

Rural Roadside Vegetation Management (RRVM)

Best Management Practices

Many Wisconsin County Public Works Agencies are tasked with managing rural roadside vegetation. It is recommended that agencies develop a management plan to define the goals of their organization. Rural roadside vegetation management is important to motorists using the highway system as well as adjoining property owners. Safety, aesthetics, environmental impacts and financial limitations are all components of a complete management plan. This Rural Roadside Vegetation Management (RRVM) Best Management Practice (BMP) document can serve as a guide to agencies as they develop their RRVM plans.

The Level of Service (LOS) Committee developed and circulated a survey to all 72 County Highway Commissioners. The survey addressed current mowing practices, equipment usage, chemical application practices, Operator safety, invasive species, woody vegetation and wildlife concerns. The information gathered from this survey has been utilized to develop this BMP document.

A summary of the survey responses has been attached as an appendix. The wealth of knowledge and history the Counties can share is a valuable asset.

WIDOT officials and UW Extension personnel have also been consulted for input from their agency perspectives.

The LOS Committee considers the BMP's "living" documents. Meaning they are constantly evolving and should be updated as practices and equipment change. Suggestions, additions or corrections are welcomed.

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Section 1

Establishing a Level of Service

Establishing a level of service for Rural Roadside Vegetation Management is an important aspect of the overall plan. A safety standard is the controlling factor for determining when mowing starts and how frequently mowing is conducted. Required resources and funds are determined based on this level of service.

Driver visibility at intersections and driveways is the major factor to consider when deciding when to start mowing highway right of way. This should be viewed as a motorist in a car would see an approaching car at an intersection. Therefore the goal should be that shoulder slope and vision corner vegetation does not exceed 18 inches in height.

There are several factors to consider while planning when to start mowing. Temperature, recent rainfall amounts, geographic location, (longer growing season in the southern portion of the State) soil type (vegetation growth rate is governed by soil type to some degree) and how long it takes mowing crews to complete a cycle. If crews start too late vegetation will exceed the targeted 18 inch height before a cycle is completed.

Another facet of a level of service policy is to decide how wide your crews will mow in a given cycle. Many agencies mow a single pass along the shoulder slope in each direction on their initial cycle. The width of this mowing pass is determined by the chosen equipment (typical range is 8' to 15').

Frequency of mowing is also an element of this plan. Weather, geographic location and soil type should be considered. If the 18 inch maximum vegetation height goal is observed, agencies can decide if and when another mowing cycle is needed in a season.

Woody vegetation can be a challenge and agencies treat this concern in different manners based on their conditions and available resources. Some County Highway Departments elect to mow the entire width of the right of way on a multi-year basis to control the growth of woody vegetation with standard mowing equipment. A 2-4 year average cycle for this mowing cycle seems common. This is usually done with a third or fourth of the County Highway Right of way being mowed full width each year to complete the desired cycle.

Some County Departments use other types of equipment i.e. forestry heads or brush mowers to remove woody vegetation as needed and forego mowing the entire right of way.

Establishing the level of service will be the catalyst for identifying the equipment and personnel requirements to deliver the desired results.

Section 2

Operator Safety

Rural roadside mowing is a hazardous occupation and should be assigned to properly trained operators. Traffic, terrain, moving equipment parts, noxious weeds and limited visibility of debris are all safety concerns associated with this duty.

Operators should be trained on safe mowing practices. The WCHA Safety and Training Committee has numerous safety related resources pertaining to tractor and mower safety. Aegis corp. is also offering a current training video for operators.

Proper equipment operation training should be provided by the equipment manufacturer or dealer.

All safety procedures should be followed and all guards should remain in place. Equipment should be inspected daily and maintained as recommended by the manufacturer.

Advanced warning signs displaying a “Mowing Operations Ahead” or similar warning message should be displayed in accordance with the M.U.T.C.D. Signs should be relocated as needed throughout the work day to ensure the operator and equipment remain within a reasonable distance of the advanced warning signs.

Mowing equipment should be equipped with flashing lights to provide adequate visibility in all conditions from all directions

Operators must be watching for debris and foreign material in the path of the mowing equipment. Personal injury and equipment damage can occur if these objects are struck by the mowing equipment. Mower thrown objects (MTOs) are also a hazard to approaching motorists if debris and foreign material are encountered by mowing equipment. All guards and safety provisions should remain in place and be inspected daily.

The increasing presence of certain invasive plant species, i.e. wild parsnip et.al have proven to be a serious health threat to Operators when they come in contact with the plant or airborne particulate resulting from roadside mowing.

Operators should be educated to recognize these plants and trained to take the proper precautions to avoid being effected.

Culvert pipes, utility pedestals and other known structures and appurtenances should be adequately marked with permanent markers to prevent accidental contact, damage or injury.

Section 3

Equipment Options

The equipment selection process should be guided by the level of service goals established by the agency.

Operator Safety, and productivity are also key factors when choosing equipment for this task.

Some additional considerations would be the terrain, right of way widths, types of vegetation, desired cutting height, and visibility from the operator's seat.

There are many variations of roadside mowing equipment configurations to consider. Some of them are:



Rear and side mounted flail mowers



Front and side mounted flail mowers



Boom mounted rotary mower



Bat wing rotary mower



Discbine mower



Skid steer loader mounted forestry/mulching attachment



Excavator mounted forestry/mulching attachment

Each of these units work well in different situations and for different functions. In many cases a combination of these units may be the best solution for a County's RRVM efforts.

It is recommended that agencies research and demonstrate different types of equipment prior to purchasing as there is no single solution to the many different conditions that prevail with rural roadside mowing. Referring to the County's level of service policy and focusing on the desired goal can help to narrow the field of options and identify which pieces of equipment will best help to achieve these goals.

Section 4

Herbicide Application and Vegetation Growth Control

As is common with the other RRVM methods there are a variety of options and many safety concerns relating to herbicide application. Some of these general concerns are:

- Employee safety
- Public safety
- Short and long environmental consequences
- Impact on pollinators
- Impact on wildlife
- Public education and acceptance
- Impact to private property
- Cost
- Short and long term effectiveness

Application of herbicides and plant growth control chemicals is gaining in popularity in the public works arena. Many advancements have been made with these products. Today's products are plant specific and can be applied with accurate placement at desired application rates. Public acceptance in the agricultural community is growing. Careful planning and responsible implementation could result in another RRVM option for Wisconsin County Highway Departments.

A successful herbicide program may provide invasive species eradication, with plant specific chemicals that will maintain growth of desirable native plants for pollinators and other wildlife concerns.

Plant growth control is also an option. The growth of desired plant species can be controlled to the degree that mowing may not be required. This option would maintain safe road ways at all times and at potentially lower costs.

Plant species, growing seasons and soil types vary throughout the state. These conditions will require specific herbicide application plans for each condition and desired goals.

It is recommended that County Highway staff contact the UW Extension agents in their area to seek references to herbicide applicators and vendors familiar with their conditions. Some topics to review with these agencies include

- Identify the goals and level of service detailed in the County's adopted RRVM plan
- Chose a pilot program area to initiate a program to meet the goals
- Involve the stakeholders early and offer education and training
- Gather photos and data of the "before" conditions in the test area
- Proceed with the application process logging detailed information including products, application rate and weather conditions
- Observe photograph and document all results of the application
- Collect all costs and compare to alternative methods of control
- Prepare and share a final report summarizing the pilot process effectiveness, costs and acceptance information with the stakeholders

- Appointment of a County Weed Commissioner per WI Statute 66.0517. Portage, Wood, and **LIST OTHER COUNTIES** have adopted a resolution appointing a Weed Commissioner. The authority of the Weed Commissioner is below:

- (3) Powers, duties and compensation.

(a) Destruction of noxious weeds. A weed commissioner shall investigate the existence of noxious weeds in his or her district. If a person in a district neglects to destroy noxious weeds as required under s. 66.0407 (3), the weed commissioner shall destroy, or have destroyed, the noxious weeds in the most economical manner. A weed commissioner may enter upon any lands that are not exempt under s. 66.0407 (5) and cut or otherwise destroy noxious weeds without being liable to an action for trespass or any other action for damages resulting from the entry and destruction, if reasonable care is exercised.

Section 5

Invasive Species Control

Invasive species within the road right-of-way and adjacent properties can pose significant health risks to highway workers, utility workers, emergency responders, and anyone utilizing the right-of-way. In 2009, Invasive Species Rule (NR 40) was passed. This rule lists and regulates a number of non-native invasive species and requires control of these invasive species and can be found at: http://docs.legis.wisconsin.gov/code/admin_code/nr/001/40.pdf.

To accomplish this control, there are many methods that can be utilized. mowing completion dates, herbicide control, mechanical removal, burning, etc. Below are a list of resources for Counties to review and consider:

- Suggested mowing times: for WI Council on Forestry
<https://councilonforestry.wi.gov/Documents/InvasiveSpecies/Suggested-mowing-times-for-select-species-in-so-WI.pdf>
- Factsheets for invasive weed management [exit DNR] by Brendon Panke and Mark Renz, University of Wisconsin – Extension
<https://ipcm.wisc.edu/downloads/pubsws/>
- Herbicide Effectiveness on Invasive Plants in Wisconsin [exit DNR] by Mark Renz, University of Wisconsin – Extension
<https://cdn.shopify.com/s/files/1/0145/8808/4272/files/A3893.pdf>
- Southeastern Wisconsin Invasive Species Consortium, Inc. Roadside Invasive Plant Management Plan
https://sewisc.org/images/managers/document_manager_folders/resources/Roadside%20Inventory%20and%20Management/ROW%20Invasive%20Species%20Management%20Plan.pdf
- UW-Extension – Management of Wild Parsnip
<https://portage.extension.wisc.edu/files/2018/04/Wild-Parsnip-Management-A3924-15.pdf>

While the goal is to control and eradicate these harmful invasive species, highway workers may be exposed to them through their daily activities. For additional worker protection, Counties should consider:

- Employee training – plant identification, hazards, treatments
- Personal Protective Equipment – glasses, gloves, long sleeves, etc.
- Equipment maintenance – cleaning off equipment to reduce seed transfer, protections for mechanics or highway personnel working on equipment that may have been exposed to invasives.

Section 6

Pollinators and Wildlife Concerns

Rural roadside right of way is comprised of thousands of acres of vegetation. This area if managed responsibly can be an important resource for many species of native plants, pollinators, and wildlife. However, there is no single or simple plan or approach to managing this resource responsibly.

Some items to consider when considering a Rural Roadside Vegetation Management plan from the pollinator and wildlife perspective are:

- Identifying desired plant, pollinator and wildlife species native to your specific area
- Determine typical schedule for plant pollination and wildlife nesting, incubation and gestation periods in your area.
- Adopt realistic goals for accommodating desired species pollination and reproduction periods.
- Schedule the optimum timing for mowing or herbicide applications to achieve the desired safety/vision goals while accommodating pollination and reproduction periods.
- Establish a program to monitor the timing of mowing and herbicide applications and log the impacts to desired plant, pollinators and wildlife species.
- Amend maintenance practices as needed to achieve safety goals and minimize the impact to all plant and wildlife species occupying the right of way.

Plant, pollinator and wildlife species vary greatly throughout Wisconsin. Soil types, growing seasons, rainfall amounts, temperatures and geological differences are all variables that result in many unique eco systems throughout the state.

Consequently these variables result in agencies tasked with developing rural roadside vegetation management plans specific to their area. Therefore it is recommended that County Highway Departments consult with state and local agencies familiar with the plant, soils, pollinators and wildlife species native to their specific area. Some of these agencies are:

- UW Extension Offices
- Federal Highways Information
- https://www.environment.fhwa.dot.gov/env_topics/ecosystems/pollinators.aspx
- Wisconsin Monarch Collaborative Information specific to the Rights of Way
- <http://wiatri.net/Projects/Monarchs/connect.cfm#ROW>
- Minnesota Roadsides and Rights-of-ways Pollinator Habitat BMPs
- <https://www.mda.state.mn.us/sites/default/files/inline-files/pollinatorbmpsroad.pdf>
- Monarch Joint Venture Information
- <https://monarchjointventure.org/i-am-a/department-of-transportation>
- WIDOT Bureau of Highway Maintenance
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christa.schaefer@dot.wi.gov
- Local Co-op organizations
- Herbicide sales/application Dealers

An equipment modification known as a “Flushing Bar” can be attached to mowing equipment to alert birds and mammals sheltering in taller vegetation when mowing equipment is approaching. The photo below illustrates an example for your reference.

