

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Bureau of Highway Operations



VEGETATION MANAGEMENT GUIDELINES



Prepared by and for:

Bureau of Highway Operations – Office of Maintenance

August 2021

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OVERVIEW

Vegetation Management Guidelines have been established by and for the Bureau of Highway Operations to provide maintenance personnel with the necessary information and guidance for maintaining an efficient and effective vegetative landscape along CTDOT highways. A significant objective is continuing the management of overgrowth along the State highway system. Vegetation management is essential for inspection and routine maintenance of our transportation infrastructure including roadways, bridges, drainage systems, signage, traffic, guiderail and barrier systems.



Vegetation management has several positive impacts that improve the movement and safety of the traveling public. Tree removal and limb management helps to decrease the overall failure of trees and limbs from falling onto the roadways. This greatly decreases the likelihood of vehicle strikes as well as increasing sunlight onto our road surfaces resulting in improved driving conditions during the winter months. Brush management, roadside mowing, and controlled herbicide use on targeted invasive plant species manages overgrowth and improves line of sight distances. Additionally, managing vegetative growth greatly reduces the exposure of wildlife, particularly deer along CTDOT highways. All of which make travel safer for the highway user.

In response to Federal legislation, and in accordance with CT Public Act 16-17, CTDOT implemented a pollinator program establishing selected highway locations throughout the state as conservation areas. Selective vegetation management in these areas is designed to promote the establishment and propagation of wildflowers and warm season grasses. This has resulted in increased habitat for pollinators such as bees, insects, meadow birds and other species.

It is essential our maintenance operations continue to make reasonable efforts to promote pollinator habitat and preserve the overall aesthetic appeal of the highway landscape. Special consideration will be given to preserve our designated scenic highways and the aesthetics of all our roadsides provided that the safety and efficiency of the highway system is not compromised by doing so.

Natural disasters and various weather events may damage vegetation and impede travel along state highways. The Bureau of Highway Operations is committed to managing storm debris operations to facilitate a prompt and efficient recovery of the highway system.

These guidelines are designed to provide information and guidance to Bureau of Highway Operations personnel for maintenance activities related to vegetation management.

GLOSSARY OF TERMS

When used in these guidelines, the following words and phrases shall have the meaning that is designated herein:

Boundary Line Tree

A tree growing in whole, or in part, on a boundary line between abutting property owners.

Bounded Highway

A highway Right of Way whose limits are set by monuments and shown on Department mapping.

Clear Zone

AASHTO definition: a region around the roadway of sufficient width to allow 80 percent of vehicles that inadvertently leave the roadway to safely recover to the roadway.

Compromised Tree

A tree that has substantial visible decay or substantial visible damage that renders the tree, or a part of the tree, structurally unsound.

Conservation Area

Designated locations where planned vegetation management practices provide for pollinator habitat.

Dead Tree

A tree that has no leaves or foliage on it during the summer months (June to September).

Emergency

An unexpected and sudden event that must be dealt with urgently.

Encroachment

An intrusion or use of a highway right of way for purposes other than for traveling.

Encroachment Permit

A permit issued by the District Maintenance Director, or his assignee allowing the use of highway right of way to a permittee who has met certain qualifications, herein referred to as a "permit".

Herbicide

A substance that is toxic to targeted plants and is used to control unwanted vegetation.

Highway

A highway, bridge, or appurtenance to a highway or bridge designated as part of the state highway system; see also "State Highway System".

Large-Scale Tree Cutting Operation

On multi-lane highways an operation requiring complete removal of trees within the 30' clear zone for a total distance of 1/4 mile or more. On secondary highways, where the clear zone is variable due to lane widths and right-of-way constraints, tree cutting operations are considered "large-scale" when they include removals of more than 100 trees within a total distance of 1/4 mile or less.

Major Traffic Generator (MTG)

With the context of CGS 14-311, any open air theater, shopping center or other development generating large volumes of traffic, shall mean any development providing two hundred or more parking spaces, or a gross floor area of 100,000 square feet or more which substantially affects state highway traffic within this state, and as provided for in the Administrative Regulations promulgated by the Office of the State Traffic Administration (OSTA).

Merritt Parkway Advisory Committee (MPAC)

The MPAC is comprised of representatives from the 8 towns the Parkway traverses, DOT disciplines, Metropolitan Planning Organizations, Federal Highway Administration (FHWA), State Police Troop G Commander, CT Chapter of the American Institute of Architects, CT Chapter of American Society of Landscape Architects, CT Trust for Historic Preservation, and the Merritt Parkway Conservancy (MPC). The committee's purpose is to advise CTDOT on all matters relative to the Merritt Parkway.

Merritt Parkway Conservancy (MPC)

A program of the Connecticut Trust for Historic Preservation which aims to revitalize the Merritt Parkway.

Non-Recoverable Slope

A slope which is considered traversable but on which an errant vehicle will continue to the bottom, such as slopes that are steeper than 4:1. Most drivers will not be able to recover and return to the highway on this degree of slope.

Permittee

An individual, firm, public utility company, municipality, or other state agency to which a permit is issued.

Pollinator

An agent (insect or animal) that pollinates flowers.

Pollinator Program

A program consisting of creating or identifying designated conservation areas for pollinator habitat. Planned vegetation management practices, including reduced mowing, are an integral part of the program.

Right of Way (ROW)

Real property, reserved for highway purposes, obtained by CTDOT either in fee or through line establishment and containing the travelway, roadside, drainage systems and other appurtenances necessary for public travel.

Roadway

The portion of the highway, including shoulders, intended for the movement of vehicles.

Scenic Road

A designated CT state highway, or portion of it, that (1) passes through agricultural land, or abuts land on which stands an historic building or structure listed on either the federal or state register of historic places, or (2) affords a view of marshes, shoreline, forests with mature trees, or notable geologic or other natural features that, singly or in combination, distinguish the highway.

Sightline

A line of sight along a specific orientation or plane; refer to CTDOT's Highway Design Manual, as revised for additional information.

Shoulder

The part of the roadway between the travelway and edge of pavement, gutter, or ditch.

Shrub Bed

An area containing vegetation; usually one continuous prepared soil area.

Sight Distance

The length of roadway visible to the driver of a vehicle at a given point on the roadway when the view is unobstructed.

State Highway System

A system of highways which includes state primary highways, state secondary highways, state special service highways, and all highways in the interstate highway system, pursuant to the Connecticut General Statutes, as revised.

Swath

A term that refers to the cutting widths as applied to mowing and brush removal.

Target

People, property, or activities that could be injured, damaged, or disrupted by a tree failure.

Travelway

The portion of the roadway for the through movement of vehicles, exclusive of shoulders and auxiliary lanes.

Unbounded Highway

A section of highway which is not set by monuments or mapping to show its width or highway lines.

Volunteer Woody Vegetation

Plants that have begun growing in an area borne by air, water or by birds.

ABBREVIATIONS

AASHTO

American Association of State Highway and Transportation Officials; a nonprofit, nonpartisan association representing Highway and transportation departments in the 50 states, the District of Columbia, and Puerto Rico

ADT - Average Daily Traffic

CAES - Connecticut Agricultural Experiment Station

CGS - Connecticut General Statute

Commissioner -The CTDOT Commissioner of Transportation

CTDOT - Connecticut Department of Transportation

DBH - Diameter Breast Height; diameter of tree measured 4.5 feet up from soil surface

DEEP - Department of Energy and Environmental Protection

GIS - Geographic Information System; a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographical data

IRMS - Image Records Management System; a CTDOT map records program

Maint. 37 - Right of Entry form; used whenever state personnel or equipment need to enter upon private property

Maint. 89 - Tree Report; used to evaluate and document condition of tree(s)

OEP – Office of Environmental Planning

PCMP - Pest Control Management Plan

UCONN - The University of Connecticut

GENERAL GUIDELINES

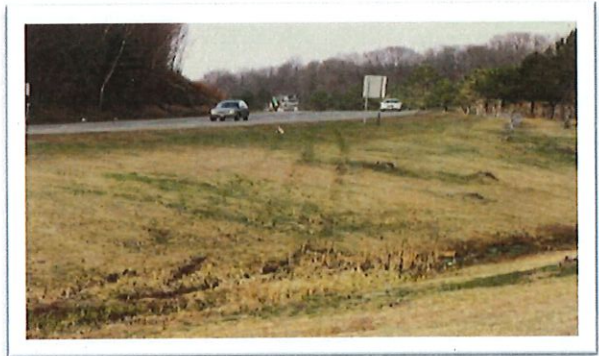
This section provides guidelines which apply throughout the document and should be referred to for all vegetation management practices.

Working near Environmentally Sensitive Areas

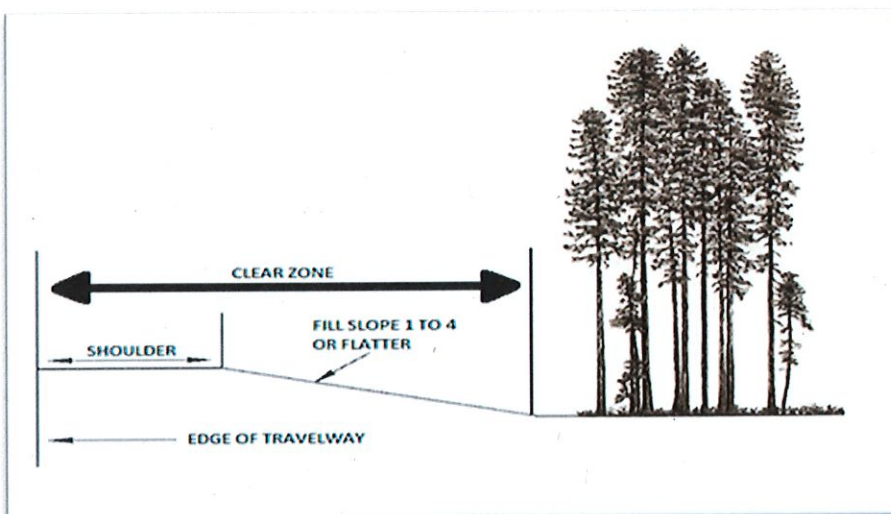
Coordination with the Office of Environmental Planning, or the Central Maintenance Environmental Planner, is required to review any cutting limits and vegetation removal operations proposed within and directly adjacent to environmentally sensitive areas.

Clear Zones/Guiderail systems

Roadside areas unprotected by barrier should be maintained to provide motorists an unobstructed, traversable area that will allow an operator to stop safely or regain control of a vehicle that has left a roadway. In areas protected by barrier there is no clear zone application. Each area is cut to meet or exceed the deflection zone corresponding to the installed guiderail system.



When determining the distance to cut beyond the deflection zone, considerations may be the lean of the trees, falling distance, previous cut distances, and sunlight onto the roadway. When the area



behind the barrier is steep or a non-recoverable slope, the cutting distance should be determined by the District Landscape Designer. When reestablishing a clear zone or removing vegetation for a system deflection zone the District Traffic Engineer should be consulted for a determination.

Scenic

Vegetation management operations on scenic roads must be reviewed and approved by a member of the Scenic Roads Advisory Committee in advance of the work unless an emergency condition exists. Generally, the committee member to be contacted for this purpose is the Landscape Designer in the Office of Central Maintenance. *Refer to Section 8 Sight Distances*

In accordance with CGS 13a-99a, the municipality is responsible for sight distances at an intersecting, town-owned roadway onto a state road. Similarly, when exiting a private drive onto a state road, the responsibility to provide and maintain adequate intersectional sight distance is placed upon the owner of the private drive. An encroachment permit must be obtained for any work within the ROW.



Right of Entry

A right of entry form (Maint. 37) should be used whenever state personnel or equipment will need to enter upon private property to address a tree within the ROW. The form is to be signed by the abutting property owner granting access to their property for the specific purpose of removing / trimming trees on state property. Unless absolutely necessary as determined by the Maintenance General Supervisor or the District Landscape Designer, no work should take place until the form is signed and returned to the respective District Landscape Designer or Maintenance General Supervisor. Extra care should be exercised to prevent damage whenever entering upon private property.

Handling Complaints

Vegetation complaints or requests received for tree evaluations will be reviewed by the General Supervisor or District Landscape Designer, as soon as practicable. If pruning or removal is deemed necessary, the District Landscape Designer should determine the location of the tree in relation to the ROW and take the appropriate action depending on whether the tree is within or outside the state highway right of way. The District Landscape Designer will complete the Tree Risk Assessment form (Maint. 89, page 2). If it is determined that work is needed, the District Landscape Designer will complete a work order and any other documents (notification card, Right of Entry–Maint. 037) and forward them to the applicable Maintenance Manager for completion of the recommended action.

For locations where the right of way property line is bounded ownership of the tree(s) or vegetation is determined by using ROW mapping, IRMS, or latest Department Software. In locations of unbounded

highways, town (GIS) mapping may be used. The District Survey Unit may also assist in determining the location of the state highway right of way line.

Late Fall, Early Spring

For these guidelines late-fall is defined as mid-October through mid-December. Early-spring is defined as mid-March to the end of April.

Section 1

TREE REMOVAL



PURPOSE

Trees within the state highway right of way are to be maintained to provide for the safe and efficient movement of the travelling public. CGS 13a-140 grants the Commissioner exclusive authority over all CTDOT rights of way by stating "the Commissioner may cut, remove or prune any tree, shrub or other vegetation situated wholly or partially within the limits of any state highway so far as is reasonably necessary for safe and convenient travel thereon."

GUIDELINES

Tree removal may be performed at any time during the year. Maintenance forces will engage in a continuing program of selective tree removal, removal of woody vegetation, invasive species and overgrowth situated within the ROW. Trees within the ROW that are determined to be dead or compromised and in need of corrective action will be either removed or maintained as deemed necessary.

Highway boundary line trees may be removed without the abutting property owner's consent if they pose an immediate danger and warrant immediate action.

Prior to the commencement of tree work notifications should be made to the abutting property owners when practicable. When notifying an abutting property owner, a notification card or business card may be left in the doorway or other conspicuous location (not in a mailbox). This is to advise the abutter of the work to be done and offer contact information in the case of questions or concerns related to the work.

In instances when a tree falls from state property onto private property, the following position statement is to be applied: It is the Department's position that when a tree falls from State property

onto private property, it is the responsibility of the private property owner for the removal of the tree(s). The only exception to this is if it is determined that special, unique circumstances exist; in such case the details are to be given to the Maintenance Manager of the section who will determine a course of action. In the event the complainant requests claim information, the Office of the Claims Commissioner website is available to them for filing instructions.

Substantial wood debris such as large logs or limbs that remain after the trimming or removal of a tree shall be placed in a safe manner. The butt ends of trees and limbs should be placed on an angle facing away from the direction of travel and removed from the ROW as soon as practicable. Exceptions may occur during extreme weather events.

Whenever possible, limbs shall be chipped and blown off to the side of the road or onto a slope. Wood chips shall be dispersed evenly along roadsides or hauled off site for re-use as advised by OEP or the Central Maintenance Planner. No wood chips should be placed on rock cut areas, drainage areas, or watercourse systems.

Trees that are removed should be cut at ground level with a clean cut, including flush cutting stumps at the angle of the slope. Stumps may be removed by excavation or stump grinding. If the stump is located on a lawn or other developed area, it will be removed to a minimum of 6" below the ground. Stumps in cleared wooded areas may be removed to a minimum of two inches below ground, depending on the location and the need. Areas where stumps are excavated will require grading and erosion control measures in accordance with the Department's Best Management Practices as identified in the latest edition of the CTDOT *Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction*.



Sub. 1(a) Large Scale tree Cutting.

When planning for large-scale tree cutting operations, *Maintenance Directive No. 20-02 Tree Cutting – Large Scale Operations Standard Operating Procedure*, will be followed. The Office of Environmental Planning, Office of Central Maintenance, and District Maintenance Manager must be notified prior to and upon completion of any large-scale tree cutting operation.

Tree cutting operations on multi-lane highways are generally considered large-scale when they include complete removal of trees within the 30' clear zone for a total distance of ¼ mile or more.

On secondary highways, where the clear zone is variable due to lane widths and right of way constraints, tree cutting operations are considered large scale when they include removals of more than 100 trees within a total distance of a ¼ mile or less.

- Special considerations should be given to large-scale tree removal operations on the Merritt Parkway, in accordance with Connecticut State Regulations Sections 13b-31e-1 through 13b-31e-4. CTDOT should apprise the MPAC and MPC of proposed alterations and improvements in accordance with the Landscape Master Plan for the Merritt Parkway and the Merritt Parkway Guidelines for General Maintenance and Transportation Improvements.

(Refer to Scenic Roads chapter for further guidelines)

Sub. 1(b) Working with Contractors

Contracted tree crews utilizing specialized equipment may be employed to remove and properly dispose of trees or vegetation. The District Planning office should be consulted for DAS contract information related to contractor tree removal, trimming, or disposal of wood debris services. The District Landscape Designer, Maintenance General Supervisor, or their designee will have oversight of contracted tree crew operations to ensure that the defined tree or area where trees are to be removed is strictly adhered to and the terms of the contract are followed. Maintenance personnel should be familiar with contract language and provide routine inspection of contracted operations. Maintenance General Supervisors and Landscape Designers may exercise discretion in establishing cutting limits in relation to abutting property owners or environmentally sensitive areas such as watercourse crossings, areas adjacent to water bodies or wetland areas.

Sec 1(c) Dead or Compromised Trees



If during their routine highway patrol activities, the Maintenance General Supervisor observes a tree that visibly appears to be dead or significantly compromised. The Maintenance General Supervisor should document such tree by completing the front page of a Preliminary Tree Report (Maint. 89) and send the form to the District

Landscape Designer for evaluation of the tree. The District Landscape Designer will complete the back page of the Maint. 89 form and issue a work order as needed. Maintainers should notify the

Maintenance General Supervisor if they observe the above-noted conditions during their course of travel. If deemed necessary by the Maintenance General Supervisor, this information may be communicated verbally to the District Landscape Designer. In the event the District Landscape Designer is unavailable and/or conditions warrant immediate action, the Maintenance General Supervisor may contact the maintenance tree crew or maintenance forces directly and request whatever action is deemed necessary.

Dead or compromised trees identified by the Maintenance General Supervisor which are located on private property immediately adjacent to the highway right of way, generally require the District office to initiate a certified letter addressed to the property owner. Notification should include that it has been determined that the tree poses a risk to the state right of way and that it is the property owner's responsibility to prune and/or remove the tree. In cases where the District Landscape Designer determines that immediate corrective action is necessary for the safety of the traveling public, the District Maintenance Director may establish an immediate course of action including the authorization of state forces to remove the dead or compromised tree(s).

Section 2

WORK NEAR UTILITY WIRES

ALL UTILITY WIRES ALONG THE HIGHWAYS SHALL BE CONSIDERED TO BE "LIVE" WIRES. Employees shall not attempt to differentiate between live wires, dead wires, wires carrying high or low voltage, insulated wires, telephone wires, or the like. Employees shall not work in proximity to downed wires, broken wires, low wires, hanging wires, etc. Wires of this sort shall not be touched and if possible, spotters may be posted to prevent others from approaching these wires. **No CTDOT employee should enter near, or make contact with any downed wires unless the utility company explicitly states that the wires are "dead" and "grounded". No other person or company is qualified to determine this.** The utility company shall be immediately notified of the condition so that action may be taken with a minimum of delay. Treat all downed wires as live.

Whenever state crews are operating bucket trucks in the vicinity of wires, it is imperative that each supervisor of a bucket truck crew personally review the safe operation of this equipment with the crew, placing special emphasis on the following:

- Always keep the bucket, boom, tools, and all debris a minimum of 10' away from all wires.



- Dispel any ideas of the crew members that they are perfectly safe because the bucket and upper boom of the truck are insulated.
- Whenever operating near wires, the ground man shall constantly observe the position of the boom and shall signal its position to the operator in the bucket.

Whenever utility wires (wires) are involved, the Maintenance General Supervisor shall contact the appropriate public utility company acting as custodian of the lines to arrange for the utility company's participation in the removal of the tree parts in proximity to their wires.



Section 3

LIMB MANAGEMENT – SIGHTLINE MAINTENANCE

PURPOSE

Limb management and sightline maintenance will be performed within the state right of way to provide for overhead clearance, allow additional sunlight onto the road surface and provide clear sight distances along all state highways. Limbs that are obstructing sight distances, dead or structurally compromised, or are below the minimum overhead height requirement should be removed or elevated as necessary.

GUIDELINES

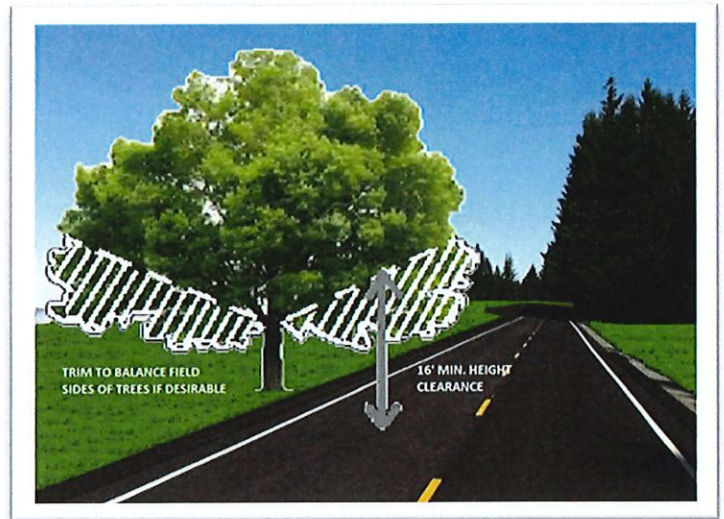
CTDOT may perform limb management and sightline maintenance at any time during the year. Branch stubs should not be left if possible and final trimming cuts are to be made at the branch collar leaving a clean and neat cut. Slope mowers shall not be used in the vertical position to perform tree trimming.

Maintenance forces will engage in a continuing program of limb management and sightline maintenance as the following conditions are observed:

- Sightline to warning, directional, regulatory signs, and traffic control signals.
- Limbs overhanging the highway travel way encroach upon the minimum vertical clearance requirement of 16 feet.
- Dead limbs overhanging the highway and originating from state or privately-owned trees.

- The standard sightline is restricted on the inside of horizontal curves, vertical curves, at intersections, crossovers, or grade crossings. Consult with the District Traffic Engineer or refer to the CTDOT Highway Design Manual (latest revised) for sightline distances.
- Curb and shoulder encroachments are found.

Pruning should be done to remove long lateral branches extending over the travel way to provide a minimum height clearance of 16 feet



Section 4

BRUSH MANAGEMENT

PURPOSE

Brush management is the removal or trimming of woody trees and shrubs. Without continued management activities small shrubs and trees become large and overgrown. This activity may only be performed in areas that predominately consist of brush and may not be performed in locations that predominately contain grasses or other herbaceous vegetation.



GUIDELINES

Brush management may be performed at any time during the year. This activity may also be used to restore desired vegetative cover to protect soil from erosion. Brush is defined as woody plants that may have several stems and have a diameter or caliper, measured single stem with a DBH of six

inches or less at a height of four and a half feet above the ground surface. Brush needs to be cut flush with the existing ground.

Maintenance activities will be continued on a regular basis to suppress the growth of volunteer woody vegetation. When the diameter of woody vegetation exceeds six inches and mechanical control is desired, refer to the Section 1 Tree Removal. Depending on the terrain and scale of work, track-mounted equipment with a brush mower or an excavator equipped with a large flail mower may be utilized.



Brush management may be used in the following locations:

Primary and Secondary Routes: Begins at the outermost limit established for routine mowing and extends to the right of way line or the tree line, whichever is less, regardless of slopes or ditches.

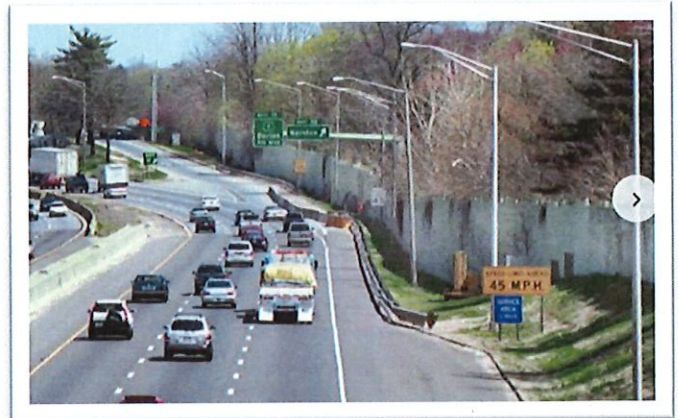
Interstate Routes: Along interstate shoulders and medians to maintain areas beyond the routine mowing limits that are included in the actual calculated clear zone.

Drainage Areas: Along clearly defined drainage ditches to maintain proper drainage and in areas which provide access to headwalls and culverts for maintenance operations. This activity is generally performed annually. This will consist of cutting vegetation as required on each side of the ditch, headwall, or culvert, regardless of the slope.

Fences and Sound Barriers: Brush removal should be performed along fences and sound barriers to protect the integrity, performance, and life of the asset. When performing this activity, access to the work area shall be obtained from the frontage road when possible.

Rock Cut/Ledge Areas: Brush in front of rock cut/ledge areas is to be removed for safety and inspection purposes. Trees growing within the rock cut/ledge area may be susceptible to failure due to poor root system establishment and should be removed when it is determined to pose a risk to the highway system.

Bridge Structures: Bridge structures should be free of vegetation from ten feet beyond the end of the bridge deck to the toe of the slope beneath the bridge at a width of 10 feet from the structure along its entire length.



Section 5

ROADSIDE MOWING

PURPOSE

The primary purpose for mowing is to provide a stabilized turf area adjacent to the state highways. This stabilized area helps prevent wind and water erosion, allows a safe area for errant vehicles, provides for safe sightline, reduces a possible fire hazard, and maintains reasonable aesthetics by providing a transition area from the highway to the surrounding vegetation.



GUIDELINES

Roadside mowing is conducted for approximately 24 weeks beginning around May 1st or when the grass reaches an average height of (8) inches. In areas generally over 60 feet in width the roadside shoulders and perimeters will be mowed. The interior areas will be deferred until control of any encroaching invasive plants or woody vegetation becomes necessary. To maintain turf areas in a healthy condition, mowers shall be set at a minimum cutting height of three (3) inches. This shall be attained by periodically checking all the mowers during the mowing season to be sure this minimum height is being maintained. Litter should be removed prior to each mowing.

During exceptional growing seasons, mowing frequency may be increased to prevent overworking mowing equipment. Mowing for brush control will be scheduled during the late growing season, preferably after October 1st or as required.

To prevent overworking mowing equipment, mower operators should utilize lower gears when mowing tall grass during the late season.

In residential areas and in keeping with maintenance practices on adjacent property, mowing may extend to a width that will blend neatly with the established surroundings.

Mowing sight lines at intersecting town roads may include the swath return up to the end of the Right



of Way. Refer to the *CGS § 13a-99a.; Town roads lying within, intersecting, or crossing state highway rights of way.*

Slope mowers will be utilized in areas that conventional mowers are unable to maintain. This type of mower has the ability to remove small brush and undergrowth year-round.



Conservation Areas

Mowing practices in these designated areas will include the travel-way shoulders and where appropriate, the conservation area perimeter. Mowing of the interior area will be delayed until late fall or early spring of the new year. In some cases, deferment may extend until late fall of the second or third season depending on the presence and pressure of invasive plants within the conservation area. The District Landscape Designer should be consulted prior to mowing any interior of a conservation area.

Secondary Roads

Roadside mowing on secondary roads will consist of all required sightline areas and generally two (2) swaths along the roadways made two (2) or three (3) times during the growing season. Mowing for brush control will be scheduled as required to protect drainage systems and prevent brush encroachment.

Multi-Lane Roads

Roadside mowing of the multi-lane highways will consist of all required sightline areas and up to fifteen (15) feet alongside the highway. Exceptions would be:

- Mow to the drainage ditches if it is within two (2) additional swaths of the fifteen (15) feet. In this case, mow one additional swath beyond the ditch.

Medians, Ramps, Slopes

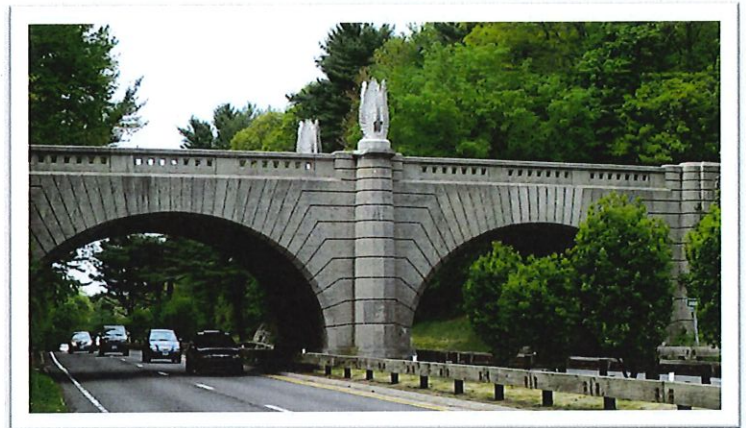
With the exception of extremely wide areas the entire median will be mowed where possible and mowing will terminate at the pronounced tree line. Extremely wide median areas may generally be defined as wider than 60 feet.

- 60' wide or less: mowed entirely.

- 60' wide or more: a 15' cut will be mowed on either side of the median or ramp.

Sightlines must be considered when determining mowing limits. Additional mowing may be required at on ramps, bowl areas, and the point of the ramp to improve sightline with merging or oncoming traffic.

Note: On tapered ramps when the average width becomes greater than 60 feet, consideration may be given to defer until late fall mowing (mid October to mid December) or early spring (mid-March – end of April) of the following year.



Merritt Parkway and Scenic Roads

Careful attention will be given to roadsides of specially landscaped highways. The presence of tall grass and weeds growing close to decorative plantings produce an unkempt appearance and detract from the aesthetics of the landscaped area. Additional mowing cycles may be needed in these areas to maintain a park-like appearance. When planted shrub beds or trees are within the area of a swath, cutting will end as neatly as possible at the edge of the shrub beds or trees. Care must be taken to keep the tractor mower far enough away from planted shrubs and trees to prevent injury to employees, equipment and the shrubs or trees. Reference should be made to the [Merritt Parkway Master Landscape Plan](#) for details in maintaining a park-like setting along scenic roads, the Merritt Parkway, and other specially landscaped highways. *Refer to section 8 for additional information*

Section 6

HERBICIDE PROGRAM

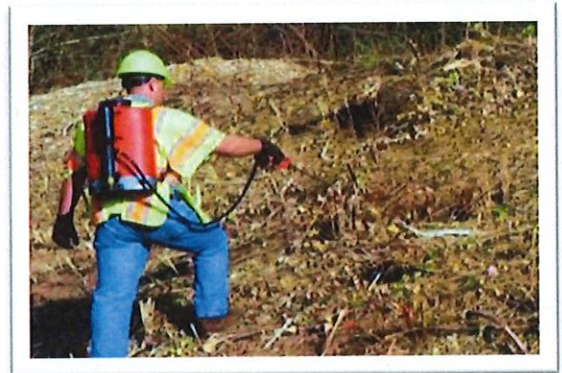
PURPOSE

CTDOT employs an integrated approach to roadside vegetation management utilizing manual, mechanical, and chemical methods. Control of vegetation is imperative to ensuring the accessibility and visibility of the guiderail systems, signs, barriers and bridge structures. Control measures also maintain sightlines, reduce fire hazards, maintain drainage systems, control invasive plants and preclude the growth of woody vegetation in designated conservation areas or established grass areas.

GUIDELINES

DOT personnel **MUST** possess and maintain a **Governmental Supervisory License (Cat.6)** to apply herbicide for chemically controlling vegetation within the state right of way. The herbicide program, including the herbicides used in the program is incorporated into an Integrated Pest Management Plan (IPMP) as required by state statute. Specific application dates, work descriptions, and approved materials are available in the most current IPMP entitled "Pest Control Management Plan" and on file in the Office of Central Maintenance.

Connecticut-licensed contractors are also utilized for the application of herbicides on multilane roads, secondary roads and for spot spray applications. Contractors utilized for multilane herbicide applications are directed by the Landscape Designer in the Office of Central Maintenance or designated licensed personnel. Contractors utilized for all secondary road applications are directed by the respective District Landscape Designer or designated licensed personnel. Contractors may also be utilized for spot spray applications as directed by the individual District Landscape Designers, and as described in the "Methods of Control". Herbicides typically utilized by CTDOT have the signal word – CAUTION, which is the lowest toxicity label.



The District Landscape Designer may determine "No Spray Areas" in areas where vegetation is maintained and does not present a concern with standard maintenance practices. The District Landscape Designer, and/or another approved Connecticut-licensed pesticide applicator may also apply approved herbicides via backpack sprayer or truck-mounted spray rig. These are spot spray applications to control stump regrowth, vines and invasive vegetation.

Areas of Control:

- A 3-5-foot width under guiderail systems on multilane and secondary highways.
- Along capped median dividers, capped islands and at the base of jersey barriers.
- In front of sound barrier walls or along wood-chipped earth berms.
- Around light standards, sign supports, delineators, and other appurtenances within the highway right of way.
- Regrowth of brush cut the previous season.

- Specific undesirable and invasive plant species within the right of way, i.e., poison ivy.
- Conservation Areas

Methods of Control:

- Vegetation control under guiderail systems will be accomplished with one herbicide application per calendar year normally between June 1st and August 31st.
- Herbicides used on divided highways shall be determined by the Central Maintenance Landscape Designer.
- Herbicides used on secondary highways shall be determined by the District Landscape Designer.
- Within designated watershed areas, an approved aquatic label product will be used. Herbicides used are a tank mix of the approved aquatic label product, a nonionic surfactant and a drift control agent at the rates recommended on the labels. No chemicals are to be applied directly to any water source.
- The spot application program requires one application per year of the herbicides determined by the District Landscape Designer. Basal or foliar applications may be performed January 1st to April 1st and from August 15th to December 31st. No applications will be made to snow-covered or frozen ground. Brownout should be minimized.



Programs requiring special consideration:

The control of some invasive plants such as mile-a-minute, Japanese knotweed, phragmite and kudzu may require broadcast foliar applications of herbicides.

Review all product labels for the best and most effective applications of herbicides. The label

may require special consideration, “the label is the law”.

Section 7

POLLINATOR PROGRAM

PURPOSE

In 2017 CTDOT implemented a pollinator program in accordance with Public Act 16-17 by establishing conservation areas in selected locations within the highway system. These locations consist of warm season grasses, native wildflowers and low-growing vegetation increasing areas for pollinator habitats. CTDOT, in collaboration with various outside entities, continues to implement best management practices in the establishment, maintenance and monitoring of these locations. CTDOT is continually evaluating prospective locations for future expansion of the program.



GUIDELINES

Oversight of the Pollinator Program is conducted by the Landscape Designer in the Office of Central Maintenance in collaboration with the District Landscape Designer.

The designation of conservation areas is determined by several factors including available space, sight distances, terrain characteristics, soil conditions and the

existing presence and pressure of invasive plants and woody vegetation. Conservation Area signs may be strategically placed at each location for visibility to the traveling public and to assist mower operators.

Conservation Areas will be established at selected highway ramp areas, medians and along selected roadside shoulder areas. Reduced mowing practices are required at all conservation areas.

Pollinator plugs or a specialized seed mix may be used to help establish the pollinator corridor. In some cases, transplanting existing wildflowers from the area perimeter into the open, meadow section of the area may be implemented.

Planting and transplanting will occur in early spring or late fall. Seeds planted in the fall will become dormant over the winter and will begin growing the following spring, or, in many cases, 2-3 years later. A cover crop, or nursery crop, will be included in the seed mix to serve as temporary cover before the wildflower seeds germinate. Wildflowers should be planted on either level ground or a slight grade to ensure that the soil is well-drained. This will ensure the vitality of the plants as well as helping to control weeds. New topsoil may be used for conservation areas if the existing soil lacks the

necessary nutrients. It is crucial that seeds are planted at a sufficient depth or they will not germinate. The ideal planting depth is 1/8th of an inch. Wildflowers will be planted only within the conservation area, excluding areas that will be mowed for sight distance maintenance.

To promote biodiversity and a healthy pollinator habitat a variety of plants shall be selected. Pollinator plants shall have staggered bloom times to ensure the survival of pollinators in the area. At a minimum, three species shall be flowering at any given time during the growing season. Plants of the same variety shall be grouped within the corridor, as pollinating insects generally visit one type of flower at a time.

Section 8

SCENIC ROADS

Route 146, Guilford

PURPOSE

Maintenance activities on scenic roads require special consideration to preserve the roads' notable aesthetics and vegetation distinctions. Designated CT scenic roads abut significant natural or cultural features such as agricultural land or historic buildings and structures. Many of which are listed on the National or State Register of Historic Places. These roads may also afford vistas of marshes, shoreline, forests with mature trees, or other notable natural or geologic features, which singularly or in combination set the highway apart from other state Highways as being distinct.



GUIDELINES

Routine maintenance of trees and vegetation along state designated scenic roadways will be performed in accordance with Connecticut State Regulations, Chapter 242, Section 13b-31d through 13b-31e last revised.

The Scenic Roads Advisory Committee Chairperson should be apprised of significant pre-planned maintenance activities and approvals granted in advance of the work. In some instances, alternative means and/or methods will be recommended. In addition, a press release will be issued to advise the public of the upcoming operations, dates and termini.

Any encroachment permit affecting scenic roads must receive prior review and approval from the Scenic Roads Advisory Committee prior to issuance.

The Merritt Parkway is one of only two National Scenic Byways in Connecticut. The other is Route 169 (spanning Lisbon, CT to Charlton, MA). A Corridor Management Plan was prepared by the Route 169 Scenic Advisory Committee and the Northeastern Connecticut Council of Governments. A link to that study is here: [2016-2016 Corridor Management Plan](#)

Section 9

ENCROACHMENT-PERMITTED VEGETATION MANAGEMENT

PURPOSE

To provide control of the Department of Transportation (CTDOT) rights of way as it pertains to vegetation management performed by other than CTDOT personnel in accordance with CGS 13b-17 and 13a-140.

GUIDELINES

An encroachment permit is required for any vegetation management work within the state right of way by performed by a private owner, contractor, developer, or entity not working for the DOT DOT personnel should notify their General Supervisor of any instances where it appears work will negatively affect state owned vegetation. Coordination for addressing the issue should be made with District Special Services personnel.

When it is determined that proposed work will compromise the overall health and integrity of vegetation within the ROW, the Special Services Section Manager or designee may require complete removal of the tree or vegetation.



Any encroachment permit affecting scenic roads must receive prior review and approval from the Scenic Roads Advisory Committee prior to issuance.

Examples of permit requests as related to vegetation management may include outdoor advertising, MTG (Major Traffic Generator), general (private/homeowner) permits, utility permits, and vegetation management for private development. These should be reviewed by the District Landscape Designer for approval or any

required changes to the proposed work. For additional information on OUTDOOR ADVERTISING refer to Policy Statement: Policy No. E&C -35 last revised.

In accordance with CGS 13a-140, utility permits involving removal of any trees over 18" diameter shall not be issued by the Commissioner of Transportation unless the chief elected official of the municipality in which the tree(s) are situated is notified in writing. The notice shall include the location and a description of such tree(s) to be cut or removed.

Section 10

STORM DEBRIS MANAGEMENT

PURPOSE

The State of Connecticut has established Debris Management Plans for proper management of debris generated by a natural disaster or significant weather event with the goal of facilitating prompt and efficient recovery that is cost effective, protective of the environment and may be eligible for FEMA reimbursement. Examples of natural disasters include flooding, hurricanes, tornadoes and extreme winter events.



GUIDELINES

The State utilizes monitoring and removal contracts to assist in the state's recovery efforts resulting from a natural disaster debris-producing event.

The [State Natural Disaster Plan](#), latest edition, was prepared by the Department of Emergency Services and Public Protection (DESPP). The Plan establishes the mission assignments of State agencies in responding to natural disasters of a severity and magnitude typical for Connecticut. The Plan describes the interaction of state government with local governments, private response organizations (e.g., utilities, the American Red Cross) and the federal government in natural disaster situations.

The [State Disaster Debris Management Plan, latest edition \(Annex to the State Natural Disaster Plan\)](#) establishes the framework for proper management of debris generated by a natural disaster.,

The Plan is an important planning document for all levels of government – federal, state, and local and describes the state contracts that are in place to use in response to a catastrophic natural disaster; the contracts are for both debris' removal operations and the monitoring of these types of operations (see below for more information on the state contracts).

Further, included in the Plan are the planning and operation functions for temporary debris storage, reduction sites, the two phases of clean-up, and several appendices that provide references to waste management resources.

The [State Concept of Operations Plan \(ConOps\) for Disaster Debris Management, Activation and Use of the State Debris Removal and Monitoring Contracts](#) is a companion document to the State Disaster Debris Management Plan latest edition. This Plan details the steps that will be taken by the state, its contractors, and other parties to facilitate the removal, management, collection and disposal or recycling of all debris generated from a catastrophic natural disaster.

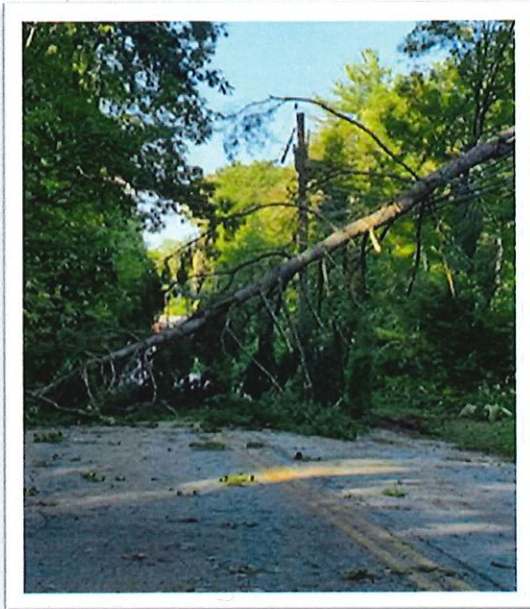
The debris management strategy for the state is divided into four major operational time periods: pre-landfall phase; phase 1; phase 2; and post-recovery. The pre-landfill phase involves planning for the particular storm. Phase 1 is the initial response, typically occurring during the first 24 to 70 hours following an event and consists primarily of “pushing” the debris along major roadways to the right of

way shoulders that would otherwise hinder immediate life-saving actions and that pose an immediate threat to public health and safety. Phase 2, which can last up to a year or longer, consists of removing, segregating, and disposing or recycling of the debris that hinders the orderly recovery of the community and poses less immediate threats to health and safety. State contracts may be initiated as early as Phase 1 if it is determined that the storm event may overwhelm state and local emergency response resources. The final phase is post-recovery which involves restoration and



reestablishment of the affected debris management areas.

Consult with Central Maintenance or the District Planning Office for guidance on contracts related to Storm Debris removal.



State contracts for the [monitoring of the disaster debris removal operations](#) and for the [removal of disaster debris](#) may be utilized when necessary. These are pre-need and pre-event contracts that can assist the state in disaster

debris recovery operations. These contracts:

- assure the immediate availability of coordinated debris removal support following a debris producing incident.
- will be used on an as-needed basis; and,
- will be activated on a state-wide basis only by the Governor, typically in the context of an Emergency Declaration.

Debris Removal: provides for clearing, collecting, and transporting debris, establishing, and operating temporary debris management sites, and ensuring ultimate recycling or disposal of debris.

Debris Monitoring (Reimbursement Documentation): provides for monitoring of debris removal operations and debris site management. The monitoring contract also provides comprehensive oversight, guidance and documentation services. This monitoring is required to receive potential federal reimbursement for disaster debris management expenditures.

SUMMARY

The CTDOT Vegetation Management Guidelines were created by and for the Bureau of Highway Operations personnel to establish an efficient and effective maintenance strategy to standardize the vegetative landscape along Connecticut's highways. By providing clearly defined guidelines for CTDOT's roadside maintenance practices and vegetation control techniques, all CTDOT maintenance facilities can achieve state-wide uniformity in maintaining the integrity and aesthetic appeal of the vegetative landscape while improving the safety of the traveling public.



APPENDIX

A Landscape Master Plan for the Merritt Parkway; Milone & MacBroom, Inc.; October 1994

American Association of State Highway and Transportation Officials; "Roadside Design Guide", 4th Edition, 2011

CGS 13a-140 Removal of Trees Along State Highways. Penalties Established by Municipalities

Connecticut Department of Transportation "An Overview of Snow and Ice Control Operations on State Highways in Connecticut", June 2015

Connecticut Department of Transportation Bureau of Engineering and Highway Operations "Manual of Organization, Functions and Procedures, 1997

Connecticut Department of Transportation "Connecticut Scenic Roads"

<http://www.ct.gov/dot/cwp/view.asp?a=2094&q=305520>

Connecticut Department of Transportation, FORM 816 and 817 – Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction, 2004 and 2016

Connecticut Department of Transportation "Guidelines for Tree Maintenance and Removal", rev. November 2000

Connecticut Department of Transportation - Encroachment Permit Regulations 1992

Connecticut Department of Transportation "Highway Design Manual 2003 Edition", rev. to February 2013

Connecticut Department of Transportation "Merritt Parkway Guidelines" For General Maintenance and Transportation Improvements, June 1994

Manual on Uniform Traffic Control Devices for Streets and Highways 2009 Edition
<http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd2009r1r2edition.pdf>

Maintaining Roadsides for Pollinators Establishment, Restoration, Management and Maintenance, A Guide for State DOT Managers and Staff, Technical Manual, Mary Galea, Vicki Wojcik, Ph.D., Laurie Davies Adams, and Evan Cote, 2016

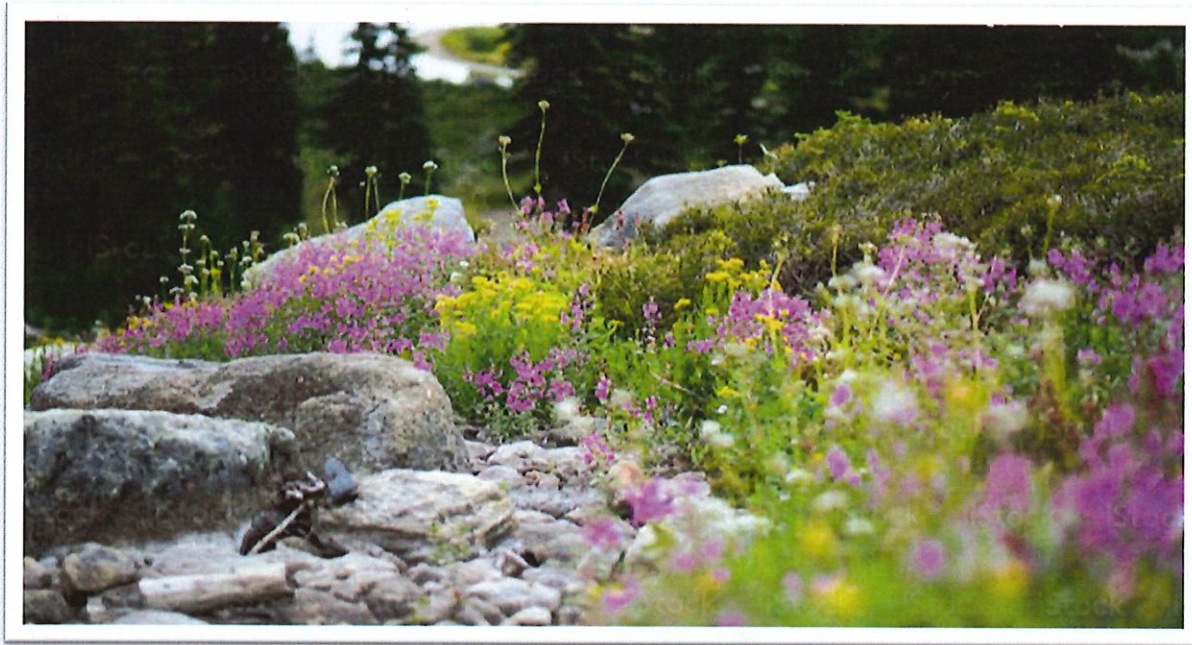
Merritt Parkway Guidelines for General Maintenance and Transportation Improvements; The Merritt Parkway Working Group; June 1994

Report of the Committee on Management of Roadside Trees, John Jasinski, Bradford Robinson, Chris Donnelly, February 22, 2012

“Report of the Two Storm Panel” presented to Governor Dannel P. Malloy, January 2013
http://www.ctsprague.org/resources/two_storm_panel_final_report.pdf

State of Connecticut “Substitute Senate Bill No. 231: Public Act No. 16-17”
<https://cga.ct.gov/2016/act/pa/pdf/2016PA-00017-R00SB-00231-PA.pdf>

The Xerces Society for Invertebrate Conservation in collaboration with ICF International “Pollinator Habitat Enhancement and Best Management Practices in Highway Rights-of-Way”, May 2015



ADDITIONAL RESOURCES FOR DISASTER DEBRIS MANAGEMENT

Department of Emergency Management and Homeland Security (DEMHS)

Department of Energy and Environmental Protection (DEEP)

Federal Emergency Management Agency (FEMA)

US Environmental Protection Agency (EPA)

Northeast Recycling Coalition (NERC)

CT Department of Public Health (DPH)