

**OPERATOR OF**

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY**

**COMMUTER RAIL SYSTEM**

**32 COBBLE HILL ROAD**

**SOMERVILLE, MA 02143**

**2022**

**YEARLY OPERATIONAL PLAN**

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**PREPARED BY:**

**FAIR DERMODY CONSULTING ENGINEERS**

**19 OCEAN AVENUE, UNIT 5**

**PORTLAND, MAINE 04103**

**ABSTRACT:**

**This Yearly Operational Plan (YOP) describes the vegetation management maintenance activities for the Commuter Rail rights-of-way (ROW) scheduled for 2022 in compliance with the Commonwealth of Massachusetts Rights-of-Way Management Regulations 333 CMR 11.00.**

**This YOP is a companion document to the Massachusetts Department of Agricultural Resources (MDAR) approved Vegetation Management Plan (VMP) which includes Integrated Vegetation Management (IVM).**

**INTRODUCTION TO THE PROGRAM**

The Commuter Rail transports over a million passengers every year. The railroad right-of-way (ROW) spans over 700 miles and more than 100 communities. The general maintenance of the infrastructure requires the control and management of vegetation along the ROW and railroad assets for safe operations. In recent years, an increase in natural hazards, fallen vegetation, and slippery rail have become a significant concern. Extreme weather events exacerbate the problem of vegetation falling over tracks causing damage to assets and interfering with safe operations. With this ever-increasing threat to safety and infrastructure, Massachusetts Bay Transportation Authority (MBTA) and Keolis have implemented an Integrated Vegetation Management (IVM) approach that includes both mechanical and chemical controls. MBTA has determined that vegetation along the ROW must be addressed and maintained as described within the five-year Vegetation Management Plan (VMP). Large canopies and encroaching tall woody vegetation pose a high risk to safe operations by impeding prompt access to assets for general inspections and maintenance activities, or by obstructing required locomotive and personnel line-of-sight along the ROW, in curves, at grade crossings, and at signals. Visibility is critical to safe operations, and to the public navigating the many grade crossings throughout the Commonwealth every day. MBTA and Keolis continue to improve in building awareness with the communities on vegetation management activities and enhance communications by providing electronic information relevant to each community. Best management practices have been implemented to ensure that operations and maintenance activities are managed in the protection of resource areas and the general safety of the communities and passengers.

Federal and State laws require railroads to control vegetation on their ROW:

**Code of Federal Regulations Title 49, Part 213 Track Safety Standards, Subpart B - Roadbed, § 213.37 - Vegetation**

*Vegetation on railroad property which is on or immediately adjacent to roadbed shall be controlled so that it does not -*

1. *Become a fire hazard to track-carrying structures;*
2. *Obstruct visibility of railroad signs and signals:*
   1. *Along the right-of-way, and*
   2. *At highway-rail crossings; (This paragraph (b)(2) is applicable September 21, 1999.)*
3. *Interfere with railroad employees performing normal trackside duties;*
4. *Prevent proper functioning of signal and communication lines; or*
5. *Prevent railroad employees from visually inspecting moving equipment from their normal duty stations.*

Massachusetts Department of Environmental Protection (MassDEP) and Department of Agricultural Resources (MDAR) developed 333 CMR 11.00: Rights of Way Management “to establish a state-wide and uniform regulatory 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 benefits to public safety provided by the selective use or herbicides.”

The purpose of 333 CMR 11.00, Rights of Way Management, is to promote the implementation of Integrated Vegetation Management (IVM) techniques and to establish standards, requirements, and procedures necessary to minimize the risk of unreasonable adverse effects on human health and the environment associated with the use of herbicides to maintain rights-of-way. These regulations establish procedures which guarantee opportunity for public and municipal agency review and input.

The VMP is the long-term management plan for the railroad which describes the intended strategy for vegetation control over a five-year period and includes both the chemical application and the manual and mechanical controls implemented through an IVM approach. On July 21, 2020, Keolis’s VMP was submitted to MDAR. The VMP was reviewed through a series of advertised public comment periods and meetings. The Conservation Commission, Board of Health, and Board of Selectmen or Mayor in each community was notified. No comments were received from the public, or individual communities. The VMP was approved by MDAR February 3, 2021 for the period 2021-2025.

A Yearly Operational Plan (YOP) is required to be submitted to MDAR every year herbicides are intended for use to maintain ROWs. The YOP provides the details of the vegetation management for the calendar year. It includes the IVM approach which incorporates chemical and mechanical controls, and drainage ditch clearing as required to ensure safe operations. The YOP is a companion document to the MDAR approved VMP. This YOP is submitted via certified mail to all communities which previously received a Request for Determination during the VMP permit process. The chemical application zones have been reviewed by each community. Any changes or updates to the chemical application zones may be requested at any time during the public comment period of the YOP. Communities also have an opportunity to inform MDAR of any new private wells. Based on received comments and information provided during the public comment period, Keolis will review information and update chemical application zone maps to ensure the most updated maps are used for the YOP.

The schedule of vegetation management activities throughout the year depends on multiple logistics and is dependent on the allowed track time for maintenance activities. Keolis will follow Best Management Practices outlined in Appendix A.

**YOP Annual Review Process**

Upon receipt of this YOP, MDAR publishes a notice in the Environmental Monitor. The applicant will provide a copy of the YOP and Environmental Monitor notice to the Board of Health, Conservation Commission, and the chief elected municipal official for the city or town in which the herbicide treatment is proposed.

Public notification of herbicide applications to the ROW is made by registered mail under separate cover at least 21 days in advance of the treatment. Notice is made to MDAR; the Mayor, City Manager or chairman of the Board of Selectman; the Board of Heath; and the Conservation Commission of the municipality where the right-of-way lies.

MDAR allows a 45-day comment period on the proposed YOP beginning with publication of the notice in the Environmental Monitor and receipt of the YOP and Environmental Monitor notice by each municipality.

The general maintenance activities this YOP details are critical to the safety of employees, passengers, and communities that the commuter rail passes and serves. To maintain and improve safety for all involved, the YOP is intended to:

* Manage vegetation to maintain clear line-of-sight by removing or trimming vegetation along signs and signals, grade crossings, inside curves and other critical assets.
* Trim or remove vegetation from encroaching on ROW assets.
* Trim or remove target overstory trees and woody vegetation that encroach over the ROW.
* Maintain communication lines, pole lines, fiber optic cables, positive train control system and other assets free of vegetation.

**The YOP permitted maintenance activities under the approved VMP:**

* Chemical application of pre-emergent in spring (May-June).
* Chemical application of post-emergent for brush control will be conducted in late summer or fall (August-October).
* Chemical application for off-track brush control will be conducted late summer or fall (August-October).
* Chemical application for stem treatment will be applied selectively throughout the year as needed.
* On-track and off-track mechanical controls including the use of hand tools will be conducted selectively throughout the year.
* Target vegetation such as large canopy trees will be planned for trimming or removal and conducted with the support of third-party contractors and overseen by a professional arborist.
* Drainage ditch clearing will be conducted throughout the year as needed.

The chemical application schedule will be dependent on MDAR approval after public comment period is completed. The vegetation chemical controls detailed in this YOP will be implemented with the approval letter issued by MDAR and will follow the requirements of 333 CMR 11. All other vegetation management activities will be conducted throughout the year.

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**Appendix A - Best Management Practices (Appendix F of VMP)**

**ANY COMMENTS ON THIS YOP SHOULD BE DIRECTED TO:**

Tim Dermody AND Clary Coutu

Fair Dermody Consulting Engineers Director of Environmental Services,

19 Ocean Avenue, Suite 5 Compliance and Sustainability

Portland, ME 04103 Keolis Commuter Services

(207) 747-4651 ex. 4 (617) 222-8009

Tim@FDCEngineers.com Clary.Coutu@keoliscs.com

1. **THE COMPANY PERFORMING THE HERBICIDE TREATMENT**

This company or contractor will perform the herbicide treatment. Applicators are certified by MDAR in the applicator category Right-of-Way Pest Control.

Company Name RWC, Inc.



Address Lockhouse Road



P.O. Box 876



 Westfield, MA 01086

 Telephone # (413) 562-5681

Contact Person(s) Brian Chateauvert

 Company Name Northern Tree Service

 Address 1290 Park Street

Palmer, MA 01069

Telephone # (800) 232-6132

 Contact Person(s) Tim Lamotte

Company Name Clearway Industries, LLC



 Address 2 Stage Road

Pine Island, NY 10969

Telephone # (845) 258-3343

 Contact Person(s) Tom Reiner

1. **INDIVIDUAL REPRESENTING APPLICANT & SUPERVISING THE YOP**

Individual supervising execution of the YOP and representing the railroad.

 Name & Title Brody Labuick

Chief Engineer



 Address Keolis Commuter Services, LLC.

 32 Cobble Hill Road

 Somerville MA 02143

 Telephone # (617) 222-8009

1. **MUNICIPALITIES THE TREATMENT DESCRIBED WILL BE MADE**

Maps of the individual municipalities affected by this Yearly Operational Plan can be found at:

**FDCErailroadvegetation.com**

KEOLIS Commuter Services

“YOUR MUNICIPALITY”

Right-of-Way Maps

|  |  |  |
| --- | --- | --- |
| Abington  Acton  Andover  Ashland  Avon  Ayer  Bellingham  Belmont  Berkley\*  Beverly  Billerica  Boston  Boxborough  Braintree  Bridgewater  Brockton  Brookline  Cambridge  Canton  Chelsea  Cohasset  Concord  Dedham  East Bridgewater  Everett  Fall River\*  Fitchburg  Foxborough\*  Framingham  Franklin  Freetown\*  Gloucester  Grafton  Halifax | Hamilton  Hanson  Haverhill  Hingham  Holbrook  Hopedale  Ipswich  Kingston  Lakeville\*  Lawrence  Leominster  Lincoln  Littleton  Lowell  Lunenburg  Lynn  Malden  Manchester  Mansfield\*  Medford  Melrose  Middleborough\*  Milford  Millbury  Milton  Natick  Needham  New Bedford\*  Newbury  Newburyport  Newton  Norfolk  North Andover  Norwood | Plymouth  Plympton  Quincy  Randolph  Raynham\*  Reading  Revere  Rockport  Rowley  Salem  Saugus  Scituate  Shirley  Somerville  Southborough  Stoughton  Swampscott  Taunton\*  Tewksbury  Wakefield  Walpole\*  Waltham  Wellesley  Wenham  West Bridgewater  Westborough  Weston  Westwood  Weymouth  Whitman  Wilmington  Winchester  Woburn  Worcester |

\*Currently under maintenance by other rail operators until further notice

1. **HERBICIDES, APPLICATION RATES, CARRIERS, & ADJUVANTS**

2022 PROGRAM FOR THE ROADBED

The post-emergent herbicide program is designed to keep the ballast section and shoulder, yards, switches, signals, and grade crossings weed free. Areas scheduled for weed control treatments have been inspected for density of target vegetation to determine appropriate control methods.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **Herbicide(s)** | **Carriers or Adjuvants** | **Application Technique** | **Application Rate** |
| Sensitive area  buffer zone | Glyphosate or Diquat SPC2L  Milestone or Opensight  Oust Extra or  Polaris AC Complete | Spreader Sticker | Foliar  Foliar  Foliar  Foliar  Foliar | 1 qt/acre or 2 pints/acre  6 oz/acre or 3.0 oz/acre  4 oz/acre  2 pints/acre  8-16 oz/acre |
| Non-sensitive  areas | Glyphosate or Diquat SPC2L  Milestone or Opensight  Oust Extra or  Polaris AC Complete | Spreader Sticker | Foliar  Foliar  Foliar  Foliar  Foliar | 1 qt/acre or 2 pints/acre  6 oz/acre or 3.0 oz/acre  4 oz/acre  2 pints/acre  8-16 oz/acre |
| Touch-up  applications | Glyphosate or Diquat SPC2L  Milestone or Opensight  Oust Extra or  Polaris AC Complete | Spreader Sticker | Foliar  Foliar  Foliar  Foliar  Foliar | 1 qt/acre or 2 pints/acre  6 oz/acre or 3.0 oz/acre  4 oz/acre  2 pints/acre  8-16 oz/acre |

OR

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **Herbicide(s)** | **Carriers or Adjuvants** | **Application Technique** | **Application Rate** |
| Sensitive area  buffer zone | Milestone or Opensight or  Method 240 SL  Oust Extra  Esplanade 200SC | Spreader Sticker | Foliar  Foliar  Foliar  Foliar  Foliar | 6 oz/acre or 3.0 oz/acre  8 oz/acre  4 oz/acre  3.5 oz/acre  8-16 oz/acre |
| Non-sensitive  areas | Milestone or Opensight or  Method 240 SL  Oust Extra  Esplanade 200SC | Spreader Sticker | Foliar  Foliar  Foliar  Foliar  Foliar | 6 oz/acre or 3.0 oz/acre  8 oz/acre  4 oz/acre  3.5 oz/acre  8-16 oz/acre |
| Touch-up  applications | Milestone or Opensight or  Method 240 SL  Oust Extra  Esplanade 200SC | Spreader Sticker | Foliar  Foliar  Foliar  Foliar  Foliar | 6 oz/acre or 3.0 oz/acre  8 oz/acre  4 oz/acre  3.5 oz/acre  8-16 oz/acre |

PROGRAM FOR AREAS ADJACENT TO THE ROADBED (BRUSH PROGRAM)

The brush control herbicide program is designed to prevent the re-growth of trees and other woody vegetation in areas adjacent to the roadbed. Areas scheduled for brush control treatments are limited to target vegetation which obscures visibility or interferes with railroad signs, signals, communication wires and other areas where vegetation represents a hazard to assets and safe operations.

| **Location** | **Herbicide(s)** | **Carriers or Adjuvants** | **Application Technique** | **Application Rate** |
| --- | --- | --- | --- | --- |
| Non-sensitive  areas | Polaris AC Complete  Milestone or Opensight  or Method 240 SL  Escort XP | Methylated Seed Oil | Foliar  Foliar  Foliar  Foliar  Foliar | 20 oz/acre  10 oz/acre or 6 oz/acre  10 oz/acre  2 oz/acre  8-16 oz/acre |
| Non-sensitive  areas | Polaris AC Complete  Milestone or Opensight  or Method 240 SL  Escort XP | Methylated Seed Oil | Foliar  Foliar  Foliar  Foliar  Foliar | 20 oz/acre  10 oz/acre or 6 oz/acre  10 oz/acre  2 oz/acre  8-16 oz/acre |
| Touch-up  applications | Polaris AC Complete  Milestone or Opensight  or Method 240 SL  Escort XP | Methylated Seed Oil | Foliar  Foliar  Foliar  Foliar  Foliar | 20 oz/acre  10 oz/acre or 6 oz/acre  10 oz/acre  2 oz/acre  8-16 oz/acre |

1. **HERBICIDE APPLICATION TECHNIQUES**

Herbicide applications within the railroad ROW will be performed using low pressure application from a specialized hy-rail truck equipped with a spray boom. This method is suitable for application within the buffer zone, or restricted application zone of sensitive areas, as defined in 333 CMR 11.04. The spray vehicle is equipped with spray nozzles and controls to allow for treatment of the entire roadbed, or to selectively treat individual sections of the ballast and ballast shoulders. Within sensitive areas, a container will be used to catch any accidental dripping of herbicide. It is a trough-shaped apparatus mounted just behind and above the boom and will be hydraulically lowered to sit underneath the spray nozzles while the vehicle is traveling through areas where herbicide spraying is prohibited.

To assist in rapid identification of “sensitive areas” in the field, a pilot vehicle will proceed approximately 1/4 mile ahead of the applicator vehicle in order to signal ahead the location of “sensitive areas”.

Touch-up techniques control any target vegetation within the ballast and ROW that may have been missed or not treated during the initial phase. Control of vines and other vegetation that might creep onto the ballast from roots growing outside the original treatment boundaries can be managed as a selective, foliage, or spot spray. No more than 10% of the initially identified target vegetation on the right-of-way in any municipality may be treated during a touch-up application and the total amount of herbicide applied in any one year shall not exceed the limits specified by the label or YOP (333 CMR11.03(8)(c)).

The brush control program is designed to control vegetation in areas adjacent to the shoulder using post-emergent herbicides. The herbicides selected will depend on the species of target vegetation present. The application method will depend on the density of target vegetation and previous mechanical control methods. Shrubs and herbaceous vegetation in these areas will be maintained where possible.

There are several methods for the application of post-emergent herbicides to the target vegetation. The variety of methods allows the applicator to selectively apply the herbicide directly onto the target vegetation. These applications are described below:

FOLIAR: Selective application of the herbicide to the foliage and or stem by low-pressure mechanical spray devices. This type of application is useful on busy, high speed rail lines where the work intervals between trains are too short for slower mechanical methods. Selective foliar application will not be used on vegetation over 12 feet in height, except for side trimming (333 CMR 11.03 (5)). Side trimming, when done with herbicides, is the selective application of the herbicide to target portions of a tree and avoids removal of the entire tree. During side trimming operations in residential areas, the railroads utilize low pressure application techniques and appropriate adjuvants to minimize drift. Experience indicates minimal drift occurs, usually within 5 feet of side trimming operations.

STEM OR BASAL SPRAYING: Selective application of the herbicide in a petroleum or crop oil base carrier to the lower portion of the main stem (trunk of a tree). The equipment for basal spraying is often a manual-pump apparatus.

CUT SURFACE: Application of herbicide to the stump immediately after a cutting procedure which may include mowing. Traditionally, the herbicide is manually applied directly to the cut stump surface.

1. **ALTERNATIVE CONTROL PROCEDURES**

No alternative vegetation control methods are feasible for the ballasted roadbed track areas of the ROW. The YOP applies manual and mechanical trimming, cutting and removal of target vegetation within the entire ROW where the application of herbicide is prohibited and where vegetation may represent a hazard to assets and safe operations.

Mechanical control techniques include methods involving the use of hand tools, power equipment, and mowing. Mechanical control techniques are limited to woody and brush vegetation and include target vegetation that interferes with the ROW that cannot be controlled with herbicide. Mechanical control removes unwanted vegetation in areas restricted for herbicide application and the areas adjacent to the roadbed and outside of the limit of herbicide application. Trees and brush interfere with pole lines, signal structures, low voltage power lines, communication and signal lines, reduce visibility, and intrude into the track zone.

Mowing is the mechanical process of cutting woody target species with cutting heads. Mowing is commonly used for trees having a diameter of less than six inches and brush. These machines can be mounted on off-track, on-track, or hy-rail equipment. The railroad strives to limit the amount of mowing and/or cutting by maintaining as much of the right-of-way with herbicide applications.

MBTA and Keolis contract the services of third-party contractors to manage and control large overstory tree canopies and woody vegetation that requires specialized hy-rail equipment. An arborist works closely with the contractor and Keolis personnel to identify at risk and hazardous trees for removal following the ANSI A300 methodology. Dead or dying, extensively decayed, or unstable trees are hazardous and shall be cut and removed following the Best Management Practices (Appendix A). Cutting is used for trees having a diameter greater than six inches or in restrictive locations where other mechanical methods are not viable. All trees and brush identified as interfering with safe operations, personnel performing their duties, and public safety shall be trimmed or removed.

Manual, mechanical, and chemical control are all accepted methodologies, and can be used for vine control depending on the severity of growth and threat to the operation of the structures. In general, chemical application of an approved herbicide is the most effective methodology for controlling woody invasive vines such as Oriental bittersweet (*Celastrus orbiculatus*), and other invasive species, and non-invasive but hazardous vines such as Poison ivy (*Toxicodendron* *radicans*). The control of invasives will follow the procedures established within the approved VMP. At times, and when necessary, a Wetlands Professional will assist in the planning and removal of invasives.

All mechanical maintenance activities will follow Best Management Practices to ensure, to the extent practicable, the protection of resource areas.

1. **IDENTIFICATION OF TARGET VEGETATION**

Prior to herbicide application, a review will be made noting location, density, and type of vegetation present along ROW. This information is used to develop priority locations for herbicide application that will be effective against target vegetation.

In accordance with the Code of Federal Regulations, 49 CFR 213 - Track Safety Standards, all vegetation growing in the ballast and ballast shoulder; in yards; and around switches, signals, signs, and highway grade crossings is considered target vegetation and must be controlled or eliminated so that it does not:

1. *Become a fire hazard to track-carrying structures;*
2. *Obstruct visibility of railroad signs and signals:*
3. *Along the right-of-way, and*
4. *At highway-rail crossings; (This paragraph (b)(2) is applicable September 21, 1999.)*
5. *Interfere with railroad employees performing normal trackside duties;*
6. *Prevent proper functioning of signal and communication lines; or*
7. *Prevent railroad employees from visually inspecting moving equipment from their normal duty stations.*

Woody vegetation growing in the ROW and adjacent to the shoulder will be trimmed, cut, or removed to promote the growth of low growing shrubs when practicable. Targeted woody vegetation will be that which has the potential to block visibility, increase slippery rail conditions, invade the roadbed, interfere with switches, signals, and overhead communication lines, interfere with general operations, encroach on assets, and generally increase risk to safe operations.

The control of invasive and nuisance vines from critical railroad infrastructure, including but not limited to switch boxes, bungalows, light towers, and crossing gates is essential for ensuring railroad safety and operation. Although not all vines encountered growing on infrastructure are considered invasive species in Massachusetts, all can present a danger to the operation of such infrastructure and can interfere with infrastructure daily operation and communication functions.

1. **METHODS TO DESIGNATE SENSITIVE AREAS ON THE ROW**

Sensitive areas are defined in the Rights-Of-Way Management Regulations (333 CMR 11.02) are as defined in 333 CMR 11.04, any areas within the Right-of-Way, including No-Spray and Limited-Spray Areas, in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects. These include but are not limited to the following:

No Spray Area, any area that is both within a Right-of-Way and within:

(a) any Zone I;

(b) 100 feet of any Class A Surface Water Source;

(c) 100 feet of any tributary or associated surface water body where the tributary or associated surface water body runs within 400 feet of a Class A surface water source;

(d) 10 feet of any tributary or associated surface water body where the tributary or associated surface water body is at a distance greater than 400 feet from a Class A surface water source;

(e) a lateral distance of 100 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake;

(f) 50 feet of any identified Private Well;

(g) 10 feet of any Wetlands or Water Over Wetlands;

(h) 10 feet of the mean annual high-water line of any river; and,

(i) 10 feet of any Certified Vernal Pool.

Limited Spray Area, any area that is both within a Right-of-Way and within:

(a) any Zone II or IWPA;

(b) a distance of between 100 feet and 400 feet of any Class A Surface Water source;

(c) a distance of between 10 and 200 feet of any tributary or associated surface water body where the tributary or associated surface water body runs outside the Zone A for the Class A surface water source;

(d) a lateral distance of between 100 and 200 feet for 400 feet upstream, on both sides of the river, of a Class B Drinking Water Intake;

(e) a distance of between 50 and 100 feet of any identified Private Well;

(f) a distance of between 10 and 100 feet of any Wetlands or Water Over Wetlands;

(g) a distance of between 10 feet from the mean annual high water line of any river and the outer boundary of the Riverfront Area;

(h) a distance of between 10 feet from any Certified Vernal Pool and the outer boundary of any Certified Vernal Pool Habitat; and

(i) a distance of 100 feet of any Agricultural or Inhabited Area.

\* Limited Spray Area(s) are those in which spraying is restricted to one annual application of a herbicide through low pressure foliar techniques.

Non-Sensitive Areas are upland areas and/or track not in proximity to sensitive areas and do not require specific precautions or herbicide restrictions.

Sensitive areas, no-spray areas, limited-spray areas, and non-sensitive areas will be marked at their boundaries with permanent color-coded markers. Sensitive areas considered to be readily identifiable in the field (i.e. agricultural and inhabited areas) will not be marked. The markers will be one or any combination of the following:

color-coded signs attached to posts

color-coded signs attached to the railroad ties

color-coded painted rail sections

Sensitive and non-sensitive areas will be designated by the following color-codes:

white non-sensitive areas

blue sensitive area in which a minimum of 12 months shall elapse

between herbicide applications

double blue sensitive areas in which a minimum of 24 months shall elapse between herbicide applications.

yellow no spray zone

1. **PROCEDURES FOR HANDLING, MIXING, & LOADING OF HERBICIDES**

The herbicide application crew will wear protective clothing and personal safety equipment when mixing, handling, loading, or applying herbicide, including standard work clothing or coveralls, work gloves, and work boots. Latex or nitrile rubber gloves, as well as eye goggles are recommended to be worn during mixing of herbicide concentrate as some herbicides may cause mild eye and skin irritations.

Mixing and use of herbicide shall be consistent with the labeling instructions included on the packaging. The herbicide mix will be prepared from herbicide concentrate and water. In compliance with the regulations, the handling, mixing and/or loading of this material will not occur within 100 feet of any sensitive area. Wherever and whenever possible, the herbicide applicator will prepare the herbicide mix on non-porous surfaces, such as pavement or concrete.

Sources of Water and Safeguards to Prevent Contamination

Water used for herbicide mix will be obtained from hydrants and freshwater sources. During the herbicide mix preparations and during herbicide application, strict adherence to the following safeguards will be maintained:

1) Water will be obtained using trucks equipped with anti-siphon devices to eliminate herbicide backflow.

a) Trucks used to extract water from water bodies will be equipped with two such devices: one will be found directly behind the mouth of the hose and another will be at the coupling that joins the hose to the mix tank.

b) Hoses used to extract water from the hydrant will utilize the same setup as described above, except that a third anti-siphon device will be found within

the coupling joining the hose to the hydrant.

2) The herbicide concentrate will not be added to the tank until the water has been obtained and the application apparatus is at least 100 feet outside a sensitive area.

Disposal of Herbicidal Wastes

Disposal of all chemical herbicidal wastes will be the sole responsibility of the licensed applicator. It is the applicator's responsibility to ensure that such disposal will be carried out in an environmentally sensitive manner, in compliance with all Federal and State regulations and guidelines.

1. **HERBICIDE FACT SHEETS, HERBICIDE LABELS, AND S.D.S. SHEETS**

Below is a list of herbicides potentially in use by this Yearly Operational Plan. For the exact products used in this year's program please refer to pages 4 and 5 of this document.

| **MANUFACTURER** | **PRODUCT**  **NAME** | **ACTIVE INGREDIENT(S)** | **EPA REGISTRATION #** |
| --- | --- | --- | --- |
| ALBAUGH, INC. | KRENITE S | AMMONIUM SALT OF FOSAMINE | 42750-247 |
| BASF | ARSENAL | ISOPROPYLAMINE SALT OF IMAZAPYR | 241-346 |
| BASF | ARSENAL POWERLINE | ISOPROPYLAMINE SALT OF IMAZAPYR | 241-431 |
| BASF | ARSENAL R.R. HERBICIDE | ISOPROPYLAMINE SALT OF IMAZAPYR | 241-273 |
| BAYER CROP SCIENCE | ESCORT XP | METSULFURON METHYL | 432-1549 |
| BAYER CROP SCIENCE | OUST EXTRA | SULFOMETURON METHYL &  METSULFURON METHYL | 432-1557 |
| BAYER CROP SCIENCE | OUST XP | SULFOMETURON METHYL | 432-1552 |
| CORTEVA AGRI-SCIENCES | MILESTONE | AMINOPYRALID | 62719-519 |
| CORTEVA AGRI-SCIENCES | OPENSIGHT | AMINOPYRALID & METSULFURON METHYL | 62719-597 |
| CORTEVA AGRI-SCIENCES | GARLON 4 | TRICLOPYR, BUTOXY ETHYL ESTER | 62719-40 |
| CORTEVA AGRI-SCIENCES | GARLON 4 ULTRA | TRICLOPYR, BUTOXY ETHYL ESTER | 62719-527 |
| CORTEVA AGRI-SCIENCES | GLYPRO-PLUS | GLYPHOSATE | 62719-322 |
| CORTEVA AGRI-SCIENCES | ACCORD CONCENTRATE OR RODEO | GLYPHOSATE | 62719-324 |
| MONSANTO | ROUND UP PRO | GLYPHOSATE | 524-475 |
| NU FARM AMERICAS | AQUANEAT AQUATIC | GLYPHOSATE | 228-365 |
| NU FARM AMERICAS | PATRIOT SELECTIVE | METSULFURON METHYL | 228-391 |
| NU FARM AMERICAS | POLARIS AC COMPLETE | IMAZAPYR | 228-570 |
| NU FARM AMERICAS | POLARIS HERBICIDE | IMAZAPYR | 228-534 |
| NU FARM AMERICAS | SPYDER SELECTIVE | SULFOMETURON METHYL | 228-408 |
| NU FARM AMERICAS | RAZOR | GLYPHOSATE | 228-366 |
| NU FARM AMERICAS | RAZOR PRO | GLYPHOSATE | 228-366 |
| RAINBOW TREE CARE | CAMBISTAT | PACLOBUTRAZOL | 74779-3 |

**LABELS & SAFETY DATA SHEETS (SDS):**

The labels and SDS sheets for the above products can be found by:

1. *Open your internet browser and enter the following address in the* ***Address bar****:* [*http://www.cdms.net/Label-Database*](http://www.cdms.net/Label-Database)
2. *Select the* ***Manufacturer*** *(as found above) you wish to be informed about from the side bar on the left side of the page.*
3. *A list of products will appear. Please be sure to reference the* ***Product Name*** *to locate the correct information.*

**HERBICIDE FACT SHEET:**

Herbicide fact sheets for the above products can be found by:

1. *Open your internet browser and enter the following address in the* ***Address bar:*** [*http://www.mass.gov/eea/agencies/agr/pesticides/rights-of-way-sensitive-area-materials-list.html*](http://www.mass.gov/eea/agencies/agr/pesticides/rights-of-way-sensitive-area-materials-list.html)
2. *Choose the link that corresponds to the* ***Active Ingredient*** *present in the product.*

**Hard copies of any of these documents may also be obtained by calling Fair Dermody Consulting Engineers at (207) 747-4651**

1. **EMERGENCY CONTACTS**

In the event of a spill or emergency, information on safety precautions and cleanup procedures may be gathered from the following sources:

Herbicide Label

Herbicide Fact Sheet

Herbicide Safety Data Sheet

Herbicide Manufacturer

BASF Ag Products (800) 545-9525

Bayer Environmental Sciences (866) 992-2937

Corteva Agri-Sciences (800) 992-5994

Nufarm Turf & Specialty (800) 345-3330

Rainbow Tree Care (952) 922-3810

Massachusetts Pesticide Bureau (617) 626-1784

Massachusetts DEP Emergency Response (888) 304-1133

Chemtrec (800) 262-8200

EPA National Pesticide Information Center (800) 858-7378

Massachusetts Poison Control Center (800) 222-1222

Local Community Chief of Police and/or Fire Chief:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Abington  Acton  Andover  Ashland  Avon  Ayer  Bellingham  Belmont  Berkley  Beverly  Billerica  Boston  Boxborough  Braintree  Bridgewater  Brockton  Brookline  Cambridge  Canton  Chelsea  Cohasset  Concord  Dedham  E. Bridgewater  Everett  Fall River  Fitchburg  Foxborough  Framingham  Franklin  Freetown  Gloucester  Grafton  Halifax | (781) 878-3232  (978) 264-9638  (978) 475-0411  (508) 881-1212  (508) 583-6677  (978) 772-8200  (508) 966-1515  (617) 484-1215  (508) 822-7040  (978) 922-1212  (978) 667-1212  (617) 343-4500  (978) 264-1750  (781) 794-8600  (508) 697-0914  (508) 941-0200  (617) 730-2222  (617) 349-3300  (781) 821-5090  (617) 466-4855  (781) 383-1212  (978) 318-3400  (781) 751-9300  (508) 378-7223  (617) 389-2120  (508) 676-8511  (978) 345-4355  (508) 543-4343  (508) 872-1212  (508) 528-1212  (508) 763-4017  (978) 283-1212  (508) 839-2858  (781) 293-5761 | Hamilton  Hanson  Haverhill  Hingham  Holbrook  Hopedale  Ipswich  Kingston  Lakeville  Lawrence  Leominster  Lincoln  Littleton  Lowell  Lunenburg  Lynn  Malden  Manchester  Mansfield  Medford  Melrose  Middleborough  Milford  Millbury  Milton  Natick  Needham  New Bedford  Newbury  Newburyport  Newton  Norfolk  North Andover  Norwood | (978) 468-1212  (781) 293-4625  (978) 373-1212  (781) 749-1212  (781) 767-1212  (508) 473-8444  (978) 356-4343  (781) 585-0523  (508) 947-4422  (978) 794-5900  (978) 534-7560  (781) 259-8113  (978) 952-2300  (978) 937-3200  (978) 582-4531  (781) 595-2000  (781) 397-7171  (978) 526-1212  (508) 261-7300  (781) 391-6404  (781) 665-1212  (508) 947-1212  (508) 473-1113  (508) 865-3521  (617) 698-3800  (508) 647-9500  (781) 455-7570  (508) 991-6300  (987) 462-4440  (978) 462-4411  (617) 796-2100  (508) 528-3206  (978) 683-3168  (781) 440-5100 | Plymouth  Plympton  Quincy  Randolph  Raynham  Reading  Revere  Rockport  Rowley  Salem  Saugus  Scituate  Shirley  Somerville  Southborough  Stoughton  Swampscott  Taunton  Tewksbury  Wakefield  Walpole  Waltham  Wellesley  Wenham  W. Bridgewater  Westborough  Weston  Westwood  Weymouth  Whitman  Wilmington  Winchester  Woburn  Worcester | (508) 830-4218  (781) 585-3339  (617) 479-1212  (781) 963-1212  (508) 824-2716  (781) 944-1212 (781) 284-1212  (978) 546-1212  (978) 948-7644  (978) 744-1212  (781) 233-1740  (781) 545-1212  (978) 425-2642  (617) 625-1600  (508) 485-2121  (781) 344-2424  (781) 595-1111  (508) 824-7522  (978) 851-7373  (781) 245-1212  (508) 668-1212  (781) 314-3600  (781) 235-1212  (978) 468-4000  (508) 586-2525  (508) 366-3060  (781) 786-6201  (781) 320-1000  (781) 335-1212  (781) 447-1212  (978) 658-5071  (781) 729-1214  (781) 933-1212  (508) 799-8466 |

APPENDIX A

**BEST MANAGEMENT PRACTICES**

Vegetation on rail rights-of-way (ROW) affects operations, maintenance activities and most importantly has a potential risk to the safety of passengers, employees, community and the environment. The 49 CFR 213.37 states in part, all vegetation will be removed from the following areas:

* Ballast section (chemical only)
* Ballast shoulder (chemical and or mechanical)
* Yards (chemical and or mechanical)
* Switches, signals, and signs (chemical and or mechanical)
* Highway grade crossings (chemical and or mechanical)
* Bridges, abutments & buildings (chemical and or mechanical)
* Off-track areas (chemical and or mechanical)
* Inside of curves (chemical and or mechanical)

The Vegetation Management Plan (VMP) incorporates an *Integrated Vegetation Management* (IVM) approach that includes chemical and physical/mechanical controls for the reduction of vegetation hazards along the ROW that may:

* Become a **fire hazard** to track-carrying structures;
* **Obstruct visibility** of railroad signs and signals:

along the right-of-way, and highway-rail crossings;

* Prevent railroad employees from conducting federally **required inspections**
* **Interfere with railroad employees performing normal trackside duties**; and or,
* Prevent **proper functioning of power, signal and communication lines**
* Present a risk to the safe operation of trains

The Yearly Operating Plan (YOP) covers the permitted activities under the approved five-year VMP under the jurisdiction of the Massachusetts Department of Agricultural Resources (MDAR) in compliance with 333 CMR 11.00: M.G.L. c. 132B. The YOP is submitted for review and approval to MDAR at the beginning of every calendar year. The MDAR has 90 days upon receipt of the YOP to review and issue written approval. Upon receipt of the YOP, MDAR publishes a public notice in the Environmental Monitor and a 45 day public comment period begins. Concurrently, the YOP is communicated via certified mail to all communities included within the VMP. In addition, Keolis submits the previously approved maps included as part of the VMP to the National Heritage of Endangered Species Program for review.

The approved VMP and the YOPs can be found in the MDAR website ( [Keolis 2021-2025 VMP](https://www.mass.gov/doc/keolis-vmp-2021-2025/download) ; [Keolis 2020 YOP](https://www.mass.gov/doc/keolis-railroad-2020-yop/download)). The YOP serves to inform communities on annually of activities planned for vegetation controls and may include any and or all of the following:

* + Chemical(s) to be applied pre-emergent spring and post-emergent/brush in late summer and early fall
  + Chemical (s) for Off-track brush control late summer and fall
  + Chemicals used for stem treatment throughout the year
  + Mechanical controls throughout the year
  + Roadbed drainage ditch vegetation clearing throughout the year

CHEMICAL APPLICATION:

Chemical application is required to ensure railroad **roadbed** is clear of *all* vegetation. Areas adjacent to the roadbed, will be treated as needed and following the controls specified within the VMP and the approved zone maps for each community. Every year, the Environmental Department reviews the areas and conditions based on Keolis Engineering Department inspections, previous YOPs and areas of significant concern for prioritization of target vegetation for chemical application or mechanical controls. Keolis employs strategies for *selective application* of herbicides focusing on the methodology of spray to control target vegetation. In doing so, we reduce the application to non-target vegetation and protect the environment.

In addition, and to further reduce chemical application, Keolis has implemented best management practices to avoid “spray” of herbicides along the “roadbed” locations or other critical infrastructure along the ROW requiring full removal of vegetation, where:

1. Rail Tie replacement has been conducted within a period of 24 months.
2. Major construction requiring disturbance of ballast and or replacement of ballast has been completed within a period of 12 months

Chemical application is planned according to the maps by line. In addition, Keolis only utilizes chemicals included within the approved [MDAR ROW Sensitive Areas Material List](https://www.mass.gov/service-details/rights-of-way-sensitive-area-materials-list).

Further, Keolis employs only certified/licensed applicators. The application of herbicide follows a review process that incorporates planning for reduction of herbicide application. This is done with the support of a Keolis trained Environmental Monitor who follows the maps and guides contractor to employ best management practices and monitor real time conditions. The herbicide is not applied:

* Near people
* Near animals / livestock
* Near agricultural areas
* Onto active train platforms nor over nonrailroad fences
* Onto nonrailroad property
* Nonrailroad structures (Sheds, Tarps, garages, playgrounds, firewood piles, etc.)
* Landscaped areas
* Well-kept shrubs
* Branches of trees above 12 feet in height except for side trimming
* If the following is observed in the field: free standing or moving water, wetland vegetation, people, animals, nonrailroad property, ground water supply areas, public/private wells.
* Near active, or soon to be active work areas.

Personnel applying herbicide are required to maintain daily records of application. Further, Keolis requires applicators to incorporate BMPs and the following:

* Drift control product to produce larger droplets to control drift to non-target areas.
* Monitor weather and wind speed direction to avoid drift of herbicide to non-designated areas (Nonrailroad property, sensitive areas, water, etc.)
* Weather conditions that may adversely affect the effectiveness of the herbicide. No application will be done during rain and or after heavy rain events. Dry conditions provide a more effective treatment of areas.
* Applicator will maintain a daily log to document conditions at the start/end of chemical application.

PHYSICAL AND MECHANICAL CONTROLS:

Keolis employs third party professional arborists and certified special services to conduct tree clearing activities. Keolis Engineering Department staff conduct general brush cutting and manual vegetation clearing as needed.

Keolis environmental and engineering staff and contractors review video and GIS tools to assess key critical areas to target annually. Keolis best management practices for physical/mechanical methods include:

* Evaluation of statistical/historical conditions for target areas (derailments, slippery rail, incidents, inspections, etc.) to determine target vegetation.
* Survey - lines via hi-rail with contractor and Keolis engineers reviewing work with GPS-enabled video cameras
* Drone use for evaluation of canopy over ROW
* Evaluation of sensitive areas utilizing MapGIS
* Evaluate VMP maps and identified No-Spray and Limited Spray Zones.
* Superintendents work in advance of crews to best determine property lines and assess tree characteristics and mitigation methods using GIS applications, physical markers, fences and Val maps to aid in property boundary determinations.
* Contractor Arborists utilize tree hazards assessment techniques to target hazardous conditions and defected trees (ANSI A-300) standards, and invasive species identification.
* Regular track inspections to identify emerging hazards

Methods- mechanical cutting & trimming

* Selective Vegetation Approach
  + Tree cutting/removal is prescribed where trimming approach is insufficient or impracticable focusing on the safety and operational needs to ensure compliance with 40 CFR 237.
  + Preference for trimming will be considered for sensitive resource areas when practicable.
  + Tree work is performed utilizing aerial lifts and specialized tree equipment fitted with hi-rail gear for rail travel to avoid disturbance of sensitive resource areas. No land disturbance will be conducted while performing vegetation controls.
  + Tree stumps are left at approximately between 6 to 12 inches to avoid soil disturbance.
  + All chainsaws utilize environmentally-friendly biodegradable bar and chain oil.
  + Debris generated is either transported to an off-site location for a variety of recycling purposes, or it’s chipped on site.
  + Chips are broadcast within MBTA property limits on the shoulders of the corridor a minimum of 25ft. from resource areas.
  + Chippings will not be stockpiled more than 12 inches and whenever practicable they will be spread along ROW.
  + Chippings need to be spread away from tracks and drainage ditches