. Application equipment includes low-volume, backpack, hand-pump sprayers; handheld squirt bottles; paintbrushes, or sponge applicators.
2. To obtain root control, it is only necessary to treat the phloem and cambium tissue, regardless of the stump diameter.

The following guidelines are observed in all CST applications:

(b) CST is used:

(a) To reduce the need to re-treat the same vegetation by controlling the root system
(b) To reduce the visual impact of vegetation management treatments
(c) For its selectivity to protect desirable vegetation
(d) At any time of the year
(e) To prevent resprouts of vegetation cut because it is over twelve feet in height
(f) To chemically treat incompatible vegetation in limited spray sensitive areas where other methods are not appropriate due to the time of year or site sensitivity.

(c) CST is best avoided:

- During the season of high sap flow
- In moderate to heavy stem densities.

(d) CST is not used:

- In moderate to heavy rains
- In deep snow that prevents hand cutting (see Hand Cutting below)
- In chemical restricted sensitive areas.

LOW VOLUME BASAL TREATMENT: the selective application of an herbicide, diluted in specially formulated oil, to wet the entire lower twelve to eighteen inches of the main stem of target plants. Lowe volume Basal Treatments:

1. Uses a hand pump backpack unit
2. the oil enables the herbicide solution to penetrate the bark tissue and translocate within the plant.

The following guidelines are observed in all Low Volume Basal applications:

11 Low volume basal treatments are extremely selective and used:

11 In areas of low vegetation density
12 In areas where extreme selectivity is necessary
13 Any time of year, including in the dormant season when foliage, grasses and herbaceous plant are not obstructing the main stem.

- Low volume basal treatments are not used:

11.02 During periods of rain, or when stems are wet
11.03 In deep snow that prevents treating the lower twelve to eighteen inches of the main stem
11.04 In chemical restricted sensitive areas.

MECHANICAL METHODS:

Mechanical control methods include mowing, hand cutting and side trimming.

The following guidelines are observed in all mechanical operations:

11 As much as possible, mowing and side trimming take place in the late summer, fall or winter months to minimize ground disturbance and destruction of endangered, threatened or listed nesting bird or turtle habitat.

12 Areas too saturated to support mowing equipment are hand-cut.

13 Tennessee's mowing contractors are expected to repair any rutting and utilize existing access roads whenever possible.

14 Mechanical equipment is expected to be in sound operating condition.

15 All equipment is to arrive on site clean and free of soil and vegetation to reduce the risk of invasive species being carried on site from other locations.

16 Treatment crews will have petroleum spill kits available on site.

17 Mechanical controls are used when conifers exceed six feet in height or are present in wetlands.

18 Mechanical controls are used in no-spray zones or chemical restricted easement areas.

HAND CUTTING: the use of chain and brush saws to remove the stem and/or branches from the plant's root system. Hand cutting is used:

1. To remove hazard trees and incompatible vegetation greater than twelve feet tall during herbicide applications per restrictions in 333 CMR 11.03(5)
2. To protect environmentally sensitive sites
3. Where herbicide use is prohibited.
4. Where terrain, incompatible species size or sensitivity renders mowing impossible or impractical.
5. Hand cutting may be used at any time of the year.

The following guidelines are observed during cutting operations:

- Target plants are cut as close to the ground as practical with stump height that should be no higher than root swell.
- Hand cutting shall generally be the mechanical method targeting plants with greater than six inches DBH (tree diameter at breast height).
- Cut stems are slashed and/or diced:

1. In areas of medium to heavy density targets, slash is either left parallel to the ROW or in windrows no greater than three feet in height along the edge of the ROW corridor.
2. In areas of light density targets with under six inch DBH, slash is diced where it falls so that it lies as close to the ground as practical; the diced slash should not exceed two feet in height.
3. Larger trees are limbed and diced.
4. A 20-foot long fire break is maintained for every 100' of windrow.
5. Slash will not be left in or on waterways, fence lines, stone walls, trails, roads, or in a manner that would permit it to wash into these areas.
6. Slash from yards or recreational sites will be chipped or removed to adjacent areas for disposal.

- The placement of cut brush/slash must comply with applicable State Fire Marshall's regulations.
- All cut cherry is removed from active pastures.
- Chipping is used at sites when dicing or piling are prohibited, impractical or near residences:

1. Wood chips will be removed, or
2. Scattered uniformly over the site at depths not exceeding four inches.

1. Where applicable, FERC *Wetland and Waterbody Construction Mitigation Procedures* restrict hand cutting in areas such as wetland and water body crossings:
    a. Within the twenty-five foot wide riparian strip at water body crossings (from the mean high water mark), all woody vegetation may be removed in a 10 foot corridor centered on the pipeline and up to ten feet wide
    b. Trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the ROW.

MOWING: the cutting, severing, or shattering of vegetation by large rotary or flail mowers. Heavy-duty mowers are typically mounted on large four-wheel drive rubber-tired tractors or tracked vehicles which may weigh several tons each. Mowing may be used at any time of the year except when deep snow precludes operations.

The following guidelines are observed during mowing operations:

1. Stump height must be less than six inches unless required by regulation.
2. Operators must perform daily inspections of hydraulic systems and carry petroleum spill control equipment on the mowing machines.
3. Operators must use designated access to ROW.
4. Mobile equipment shall not intrude into residential lawn areas without landowner permission

1. Mowing is used on sites:
    1. Where herbicide use is prohibited by regulatory or easement restriction(s)
    2. Where large numbers of target stems exceed maximum control heights and density
    3. Where hand cutting is inefficient and expensive
    4. Where short term access is required in impenetrable areas of high density woody vegetation
    5. Where terrain, site size and sensitivity permit the efficient use of the equipment.

1. To reduce the impact to non-target organisms including food, cover and nesting sites for wildlife, Tennessee schedules routine mowing activities after the primary nesting season, which is generally from mid-April to mid-July, except during emergencies or under extenuating circumstances.

2. Hand cutting is used in areas where mowing is restricted by terrain conditions such as steep, rocky sites, wet soils, residential lawn areas, or next to obstructions such as stone walls and fence lines.

1. FERC *Wetland and Waterbody Construction Mitigation Procedure* on asppropriate pipeline certifications may restrict mowing in *sensitive areas* such as wetland and waterbody crossings:

    11 Within the 25 foot wide riparian strip at water body crossings (from the mean high water mark), all woody vegetation may be mowed in a ten foot corridor centered on the pipeline and up to ten feet wide.

    12 Mowing is restricted within wetlands except for a 10 ten foot strip centered over the pipeline.

1. Great care must be exercised to insure the safety of the general public as mowing brush can throw large chips and debris great distances from the cutting equipment which, when appropriate, requires employing someone to prevent people and animals from coming too close to the work site.

SIDE TRIMMING: the trimming or removal of encroaching tops and/or branches of trees growing on or near the ROW which may cause a hazard, hamper access and/or impede visual inspections. This method is useful in maintaining the edge definition of the ROW corridors and provides for easier inspections of vegetation conditions during aerial patrols. It is accomplished by an aerial lift mounted on a street or off-road vehicle, or tree climbing where terrain prevents the passage of equipment. All trimming activities are performed in accordance with appropriate arboriculture practices and in compliance with all applicable regulations to insure the health of the trees.

SECTION 6: SENSITIVE AREA IDENTIFICATION AND PROPOSED CONTROL STRATEGIES

Per 333 CMR 11.02, sensitive areas are "any areas within rights-of-way...in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects." They include, but are not limited to, the following areas:

Water Supplies:

a. Zone I's
b. Zone II's
c. IWPA's (Interim Wellhead Protection Areas)
d. Class A Surface Water Sources
e. Tributaries to a Class A Surface Water Source
f. Class B Drinking Water Intakes
g. Private Wells

Surface Waters:

1. Wetlands
2. Water Over Wetlands
3. The Mean Annual High Water Line of a River
4. The Outer Boundary of a Riverfront Area
5. Certified Vernal Pools

Cultural Sites:

1. Agricultural Areas
2. Inhabited Areas

Wildlife Areas:

1. Certified Vernal Pool Habitat
2. Priority Habitat.

Sensitive areas consist of no-spray areas in which herbicide use is prohibited, limited spray areas, and areas that require special treatment recommendations. Protecting these environmentally sensitive sites is accomplished by establishing limited spray and no-spray areas and treatment restrictions based on the sensitivity of each site and the requirement to minimize any unreasonable adverse impacts within that area (See Table 1).

> Only herbicides specified by the Department as acceptable for use in *sensitive areas* pursuant to the Cooperative Agreement [Memorandum of Understanding] executed between the Department of Agricultural Resources and the Department of Environmental Protection on July 1-2, 1987, or future amendments thereto, shall be used in sensitive areas (333 CMR 11.04(1)(d)).

The herbicides included in the resulting *Herbicides Recommended for Use in Sensitive Areas List* (*Sensitive Area Materials List*) will be applied not only to limited spray areas according to the application restrictions in 333 CMR 11.04 but will be the only herbicides used on Tennessee's Massachusetts

ROWs.[10] A current copy of the *Sensitive Areas Materials List* and Massachusetts Department of Agricultural Resources approved active ingredient fact sheets are available at:

https://www.mass.gov/service-details/rights-of-way-sensitive-area-materials-list

TABLE 1: CONTROL STRATEGIES FOR *SENSITIVE AREAS*

Sensitive Area	No-Spray and Limited Spray Areas (feet)	Control Method	Restriction Code
Public ***Ground*** Water Supplies	400'	Mechanical Only	None
Primary Recharge Area	Designated buffer zone or 1/2 mile radius	Mechanical, Recommended Herbicides*	24 months
Public ***Surface*** Water Supplies (Class A & Class B)	100'	Mechanical Only	None
	100'-400'	Recommended Herbicides	24 months
Tributary to Class A Water Source, within 400' upstream of water source	100'	Mechanical Only	None
	100'-400'	Recommended Herbicides	24 months
Tributary to Class A Water Source, greater than 400' upstream of water source	10'	Mechanical Only	None
	10'-200'	Recommended Herbicides	24 months
Class B Drinking Water Intake, within 400' upstream of intake	100'	Mechanical Only	None
	100'-200'	Recommended Herbicides	24 months
Private Drinking Water Supplies	50'	Mechanical Only	None
	50'-100'	Recommended Herbicides	24 months
Surface Waters	10'	Mechanical Only	None
	10'-100'	Recommended Herbicides	12 months
Rivers	10' from mean annual high water line	Mechanical Only	None
	10'-200'	Recommended Herbicides	12 months
Wetlands	100' (treatment in wetlands permitted up to 10' of standing water)*+	Low-pressure Foliar, CST, Basal Recommended Herbicides	12 months
Inhabited Areas	100'	Recommended Herbicides	12 months
Agricultural Area (Crops, Fruits, Pastures)	100'	Recommended Herbicides	12 months
Certified Vernal Pools	10'	Mechanical Only when water is present	None
Certified Vernal Pool Habitat	10'-outer boundary of habitat	No treatment without written approval per 321 CMR 10.14(12)	
Priority Habitat	No treatment without written approval per 321 CMR 10.14(12)		

Restrictions "24 Months": A minimum of twenty-four months shall elapse between applications
"12 Months": A minimum of twelve months shall elapse between applications
*Massachusetts recommended herbicides for sensitive sites
+Per the *DFA Decision Concerning the Wetlands Impact Study* for utilities per 333 CMR 11.04(4)(c)(2).

[10]Manufactures specimen herbicide labels and fact sheets are included in the YOPs.

IDENTIFICATION OF SENSITIVE AREAS

Sensitive areas can be divided into two additional categories that help identify and treat them: "readily identifiable in the field" and "not readily identifiable in the field." Readily identifiable in the field areas will be treated, identified and when appropriate, marked according to all applicable restrictions listed in 333 CMR 11.00. Not readily identifiable in the field areas will likewise be treated and marked when appropriate, but they are identified using data marked on maps and collected in the YOP and notification processes.

- Sensitive areas usually identifiable in the field, include but are not limited to surface water, some private and public water supplies, wetlands, inhabited and agricultural areas
- Sensitive areas not usually identifiable in the field, including, but are not limited to designated public surface water supplies, public ground water supplies, some private drinking supplies, certified vernal pools and Priority Habitat of State-listed Species.

As appropriate, therefore, sensitive areas will be identified and marked in the field by either Tennessee personnel, trained and experienced vegetation management contractor personnel, and/or by individuals trained in the identification of sensitive areas.

The following resources help in the identification of sensitive areas:

1. Tennessee's pipeline alignment sheets, maps, records, and institutional knowledge.
2. Tennessee permitting documents, including original construction permits.
3. Massachusetts Department of Environmental Protection water supply maps and/or GIS mapping layers available through MassGIS.
4. Correspondence, meetings and input from municipalities within the forty-five day YOP and twenty-one day municipal right-of-way notification letter review and comment periods and the 48 hour newspaper notification (under 333 CMR 11.06 & 11.07 and Chapter 85 of the Acts of 2000).
5. Correspondence and meetings resulting from Tennessee's abutter notification procedure.
6. A point person who verifies identified sensitive areas and any additional areas that may require special precautions.
7. USGS topographical maps.
8. Information from contractor's knowledge and records.
9. Confidential information from NHESP.
10. A copy of the YOP and VMP.
11. Treatment crew(s) are required to have the following references on the job site to help identify sensitive areas:
    1. Topographical maps (electronic or paper)
    2. Copy of YOP
    3. Any additional information that may become available.

CONTROL STRATEGIES FOR SENSITIVE AREAS:

Mandated sensitive areas will be treated following the restrictions in applicable state and federal regulations. Because Tennessee only uses herbicides from the *Sensitive Areas Materials List* on their entire ROW system in Massachusetts, treatments in "limited spray areas" will follow all operational guidelines and restrictions listed above in Section 5: "Intended Vegetation Management Methods." Treatments in no-spray areas will likewise follow these operational guidelines as well as the guidelines described below and in Table 1.

Wetlands

Pursuant to 333 CMR 11.04 (4) (c) (2), based upon the results of two ROW wetland impact studies, the Massachusetts Department of Agricultural Resources in consultation with the Department of Environmental Protection and the VMP Advisory Panel, made a determination that herbicides, when used at various utilities including gas pipelines, under the guidance of an IVM program and other conditions as set forth in the determination, have less impact on wetlands than mechanical only techniques. Therefore in accordance with the conditions of the Department's determination, Tennessee will selectively apply herbicides to wetland sites, except within ten feet of standing and flowing water and to conifers (Appendix 5).

Public and Private Water Supplies

Appropriate sources and references will be consulted to determine the location of public and private water supplies. Tennessee's YOP maps will include all known public and private water supplies at the time of printing using the sources listed above, and the mapping information used by contract treatment crews will be updated as necessary during the treatment cycle:

1. To aid in the public and private water supply identification process, under 333 CMR 11.01(3), Tennessee requests that during the notification processes under 333 CMR 11.06-11.07 and during the treatment cycle, that public and municipal agencies share information on new or unidentified public and private water supplies.
2. Identified private drinking supplies within one hundred feet of a ROW are included in our permanent records and maps, and landowners are encouraged to post signs on the edge of the ROW to help identify private water supplies (the no-spray treatment area is fifty feet from a private well).
3. A point person will patrol the ROW to verify sensitive areas and buffers.

Massachusetts Endangered Species Act

Tennessee recognizes the importance of the Massachusetts Endangered Species Act, M.G.L.C. 131 A, and its significance to ROW vegetation management. Tennessee will comply with all applicable portions of this Act and the regulations promulgated thereunder. Tennessee will also follow the rules and prohibitions directed at human activities which Take Species or alter their Significant Habitat (as of this printing there are no designated Significant Habitat in Massachusetts).

321 CMR 10.14, Massachusetts Endangered Species Act Regulations, Part II Exemptions and 333 CMR 11.04(3)(a-c) exempts utility ROW vegetation management from the permit process under the following condition:

> …within existing utility rights-of-way provided that the management is carried out in accordance with a vegetation management plan approved in writing by the Division prior to the commencement of work for which a review fee shall be charged, the amount of which shall be determined by the commissioner of administration under the provisions of M.G.L. c.7, § 3B…

To comply with this exemption, Tennessee will submit this VMP and YOPs to the NHESP.

The NHESP has delineated areas as Priority Habitat based on the "Best Scientific Evidence Available" to protect State-listed species from a "take." Under the approval process, details about the Priority Habitat of state-listed species that might be affected by our activities and management recommendations are shared with Tennessee under strict confidentiality agreements. Using this data and best management practices, Tennessee and contract personnel will follow the appropriate vegetation management treatment methods within these sensitive areas taking all practical means and measures to modify ROW vegetation management procedures to avoid damage to state-listed species and their habitat.

To identify Priority Habitats, Tennessee personnel, NHESP approved review botanists and vegetation management crews must use proper identification procedures. Contractors are, therefore, required to train their personnel to recognize the location of Priority Habitats using one of the following tools: paper maps, GPS coordinates and/or GIS systems.

SECTION 7: OPERATIONAL GUIDELINES FOR APPLICATORS

Tennessee relies on independent contractors for vegetation management applications and requires, in a contractual agreement, that they comply with all applicable federal and state laws and regulations. In addition to those listed in the "Introduction" and elsewhere above, this includes, but is not limited to applicable OSHA, FIFRA and DOT regulations.

- Both the contractor and Tennessee are responsible to ensure vegetation management activities are conducted in a professional, safe, efficient manner, with special attention directed towards minimal environmental impact.
- Tennessee's representative responsible for monitoring, supervising, and coordinating vegetation management programs will be identified in the YOPs depending upon the district being treated.
- The contractor must provide qualified, state licensed and certified personnel to apply herbicides to Tennessee's ROW. "Qualified" should be interpreted to mean those personnel who have been trained to recognize and identify incompatible and compatible vegetation and to be knowledgeable in the safe and proper use of both mechanical and chemical vegetation management techniques.
- Vegetation management crews will exercise care to ensure non-target organisms are not unreasonably affected.
- Herbicides are only applied in a safe and judicious manner, in compliance with applicable federal and state pesticides regulations.
- Herbicides are to be handled and applied only in accordance with the label.
- Contractors will strictly adhere to all mandated safety precautions directed towards the public, the applicator, and the environment.
- Herbicide applicators will wear all personal protection equipment prescribed by the label.
- Applicators will at all times exercise good judgment and common sense and will immediately cease the operation if adverse conditions or other circumstances warrant.
- The contractors' foreman or senior member of the crew must complete daily vegetation management reports:
    - Date, name, and address of vegetation management contractor[s]
    - Identification of site or work area
    - List of crew members and pesticide license numbers
    - Type of equipment and hours used
    - Method of application
    - Target vegetation
    - Amount, concentration, product name of herbicide(s), adjuvants, and dilutants with applicable EPA registration numbers
    - Weather conditions
    - Notation of any unusual conditions or incidents, including inquiries from the public.

1. All equipment must be maintained in good working condition and should be of adequate design and functionality to produce the professional quality of work that Tennessee requires.[11]
2. All vehicles shall be equipped with absorbent material or pads in the event of a spill.
3. Landowners, abutters, and other concerned individuals will always be treated with courtesy and respect.
4. Permission must be obtained if entering the ROW from private land and precaution and common sense shall be exercised when moving vehicles and equipment.
5. All bar-ways and gates shall be immediately closed, and care exercised to prevent the rutting or destruction of roadways or any other form of access.
6. When addressing inquiries or complaints from a landowner, or other concerned person, the foreman of the ROW crew will explain the program in a polite and professional manner:

1. If a landowner demands that vegetation maintenance cease, the foreman should remove the crew and equipment off the property.
2. The Tennessee representative should be contacted as soon as possible and advised of the situation.
3. The crew will not return to that location until given clearance by Tennessee.
4. Treatment crews will not leave litter of any kind on the ROW or adjoining land.

[11]Because Tennessee recognizes the vast variety and performance of herbicide application equipment, Tennessee will not dictate how that equipment should be calibrated to deliver precise amounts of herbicide to effectively control a host of vegetation conditions. Tennessee, therefore, insists that the contractor, who must be duly licensed or certified for herbicide applications, provide the most appropriate application equipment, calibrated to effectively control target vegetation.

SECTION 8: ALTERNATIVE LAND USE PROVISIONS

Tennessee's notification policy includes sending an informational letter to all abutters and landowners explaining the vegetation management program and its rationale. The purpose of this notification letter is to open a line of inquiry and dialogue between Tennessee and landowners. If during this discussion, individuals make reasonable requests regarding treatments on their property, Tennessee will do whatever is within its power to comply with these requests, while staying in compliance with all applicable federal and state regulations.

SECTION 9: REMEDIAL SPILL AND EMERGENCY PLAN

This section is offered as a general procedural guide for responding to chemical spills or related accidents (related accidents include but are not limited to fire, poisoning and vehicle accidents). The following is, therefore, a guide to the items that will be available to the applicator on site in the event of a chemical spill or emergency.

Although education and attention will constantly be directed at accident and spill prevention, in the event of a spill, immediate action will be taken to contain the spill and protect the spill area. Until clean, the spill area will be protected by placing barriers, flagging or crew members at strategic locations, as appropriate. If a fire is involved, care will be taken to avoid breathing fumes from any burning chemicals.

Minor spills will be remedied by soaking up the spill with adsorption clay or other adsorptive material and placed in leak proof containers, removed from the site and disposed of properly. Dry herbicides will be swept up or shoveled up directly into leak proof containers for proper disposal. When applicable, all contaminated soil will be placed in leak proof containers, removed from the site and disposed of properly. When applicable, activated charcoal will be incorporated into the soil at the spill location at a rate of several pounds per thousand square feet to inactivate any herbicide residue. Reportable spills will be reported to the appropriate agencies below.

The Massachusetts Department of Environmental Protection will be contacted when there is a spill of a reportable quantity, regardless of major or minor spill status and in accordance with 310 CMR 40.0000, Massachusetts Contingency Plan.

Types of Chemical Spills that Require Action

Chemicals include, but are not limited to the following:

1. Herbicides
2. Diesel Fuel
3. Bar and Chain Oil
4. Gasoline
5. Motor and Hydraulic Oil/Fluids
6. Title 3 Hazmat Materials

Required Spill Response Equipment

As a minimum, the treatment crew will have available on the job site:

1. YOP with Emergency Contact List
2. Shovel
3. PPE (Personal Protective Equipment) per Product Label
4. Broom
5. SDS (Safety Data Sheet)
6. Flagging
7. Product Label
8. Leak Proof Container
9. Product Fact Sheets (when applicable)
10. Heavy-duty Plastic Bags
11. Appropriate adsorbent material

Personal Contact

In the event of **Personal Contact** with hazardous chemicals:

1. Wash affected area with plenty of soap and water
2. Change clothing which has absorbed hazardous chemicals
3. If necessary, contact a physician
4. If necessary, contact the proper emergency services
5. If necessary, follow the procedures for Major or Minor Spills
6. Avoid breathing the fumes of hazardous chemicals.

Reference Tables (information subject to change as necessary)

Table 2: Herbicide Manufacturers

MANUFACTURER	TELEPHONE NUMBER	SPECIAL INSTRUCTIONS
Albaugh Inc.	(800) 247-8013	
BASF Corporation	(800) 832-4357	
Bayer Environmental Science	(800) 334-7577	
Dow Agro Sciences	(800) 992-5994	
Corteva AgriScience	(800)-992-5994	
Nufarm	(877) 325-1840	Medical Emergencies

Table 3: State Agencies

STATE AGENCY	TELEPHONE NUMBER	SPECIAL INSTRUCTIONS
Massachusetts Department of Agricultural Resources (MDAR), Pesticide Program	(617) 626-1700	A.S.A.P. (within 48 hours)
Massachusetts Department of Environmental Protection (DEP), Emergency Response Section	DEP 24 Hour Contact: (888) 304-1133 Southeast Region: (508) 946-2700 Northeast Region: (978) 694-3200 Central Region: (508) 792-7650 Western Region: (413) 784-1100	For emergencies involving reportable quantities of hazardous materials. Required info: City, street address, site name (if applicable), material
Massachusetts Deptartment of Public Health, Bureau of Env. Health Assessment Toxicology Program	(617) 624-5757	
Massachusetts Poison Information Centers	800-682-9211	For medical emergencies involving suspected or known pesticide poisoning symptoms

Table 4: Emergency Services

EMERGENCY SERVICE	TELEPHONE NUMBER	SPECIAL INSTRUCTIONS
Police/Fire Department	911	
ChemTrec	(800) 424-9300	
Clean Harbors	(800) OIL-TANK	
Pesticide Hotline	(800) 858-7378	PST: 6:30 am-4:30 pm, web: www.NPIC.orst.edu

Table 5: Tennessee's contacts in the case of a spill or accident will be listed in the YOP

REPORTABLE SPILLS
(Spills of reportable quantity of material per CMR 310 40.0000)**:**
FOLLOW STEPS 1-11

NON-REPORTABLE SPILLS:
FOLLOW STEPS 1-4, 7-11 as appropriate & contact the Great River Hydro representative.

Table VII: Herbicide Spill Check List

REPORTABLE SPILLS (Spills of reportable quantity of material): FOLLOW STEPS 1-11
NON-REPORTABLE SPILLS: FOLLOW STEPS 1-4, 7-11 as appropriate & contact the Great River Hydro representative.

Order	ACTION		Done (√)
1	Use Personal Protective Equipment (PPE) as directed by product label or Safety Data Sheet (SDS)		
2	Cordon-off spill area to unauthorized people & traffic to reduce the spread and exposure to the spill		
3	Identify source of spill and apply corrective action, if possible, stop or limit any additional amounts of spilled product.		
4	Contain spill and confine the spread by damming or diking with soil, clay, or other absorbent materials.		
5	Report spills of "reportable quantity" to the Mass. DEP and MDAR:		
	MDAR Pesticide Program	(617) 626-1700	
	Massachusetts Department of Environmental Protection, Emergency Response Section	1-888-304-1133 [Fill in appropriate district, contact info]	
6	If the spill cannot be contained or cleaned-up properly, or if there is a threat of contamination to any bodies of water, immediately contact any of the following applicable emergency response personnel:		
	local fire, police, rescue	911	
	Tennessee Representative:	In YOP	
	Product manufacturer(s) 1 2 3	1	
	Product manufacturer(s) 1 2 3 Chemtrec	2 3 (800) 424-9300	
	additional emergency personnel:		
	Remain at the scene to provide information and assistance to responding emergency clean-up crews		
7	Remain at the scene to provide information and assistance to responding emergency clean-up crews		
8	Refer to the various sources of information relative to handling and cleanup of spilled product		
9	If possible, complete the process of “soaking up” with appropriate absorbent materials		
10	Sweep or shovel contaminated products and soil into leak proof containers for proper disposal at approved location		
11	Spread activated charcoal over spill area to inactivate any residual herbicide		

SECTION 10: QUALIFICATIONS OF THE INDIVIDUAL DEVELOPING THE VMP

Wendy L. Priestley, Ph.D.
Co-CEO, Vegetation Management Consultant
Vegetation Control Service, Inc.
2342 Main Street
Athol, Massachusetts 01331

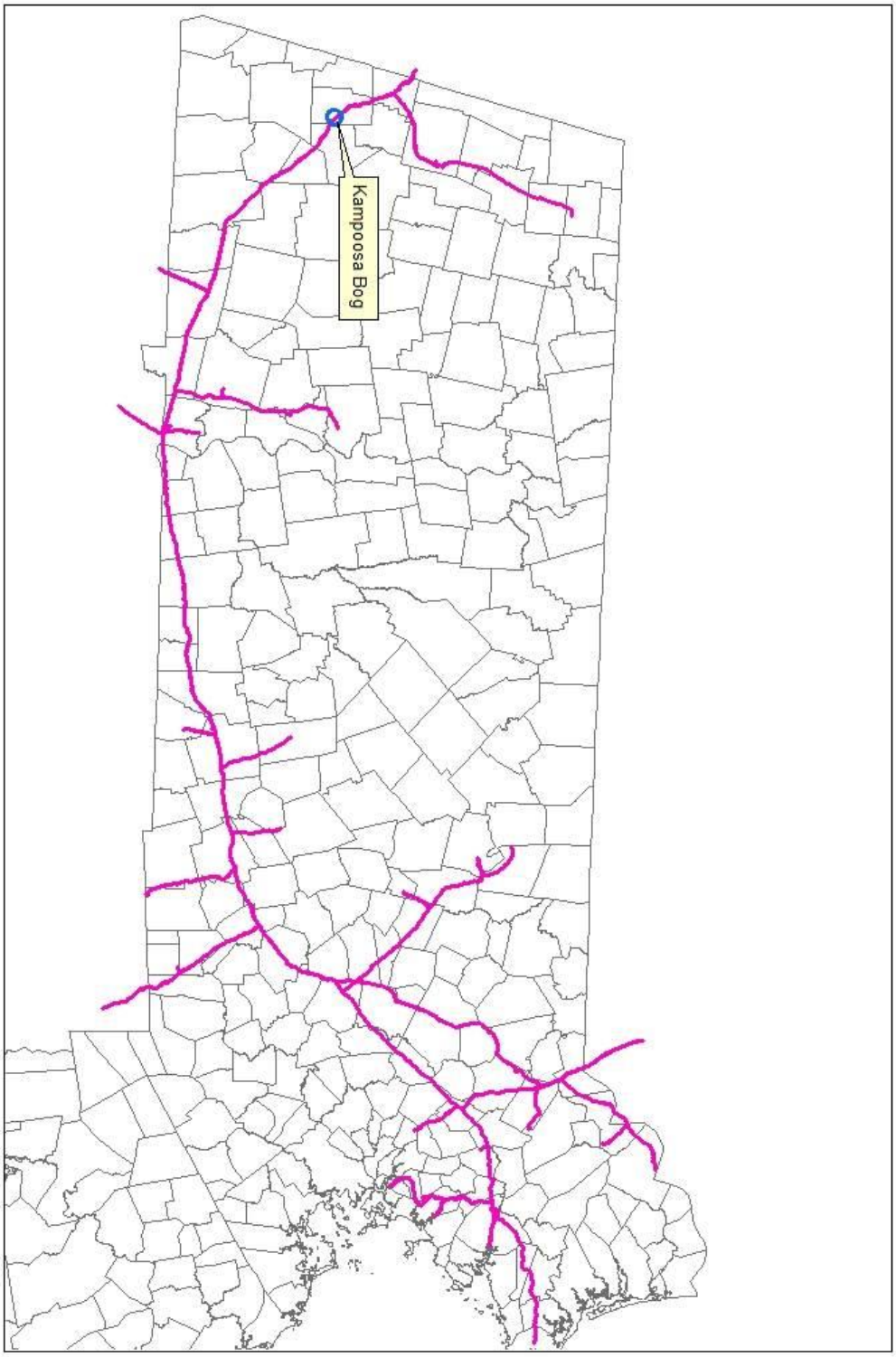
Dr. Priestley's qualifications extend from her education to work experience in the field of herbicide application, crew management and VMP consulting:

Dr. Priestley holds a Ph.D. in American Civilization from The George Washington University, Washington, DC. In this capacity her research, analytical and organizational skill have aided her efforts in writing Vegetation Management Plans.

She has worked both part time and full time since 1985 for Vegetation Control Service, Inc., a consulting and service company that provides vegetation management programs for utilities, government agencies, municipalities, private business and landowners throughout New England. In this capacity, she is a certified pesticide applicator, and her experience includes both field and administrative experience in rights-of-way and industrial weed control programs. Since 1985, she has written or co-authored many Vegetation Management Plans and permits for utilities and municipalities both in Massachusetts and throughout New England. She has assisted the national IVM Stewardship Council with editing their accreditation standards and the current ANSI IVM standards.

APPENDIX 1:
SYSTEM MAP & MUNICIPALITIES

Tennessee Gas Massachusetts Pipelines



Locations of Tennessee Gas Pipeline Rights-of-Way

MASSACHUSETTS MUNICIPALITIES			
Acton	East Longmeadow	Lunenburg	Saugus
Adams	Easthampton	Lynn	Southampton
Agawam	Essex	Lynnfield	Southborough
Andover	Everett	Malden	Southbridge
Arlington	Fitchburg	Marlborough	Southwick
Ashland	Framingham	Maynard	Spencer
Auburn	Gloucester	Medford	Springfield
Hansom AF Base	Grafton	Melrose	Stockbridge
Bedford	Granville	Mendon	Sturbridge
Bellingham	Hamilton	Methuen	Sudbury
Billerica	Hampden	Millbury	Sutton
Blackstone	Haverhill	Monson	Tewksbury
Bolton	Holland	North Adams	Tolland
Brimfield	Holyoke	North Reading	Upton
Brookfield	Hopedale	Northampton	Uxbridge
Burlington	Hopkinton	Northbridge	Wales
Carlisle	Hudson	Otis	Wayland
Charlton	Lancaster	Oxford	Wenham
Chelmsford	Lanesborough	Palmer	Westfield
Cheshire	Lawrence	Peabody	Westford
Clinton	Lee	Pittsfield	Weston
Concord	Leominster	Reading	Wilbraham
Danvers	Lexington	Revere	Wilmington
Devens	Lincoln	Richmond	Winchester
Douglas	Longmeadow	Salem	Woburn
Dracut	Lowell	Sandisfield	Worcester

APPENDIX 2:
333 CMR 11.00

https://www.mass.gov/regulations/333-CMR-11-rights-of-way-management

APPENDIX 3:
Chapter 132B

https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter132B

APPENDIX 4:
CHAPTER 85 of the ACTS OF 2000

CHAPTER 85 OF THE ACTS OF 2000

SECTION 10.

Said chapter 132B is hereby further amended by striking out section 6B, as appearing in the 1998 Official Edition, and inserting in place thereof the following section:

Section 6B.

c. No gas, electric, telephone or other utility company licensed to do business in the commonwealth, nor any agency of the commonwealth or any of its political subdivisions, nor any authority, as defined in section 39 of chapter 3, nor any private entity or their agent, shall spray, release, deposit or apply any pesticide to any land which it owns, or as to which it holds an easement or similar right and over which it maintains power, high tension or other lines, or to any roadway, railway, or other transportation layout, without first notifying the department and, by registered mail, the mayor, city manager or chair of the board of selectmen and the conservation commission in the city or town where such application is to occur 21 days before such spraying, release, deposit or application, and without first publishing conspicuous notice in at least one newspaper of general circulation in each city or town where such land lies at least 48 hours prior to such spraying, release, deposit or application. Such notice shall appear in the local section of the newspaper and measure at least four by five inches in size. The published notice shall include: the method and locations of pesticide spraying, release, deposit or application; the approximate dates on which spraying, release, deposit or application shall commence and conclude, but such spraying, release, deposit or application shall not commence more than ten days before nor conclude more than ten days after such approximate dates; a list of potential pesticides to be used; a description of the purpose of the spraying, release, deposit or application; and the name, title, business address and phone number of a designated contact person from whom any citizen may request further information.

d. The notice to the city or town where the affected land lies shall contain the following information: the method and locations of pesticide spraying, release, deposit or application; the approximate dates on which such spraying, release, deposit or application shall commence and conclude, but such spraying, release, deposit or application shall not commence more than ten days before nor conclude more than ten days after such approximate dates; the type of pesticide to be used and a copy of all information supplied by the manufacturers thereof relative to the pesticide; a department-approved fact sheet and United States Environmental Protection Agency registration number for each pesticide; the name, title, business address and phone number of the certified commercial applicator, certified private applicator or licensed applicator, or the contractor, employers or employees responsible for carrying out the pesticide spraying, release, deposit or application.

e. Notwithstanding any other provision of law, all agencies of the commonwealth and all authorities, as defined in section 39 of chapter 3, shall develop policies to eliminate or, if necessary, reduce the use of pesticides for any vegetation management purpose along any roadway.

f. Any employee of any state agency, or authority, as defined in section 39 of chapter 3, when spraying, releasing, depositing or applying pesticides, supervising the use of pesticides, or when present during the spraying, release, deposit or application of pesticides, shall be provided with personal protection equipment and clothing in conformance with all federal and state laws and regulations pertaining to pesticide applications. This shall include, but not necessarily be limited to, protections according to Material Safety Data Sheets (MSDS), the product label, and any other supportive technical data provided by the manufacturer.

APPENDIX 5:
DEPARTMENT OF FOOD AND AGRICULTURE WETLAND DECISION

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF FOOD AND AGRICULTURE
100 CAMBRIDGE ST., BOSTON, MA 02202 617-727-3000 FAX 727-7235

WILLIAM F. WELD
Governor

ARGEO PAUL CELLUCCI
Lt. Governor

TRUDY COXE
Secretary

JONATHAN L. HEALY
Commissioner

Decision Concerning
The Wetland Impact Study Conducted
Pursuant to 333 CMR 11.04(4)(c)(2)

PUBLIC UTILITY VEGETATION MANAGEMENT PROGRAM FINDING

Background

The Rights of Way Management (ROW) Regulations (333 CMR 11:00) promulgated in 1987 prohibit the use of herbicides to control vegetation along utility right of ways on or within ten (10) feet of a wetland unless the following conditions are met:

1. Submission of a study, the design of which is subject to prior review and approval of the Departments of Food and Agriculture and Environmental Protection, evaluating impacts of proposed vegetation management programs on wetlands; and
2. A finding by the Department, after consultation with the Advisory Committee, that the proposed vegetation management program will result in less impacts to the wetland than mechanical control.
3. Notwithstanding the above, no herbicides shall be applied on or within ten feet of any standing or flowing water in a wetland.

On April 28, 1988, The Departments of Food and Agriculture and Environmental Protection approved the scope of the study. In the fall of 1989, Environmental Consultants, Inc. submitted to the Department of Food and Agriculture the study entitled, "Study of the Impacts of Vegetation Management Techniques on Wetlands for Utility Rights-of Way in the Commonwealth of Massachusetts", dated June 1989. The Department consulted with the Vegetation Management Plan (VMP) Advisory panel at their November 15, 1989, December 7, 1989 and August 1, 1991 meetings.

The study provided some broad information of vegetation control along utility right of ways. The Department based its finding solely upon the narrow scope of whether the "proposed vegetation management program will result in less impacts to the wetland than mechanical control."

The following are the major evaluation points the Department considered in reaching its decision.

What are the Long-term and Short-term Impacts From Herbicide use and Mechanical Control?

Since wetlands are not a static, unchanging resource, there is some difficulty in determining the actual long-term impacts from the various vegetation control practices. The extent of wetland alterations must be the most important factor in determining impacts. With limited or selective removal of unwanted plant species in specific locations, it appears that long-term impacts are negligible. While mowing or foliar application can damage non-target species, neither control practice appears to result in adverse long-term impacts if they are carefully executed. Clear cutting, however, has a greater impact on wetlands since both wanted and nuisance species are removed.

Although there were some reservations about the sites that were chosen to determine the level of chemical residues, the study did show that there was not a buildup of background residues of herbicides applied from previous practices. However, there were some trace amounts of petroleum products - bar oil or hydraulic fluid found. The source of these petroleum products is unclear and may have been the result of public activities not related to vegetation management. Retrospective analyses for herbicide residues in previously treated wetland areas is not generally applicable since the herbicides used today are less persistent than those which were used previously. However, these analyses did indicate that the herbicides used in the past do not persist in the environment.

The study clearly demonstrated that adjacent non-controlled wetland areas did not differ significantly in composition and abundance of plant species from the controlled areas. The control practices did not appear to impact the entire wetland ecosystem, since a long-term comparison of wetland plant species composition between controlled and non-controlled sites did not differ significantly. Therefore, the long-term effects on the entire wetland ecosystem were considered negligible.

The determination of the short-term impacts to the wetland from the control practices was the most noted short-coming of the study. However, this was not part of the original scope. The VMP Advisory Panel felt, and the Department agreed, that a short-term environmental fate study would be needed.

The first study indicated that certain mechanical control practices can impact wetlands and disrupt the ecosystem to a greater extent than the judicious use of herbicides. While cutting may result in re sprouting of some unwanted vegetation in a manner unlikely to be encountered in unaltered wetland areas, unregulated mechanical vegetation control could result in the destruction of other non-target plant species.

What is the Impact to Non-target Wetland Plant Communities?

Basal and cut stump treatment with low mobility, short persistence herbicides that are judiciously applied usually do not impact adjacent plant species. Likewise careful selective mechanical cutting (versus mowing or clear cutting) also usually does not impact non-target wetland plants. The greatest potential risk to non-target wetland plants comes from mowing, clear-cutting, and high volume foliar applications. Low volume foliar applications in wetlands may also cause non-target impacts if application guidelines are not followed (e.g. no applications during high winds, or without using anti-drift agents, etc.).

Is There Enough Information on Which to Base a Finding?

As in most environmental assessments, a complete database is not available to answer all of the questions posed by the Department and the Vegetation Management Advisory Panel. Some of the questions posed were entirely valid, but were beyond the scope of the approved study.

The study did provide some clear evidence that selective mechanical and herbicide use does minimally alter wetlands by removing specific plant species. Mechanical mowing operations, however, can result in far greater short-term and potentially long-term impacts to wetlands since both wanted and un-wanted plant species are indiscriminately removed. Additionally, foliar herbicide applications may cause short-term impacts to non-target species.

The Department did not find any significant difference in wetland impacts between careful mechanical removal (selective hand cutting) of unwanted species

and, cut stump or basal treatment with herbicides.

There is no assurance that prohibiting the use of herbicides in wetlands will result in careful mechanical control. If herbicide use is prohibited in wetland areas, mechanical control in wetlands will be the only practice available to utilities. Financial pressures and other considerations may force Utilities to increase mowing and / or the use of more destructive non-chemical control practices due to a lack of alternative control techniques.

On August 29, 1991, the Department made a finding that the submitted study met the approved scope. However, although the study contained useful information, it was also determined that additional data needed to be gathered and analyzed because the study was inconclusive in a number of instances.

The Department issued a finding that a proposed vegetation program containing the specific elements listed does not pose an unreasonable adverse impact to wetlands. In addition, the Department required a study be conducted to provide important environmental fate data necessary for the long-term implementation of the rights of way program.

AUGUST 1991 FINDING

The Department of Food and Agriculture finds that a proposed vegetation program containing the following elements will not pose an unreasonable adverse impact to wetlands:

1. *The Integrated pest Management (IPM) system, as described in the Vegetation Management Plan and Yearly Operation Plan, is utilized in wetland areas. The IPM system must, at a minimum, place emphasis on encouraging low growth plant species to discourage unwanted vegetation and, minimizing the frequency and amount of herbicide use by only controlling specific non-conifer tree species which will impact transmission line operation and access to the right of way.*

2. *Herbicides may be applied by basal, cut stump or low volume foliar methods. Foliar applications must include the use of drift reduction agents. Foliar applications may only be conducted in situations where basal and cut stump treatments are not appropriate based on the size of the vegetation and potential for off-target drift. Foliar applications must not result*

in the off-target drift to non-target species.

3. *Herbicides are not applied to conifer species (pine, spruce, fir, cedar and hemlock).*

4. *Carriers for herbicides do not contain any of the following petroleum based products: jet fuel, kerosene or fuel oil. Carriers will be subjected to review by the Department of Food and Agriculture and DEP through 333 CMR 11.04(1)(d).*

5. *Herbicides must be recommended by the Department of Food and Agriculture and DEP through 333 CMR 11.04(1)(d).*

6. *Herbicides may only be applied by hand operated equipment containing no more than 5 gallons of diluent.*

7. *All other restrictions within sensitive areas remain in effect. In accordance with 333 CMR 11.04(1)(c), no person shall apply herbicides for the purposes of clearing or maintaining a right-of-way in such a manner that results in drift to any areas within 10 feet of standing or flowing water in a wetland or area within 400 feet of a public drinking water supply well; or area within 100 feet of any surface water used as a public water supply; or area within 50 feet of a private drinking water supply identified under 333 CMR 11.04(2)(c)(3).*

8. *Approved Vegetation Management Plans and Yearly Operation Plans must be amended as needed to reflect the conditions of this FINDING.*

9. *The Department further requires that environmental fate data be provided by the utilities that are applying herbicides to rights-of-way, which characterizes the movement of herbicides applied to wetland areas under these conditions. The Department further requires that all study protocols be reviewed by the Vegetation Advisory Panel and be approved by the Department of Food and Agriculture and the Department of Environmental Protection. Failure to submit the required information by the dates outlined in the schedule below will render this finding void.*

An approvable scope of the study developed and

submitted by January 1, 1992.

Field data submitted to DFA by October 1, 1992. Data must be consistent with the requirements of the approved scope.

Draft study report submitted to DFA by October 1, 1993.

Final Report submitted to DFA by March 1, 1994.

10. *The Department reserves the right to amend or withdraw its FINDING at anytime if it determines that the use of herbicides in wetland areas poses a greater impact than mechanical control or may pose an unreasonable adverse effect to humans or the environment.*

11. *This finding expires December 31, 1994.*

Therefore, herbicide use may be allowed to control certain vegetation along utility right of ways if the proposed vegetation program as described in the approved Vegetation Management Plan and Yearly Operational Plans contains the above elements.

On, April 27, 1992, the Departments of Food and Agriculture and Environmental Protection approved the scope of the *"Study of Fates of Herbicides in Wetlands on Electric Utility Rights of Way in the Massachusetts Over the Short Term"*. The final report was submitted to the Department of Food and Agriculture December 31, 1993. The Department began reviewing the report in consultation with the VMP Advisory panel.

At the end of 1994, the Department had not completed its review. Therefore, on December 22, 1994 the Department extended the current finding for one year (to December 31, 1995) or until such time it is able to make a final determination, whichever occurs first.

Fates of Herbicides Over the Short Term Study

The objective of this study was to determine the short term environmental fate and assess the impacts of selected herbicides applied by four common Right-of-Way management techniques. Additionally, the study evaluated which of the four Right-of-Way management techniques provides the most effective control of target vegetation and which techniques produced the least impact on the non-target plant community, and consequently the least alteration of wooded wetland community.

The study investigated the environmental fate of two herbicides, which are typically used to control vegetation on ROWs, and are included in the list recommended for use in sensitive areas. These herbicides were chosen, among other reasons, for their use patterns, size of area treated, and application rates. Accord, which contains the active ingredient glyphosate, is the primary herbicide used for cut stump treatment and is also used for foliar application. Garlon 4, which contains the active ingredient triclopyr, is the primary herbicide used for basal applications. Collectively these products represent the typical herbicides used to control vegetation on ROWs.

Results

A summary of the most important findings and conclusions of the study include:

* Based upon the samples collected immediately after application, at 1 week, 1 month, 3 months and 1 year:

  - The two herbicides, glyphosate and triclopyr degrade rapidly. Residues reach low quantities quickly, often less than detection limits, within a year.; and
  - There is essentially no movement either laterally or vertically from the treated sites by glyphosate. Triclopyr does not move laterally, but was noted to move vertically in small amounts.

* Drift cards indicate that the herbicides are neither splashed nor carried any distance by the wind. Glyphosate drift is not a significant problem resulting in slight effects on neighboring vegetation and are not detectable in the next year's growth. Sphagnum moss next to trunks treated basally with triclopyr were killed within three months in a 15 cm diameter circle immediately around the target tree, but the dead circle did not continue to enlarge.

* Filter paper recovered immediately after application of herbicide showed that all methods of application deposit herbicide on the ground. Treated bare soil samples showed as consistent a drop in herbicide concentrations and as little vertical movement as did samples beneath target trees.

* The use of the herbicides glyphosate and triclopyr at the strengths and application rates used does not pose a risk of accumulation in organically rich soils.

* Herbicide concentrations in soil continue to decline as time advances.

* Rainfall occurring more than a week after application does not appear to spread the herbicide nor does groundwater carry any substantial fraction of what has been applied to a particular site down into the soil or horizontally.

* Based upon the results of the study, an assessment of the environmental fate, and observations of both treatment effectiveness and non-target impacts, an effective and environmentally sensitive ranking from most effective and posing least potential environmental risks to least effective and posing the most environmental risk is suggested:

1. Most effective control and exclusive effect on target:
   low-volume foliar (with glyphosate).

2. Most consistent control with lethal effects on bordering vegetation:
   high-volume foliar (with glyphosate)

3. Total control with rings of dead vegetation around treated trunks:
   low-volume basal (with triclopyr)

4. Incomplete target control and leaving largest soil residues:
   cut-stump (with glyphosate)

It is important to note that the results of the second short term study suggest that the most efficacious application techniques and which pose the lowest environmental risk were not those recommended in the interim finding.

DEPARTMENT DETERMINATION

Based upon the results of the two ROW impact studies, the general information in the literature, and after consultations with the Vegetation Management Panel, the Department finds that the following proposed vegetation management program will result in less impacts to wetlands than exclusive use of mechanical control methods. Therefore, the Department finds that any vegetation management program that incorporates the conditions under which the study was conducted as well as taking into account the results of previous studies, will result in the least impacts to wetlands.

These conditions include:

1. An Integrated Pest Management (IPM) system, also known as Integrated Vegetation Management (IVM), as described in the Vegetation Management Plan and Yearly Operation Plan is utilized in wetland areas. The IPM system must, at a minimum, place emphasis on encouraging low growth plant species to discourage unwanted vegetation and, minimizing the frequency and amount of herbicide use by only controlling specific non-conifer tree species which will impact transmission line operation and access to the right of way.

2. Herbicides may be applied by low volume foliar, basal, or cut stump methods. Foliar applications must include the use of appropriate drift reduction agents, and must not result in the off-target drift to non-target species. Basal and cut-stump treatments may be conducted in those situations where the size of the vegetation, potential for off-target drift, or other considerations precludes the use of low-volume foliar applications. Cut stump and basal applications shall be restricted, when practicable, to periods when static ground water levels are low or otherwise when conditions are less susceptible to potential contamination.

3. Herbicides are not applied to conifer species (pine, spruce, fir, cedar and hemlock).

4. Carriers for herbicides do not contain any of the following petroleum based products: jet fuel, kerosene or fuel oil. Carriers will be subjected to review by the Department of Food and Agriculture and DEP through 333 CMR 11.04(1)(d).

5. Only herbicides recommended by the Departments of Food and Agriculture and Environmental Protection through 333 CMR 11.04(1)(d) may be used in sensitive areas.

6. Herbicides may only be applied by hand operated equipment containing no more than 5 gallons of diluent.

7. All other restrictions within sensitive areas remain in effect. In accordance with 333 CMR 11.04(1)(c), no person shall apply herbicides for the purposes of clearing or maintaining a right-of-way in such a manner that results in drift to any areas within 10 feet of standing or flowing water in a wetland or area within 400 feet of a public drinking water supply well; or area within 100 feet of any surface water used as a public water supply; or area within 50 feet of a private drinking water supply identified under 333 CMR 11.04(2)(c)(3).

8. A minimum of twelve months must elapse between herbicide treatments. Only touch-up applications may be performed between twelve and twenty four months.

9. Approved Vegetation Management Plans and Yearly Operation Plans must be amended as needed to reflect the conditions of this determination.

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Therefore, herbicide use may be allowed to control certain vegetation along utility right of ways if the proposed vegetation program as described in the approved Vegetation Management Plan and Yearly Operational Plans contains the above elements.

Jonathan Healy, Commissioner

10/12/95
Date

APPENDIX 6:
PREFACE to CMR 10.00

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION PREFACE TO WETLANDS REGULATIONS RELATIVE TO RIGHTS OF WAY MANAGEMENT 1987 REGULATORY REVISION

In 1983, the Massachusetts Pesticide Control Act, M.G.L. c. 132B, was amended to require notification of conservation commissions prior to application of herbicides on rights of way. Many commissions became aware for the first time that application of herbicides on rights of way may result in alteration of wetlands and, with the exception of exempt utilities, may require action under the
M.G.L. c. 131, § 40. On July 18, 1986, the Department issued a final decision after adjudicatory hearing in DEP Hearing Docket Nos. 83-28 and 83-35 (Clinton and Leverett) finding that the application of specific herbicides by the railroads to track and ballastwithin100 feet of wetland areas would alter those wetlands and was therefore subject to jurisdiction under M.G.L. c. 131, § 40, requiring the filing of Notices of Intent with the local conservation commissions.

The Department of Food and Agriculture (DFA) initiated a Generic Environmental Impact Report (GEIR) evaluating alternatives for rights of way management. A technical advisory task force of environmentalists, agencies and rights of way managers assisted in the GEIR preparation and, based on results of the study, recommended to the Secretary of Environmental Affairs a framework for a coherent state-wide rights of way regulatory program. DFA published draft regulations to implement thisprogramin1986 and received extensive public commentary. Final regulations, 333 CMR11.00, became effective on July 10, 1987.

The DFA regulations require persons proposing to apply herbicides to rights of way to first receive approval of a five year Vegetation Management Plan (VMP) and Yearly Operating Plan (YOP). These regulations identify certain "sensitive areas", including wetlands and public and private surface and groundwater supplies, where the application of herbicides is, in most instances, prohibited, and areas adjacent to the sensitive areas where use of herbicides is curtailed.

DEP worked closely with DFA to include provisions which give maximum protection for water supplies and provide protection for wetlands at least equal to that provided under the M.G.L. c. 131, § 40 and 310 CMR 10.00. To eliminate duplicate review under M.G.L. c. 131, § 40, DEP has adopted changes to the wetlands regulations which allow herbicide applications on rights of way in accordance with the DFA regulations without filing a Notice of Intent under the M.G.L. c. 131, § 40. However, non-exempt applicants will still be required to file a Request for Determination of Applicability to the appropriate conservation commission to establish boundaries of wetlands on or near the right of way. Specifically, these regulations presume that work performed in accordance with a VMP and YOP, as may be required under DFA regulations, will not alter an area subject to protection under M.G.L. c. 131, § 40.

During the public comment period on its proposed regulations, the Department identified several issues of major concern. After consideration of all comments, the Department has determined that, except for minor points of clarification and the addition of an automatic expiration date, no further changes in the regulations are warranted at this time. A discussion of these issues follows.

A. Presumption vs. Limited Project. Several commentators suggested that conservation commissions should retain the authority to review each herbicide application on rights of way through the usual Notice of Intent process. These regulations create a presumption that herbicide application carried out in accordance with an approved VMP and YOP under the DFA regulations will not alter wetlands and that the filing of a Notice of Intent is therefore not required. This procedure was established pursuant to the recommendation of the GEIR task force which states:

The regulations which provide for approval of Vegetation Management Plans by the Department of Food and Agriculture should be conditioned on review and approval by the Department of Environmental Protection (DEP) of those portions of the Plans that deal with wetlands. The DEP should be required to certify to the DFA that these portions of the Plans will result in compliance with the substantive and procedural provisions which protect the interests of the M.G.L. c. 131, § 40. If the regulations are so drawn, activities under a Plan approved by DEP would not constitute an alteration of wetlands as defined under 310 CMR 10.00.

Since the DFA regulations provide that DEP is a member of the VMP advisory panel which reviews and makes recommendations on the approval of VMPs, the GEIR task force recommendations have been fully implemented. Therefore, the Department has determined that it would be duplicative to require the filing of individual Notices of Intent in each municipality for each application of herbicides to rights of way.

B. Adequacy of Setback from Wetlands. The DFA rights of way regulations prohibit application of herbicides on or within ten feet of wetlands and strictly limit herbicide application from ten feet to 100 feet of wetlands. Many commentators questioned the adequacy of these setback requirements and suggested that a 50 or 100 foot no spray zone would be more appropriate. Several commentators suggested that the proposed setback requirements were inconsistent with the Department's adjudicatory hearing decision in the Clinton and Leverett cases.

The no spray zone surrounding wetlands is necessary for three reasons: to compensate for mapping errors, to compensate for applicator errors and to assure that herbicides will not migrate into wetlands after application on the adjacent uplands. During the public comment period, the Department received no evidence demonstrating that the ten-foot setback established in the DFA regulations will not be adequate. The DFA regulations establish a procedure for selecting a limited number of herbicides that may be applied in the limited spray zone (from 10 to 100 feet from wetlands) which is adjacent to the no spray zone. Herbicides that will be selected for use in these limited spray zones under the DFA regulations are those which available data demonstrate will not migrate further than ten feet.

The applicators have argued that they can maintain a level of accuracy in mapping of wetlands and in application of herbicides to assure that herbicides will not be inadvertently applied within ten feet of wetland areas. The Department is not convinced that these claims are unreasonable; however, in order to confirm their accuracy, the Department has included in the final regulations an automatic expiration date two years from the effective date, which is coterminous with the expiration date of the DFA regulations. During the two-year effective period of these regulations, the Department expects applicators to conduct studies monitoring

herbicide application operations and to submit a report concerning impacts of herbicide application on wetlands under these new regulations detailing the accuracy of wetlands mapping, the accuracy of herbicide application, and the extent of herbicide migration. The results of this study will provide a basis for recommendations by the Department for amendments to the DFA regulations and a decision on reauthorization of these amendments to the Department's wetland regulations.

Finally, the Department does not find the setbacks requirements established in the DFA regulations to be inconsistent with its decision in the Clinton and Leverett cases. In that decision, the Department assumed a worst-case analysis in terms of an herbicide known to be highly mobile which was applied to the track and ballast areas adjacent to wetlands. The Department found, based on the particular facts of these cases and the particular herbicide proposed for application that there would be a migration of that herbicide into the wetlands from application within the 100-foot buffer zone that would be sufficiently concentrated to cause alterations of the wetlands plants. However, the DFA rights of way management regulations set up a procedure for identification of herbicides which are relatively immobile and which are preapproved for application on the buffer zone in order to avoid alteration of wetlands plants. Furthermore, guidelines for application of the selected herbicides will also be established. Finally, no herbicides may be applied within ten feet of wetland areas. In light of the strict controls placed on application of herbicides within the 100-foot buffer zone under the DFA regulations, the Department finds that adoptions of the proposed regulatory scheme is fully consistent with its previous adjudicatory hearing decision in the Clinton and Leverett cases.

C. Impacts of Herbicides Application on Wildlife Habitat. The Department is currently developing regulations under M.G.L. c. 131, § 40 to protect wildlife habitat, The effective date of these regulations is November 1, 1987. One commentator expressed concern regarding the impact of herbicide application on wildlife habitat in wetlands, and particularly on the habitat of rare, "state-listed" wildlife species. As discussed above, the Department has determined that the DFA regulations provide for protection of wetlands from alterations due to herbicide application. However, the DFA regulations do not include flood plains in their definition of wetlands, although those regulations do prohibit herbicide application within 10 feet of any standing or flowing surface water. Beyond that, there is no specific protection of wildlife habitat, including rare species, in floodplain areas.

The Department is concerned that the DFA regulations do not specifically address protection of wildlife habitat in floodplains, in particular those rare, "state-listed" wildlife species. Therefore, as a member of the VMP advisory panel, the Department will review VMPs for potential effect on wildlife habitat and specifically will recommend disapproval of any VMP that will have an adverse effect in areas mapped by the Natural Heritage and Endangered Species Program as habitat of any rare, "state-listed" wildlife species. Furthermore, the Department expects applicators to incorporate into the previously discussed two-year monitoring study a section detailing the effects of herbicide application on wildlife habitat in floodplains and on the habitat of rare, "state-listed" wildlife species. The Department will use the results of this study as the basis for recommending any amendments to the DFA regulations and a decision on reauthorization of these amendments to the Department's wetlands regulations.

APPENDIX 7:
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