APPROVED
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BOARD OF SUPERVISORS

DES MOINES COUNTY

INTEGRATED ROADSIDE VEGETATION MANAGEMENT

COMPREHENSIVE PLAN

2023

DES MOINES COUNTY
ROAD DEPARTMENT

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Des Moines County Engineers Office

Table of Contents

INTEGRATED ROADSIDE VETETATION MANAGEMENT OBJECTIVE STATEMENT

The Integrated Roadside Vegetation Management (IRVM) program was created to better serve the public using an environmentally safe approach to vegetation maintenance in Des Moines County and statewide.

Des Moines County's IRVM objective, is to control the vegetation along county right-of-way by judicious plantings of desirable species. This allows us the opportunity to establish and maintain a safe, stable, low maintenance roadside that is attractive and healthy for all life and a legacy for future generations to enjoy.

By using the various management techniques described in this document and specifically the re-introduction of warm season native prairie plants, many roadsides can now be inexpensively managed in a positive and sensitive approach.

INTRODUCTION AND HISTORY OF IRVM IN IOWA

Roadsides exist for a variety of reasons, but their primary function is to handle surface water from adjacent land the road surface. Because of steep sloping land and poor soil conditions in many roadsides, weed invasion and soil erosion are constant problems in Iowa. To address these issues, a committee was formed in Black Hawk County in 1985. They found that it wasn't the poor soil conditions that caused weed invasion, but rather the improper establishment and maintenance of Eurasian grasses and legumes. This committee proposed the establishment of native prairie vegetation in roadsides and the integration of various vegetation management techniques to maintain a dominate plant community (Eli, UNI).

IRVM techniques produce a roadside that is resistant to weed invasion and soil erosion yet requires little or no maintenance. At present, 47 counties across Iowa have adopted this approach to vegetation management, as well as state transportation departments across the Midwest. The approach is attracting attention from special interest groups throughout the U.S. because of our strict dedication to environmental concerns.

DES MOINES COUNTY IRVM

With the growing concerns over environmental issues dealing with vegetation management in the right-of-ways, the Des Moines County Conservation Board voted by resolution on February 7th of 1990 to approve the integrated roadside vegetation management program for this county. The plan was endorsed by the Des Moines County Board of Supervisors during regular session on February 12, 1990.

To join the trend of IRVM counties statewide, Des Moines county hired a Roadside Biologist in May of 1990 to assume responsibility for the maintenance of vegetation along 610 miles of secondary roads or 3,050 acres of manageable habitat. The vast majority of right-of-ways are 40 to 66 feed wide. These areas all have special needs and will be controlled by IRVM techniques.

Funding for this program will be derived from the Road Clearing, Wedd Commission, and Secondary Road Maintenance funds. The budget provided will be jointly administered by the Roadside Manger and the County Engineer and will be a separate and distinct budget.

Program evaluations and reviews of goals and objectives will be conducted annually by the Roadside Biologist, County Engineer and Conservation Director. Changes of IRVM personnel and/or job descriptions will be conducted by Roadside Biologist and County Engineer. Input from the County Conservation Board and Conservation Director will be taken into consideration. Annual reports will be prepared fiscally to coincide with the budget year and will be submitted to the County Engineer for distribution.

PRIOR MANAGEMENT AND THEORY

For years it was believed that herbicide application would eradicate unwanted undesirable plants (Eli, UNI). After thirty plus years of blanket praying with herbicides, untimely mowing, and burning of cool season vegetation, the stress put on by these techniques has not reduced weeds.

DES MOINES COUNTY IRVM PROGRAM SUMMARY

The purpose of Des Moines County IRVM is to protect the user of secondary roads from sight visibility problems due to unwanted weeds and brush and additionally to prevent the spread of these materials onto adjacent agriculture land. These goals are to be addressed through the use of native prairie vegetation where possible and practical.

There are six major expected benefits associated with this approach:

1. Reduction in maintenance costs when prairie plants are established.
    a. After establishment minimal maintenance is required except for a periodic burn once every 4 or 10 years.
2. A dramatic reduction I the quantity of herbicide used.
    a. When prairie plants are established, they monopolize the soil substructure with their spreading root system. When this occurs, weed species are eliminated by the more dominant native species, with less dependence on any chemical control.
3. Reduced brush problems.
    a. Cutting unwanted brush and treating stumps correctly will assure that roadways will not be over-shadowed by trees growing in the right-of-ways. Trees and brush will be chipped or burned.
4. Public education and awareness with IRVM techniques.
    a. Public programming, media, and radio coverage are all ongoing mechanisms used to reach the rural community. Public involvement has increased dramatically since the program began in 1990. Many landowners are now using IRVM techniques and are benefiting from Iowa's pas prairie heritage.
5. Wildlife enhancement.
    a. Areas reseeded with warm season grass cover are providing nesting, feeding, loafing and escape habitat for wildlife. New plantings have increased dramatically the nesting success of game birds and songbirds.
6. Aesthetically pleasing right-of-ways.
    a. The ecological benefits achieved by reintroducing native grasses and wildflowers in roadside seedings become apparent to both residents and visitors.

PROGRAM GOALS

A series of goals have been structured for program development. These goals outline the overall framework for the "IRVM" program. Each goal reflects the diversity and scope of an integrated approach to roadside management. An outline of these goals follows:

1. Weed Law Compliance.
    a. According to State mandates it is our duty to control noxious weeds within County right-of-ways.
        i. Spot treatment of select herbicides used.
        ii. Locating problem areas.
        iii. Plant identification for proper control.
2. Erosion Control.
    a. Steep slopes will be netted using synthetic fibre materials.
    b. All other areas will be straw mulched.
    c. Hydro-mulch with tackifier.
    d. Critical areas will be seeded as soon as possible.
3. Improve Groundwater Quality
    a. The existence of a dominant prairie plant community should reduce chemical usage naturally by:
        i. Spot treating targeted species only.
        ii. Encourage native grass seedings.
        iii. Mow as a chemical alternative.
4. Enhance Wildlife Habitat.
    a. By increasing seeding locations and recognizing opportunities for habitat development.
        i. Locate prairie remnant sites.
        ii. Seed all adaptable new road construction with prairie plants.
        iii. Rejuvenate unused areas.
5. Roadside Beautification.
    a. Using wildflower and native grass applications generates public support and reminds us of our prairie heritage.
        i. Special roadside seedings.
        ii. Develop beautification route.
        iii. Work with adjacent landowners.
6. Brush Control.
    a. Unwanted brush will be cut and stumps treated chemically to prevent regrowth.
        i. Identify problem areas.
        ii. Maintain a clear zone.
        iii. Cut and chip or burn brush.
        iv. Shredded material may be used for conservation plantings.

Implementation of IRVM procedures will achieve the following objectives:

Objective 1. Maintain safe roadways and intersections.

The right-of-way shall be free of brush and trees that may cause problems for vehicles that leave the traveled portions of the roadway. This includes areas where brush impedes drainage and increases the likelihood of snow drifting on the road or shades the road excessively.

Strategy:

Short native grass species (buffalo grass, blue gramma) will be planted in recovery zones around intersections.

Remove all brush from intersections and wherever it obstructs traffic control signs. Brush will be removed from all floreslopes and ditch bottoms to assure an adequate recovery zone. Cut brush shall be chipped and the stumps will be treated with herbicide to prevent regrowth.

Objective 2. Reduce maintenance requirements.

A significant reduction in maintenance dollars spent on mechanical control may be realized when prairie is introduced in roadsides.

Strategy:

The entire right-of-way may be mowed for safety considerations and for the control of noxious weeds and brush. Mowing may be reduced during the ground bird nesting season where conditions allow.

Herbicide use will be limited to spot control of noxious weeds (Canada thistle, teasel, multiflora rose, etc.) and brush/trees.

Burning will become a primary management tool for controlling annual and biannual weeds and for the control of unwanted woody encroachment. Complete responsibility for this practice will be with the Des Moines County IRVM program.

All interested adjacent landowners will be provided the necessary information needed to implement these management techniques.

Objective 3. Locate and preserve prairie remnants.

All prairie remnant roadsides will be located and identified by placement of prairie restoration signs. Signs will be maintained and installed by the Des Moines County IRVM staff and should remind the public of the considerable benefits offered by the program.

Strategy:

A systematic roadside inventory will help to locate prime areas in Des Moines County. The goal is to inventory all natural areas, both public and private, and coordinate these efforts through the appropriate entities.

Staff will inform landowners of special roadsides adjacent to their property and explain the uniqueness of the prairie community. This will help preserve the area and involve the landowner in the preservation process.

Objective 4. Establish warm season grasses and flowers where practical.

Native grasses and wildflowers will be planting when appropriate and suitable, site-dependent considerations dictate alternative seedings.

Strategy:

All new roadside construction, ditch clean outs, and disturbed areas will be considered to reseed with warm season native grasses and flowers. Exceptions will be urban right-of-ways, foreslopes, intersections, and highly erodible areas. These will be seeded to short grass mixes, cool season grasses and legumes or otherwise as dictated by soil conditions and terrain.

Burning, as noted in Objective 2, will be used as a management tool. The first burn will occur in the Spring after the first year's growth to control weeds and thereafter on the three and five year rotation, as needed, to encourage warm season growth.

Healthy, weed free, cool season grass roadsides will be left alone until weeds take over or disturbances require attention. The area may then be reseeded or inter-seeded and burned as circumstances indicate.

Objective 5. Increase wildlife habitat.

Reestablishment of native grasses and forbs through improved seedings, and management will increase habitat.

Strategy:

Planting native warm season species will provide nesting cover, shelter, forage, and seed for ground nesting birds and animals. Using a mixture of grasses and wildflowers will increase soil stability and habitat development.

Public support for long-term habitat development should be derived from supporting groups such as Pheasants Forever, Audubon Society, Boy Scouts, Etc. to help with seed donations, seed harvest, clean up and other necessary tasks.

Objective 6. Develop aesthetically pleasing roadsides for public enjoyment and education.

The public should see roadsides free of noxious weeds with the majority of vegetation being tall grass prairie and successional blooming forbs.

Strategy:

Seedings throughout Des Moines County will remain fairly constant depending upon soil types. High visibility areas, town and city entryways or park and public use areas may be designated to receive additional flower species. A mix of native grasses and forbs will be planted.

PROGRAM COMPONENTS

Program components have been developed to meet the goals of the IRVM program. These components create a usable format for roadside users and developers to follow. An outline of the program components follows:

1. Program Plans
    a. Brush Control Plan
    b. Seeding Plan
    c. Burning Plan
    d. Weed Commissioner's Plan
    e. Chemical Control Plan
    f. Roadside Inventory Guidelines
    g. Erosion Control Plan
    h. Encroachment Plan
    i. Budget and Finance

Program Plans

Program plans have been developed to achieve a systematic approach in roadside vegetation management.

A. Annual Plan Outline

January-March

1. Discuss goals and objectives for the year and draft annual plan for vegetation management.
2. Coordinate planting sites, noxious weed sites, and brush control activities with Secondary Roads personnel.
3. Order prairie grass seed and forbs.
4. Check or acquire necessary equipment.
5. Develop public relations programs, presentations, and target landowners through newsletters and one to one contact.

April-May

6. Conduct prairie burns.
7. Begin spring planting on new construction sites, as well as interseeding into existing vegetation.
8. Hire seasonal staff.
9. Follow-up on previous year's weed control.
10. Review and conduct employee safety training.

June-July

11. Continue prairie planting where needed.
12. Spot spray noxious weeds (thistles and teasel). One, two or three applications may be necessary.
13. Remove weed competition from new seeding projects. Mow roadsides where encroachments threaten safety.
14. Begin spot spraying.

August-October

15. Plant cover crops and mulch all exposed roadside projects.
16. Harvest seed of prairie forbs; clean and store seed.
17. Attend meetings and conferences on prairie roadside management.

November-December

18. Clean seed for winter storage.
19. Plant seed for winter dormancy.
20. Burn undesirable vegetation.
21. Mow fire breaks for spring burning.
22. Cut brush in conjunction with Secondary Roads personnel.
23. Update slide programs for vegetation management.
24. Attend continuing education courses and seminars.

B. Brush Control Plan

Goal:

Brush control represents the major thrust of mechanical or "hands-on" implementation for Des Moines County's Roadside Vegetation Management program. Small brush will be controlled using spot-treatment techniques designed not to disturb beneficial plant communities.

Strategy/(Implementation Schedule):

1. Provide safety for the general public (on-going) which includes:
    a. Maintaining sight distance
    b. Maintaining a clear recover zone
2. Remove brush from intersections. (on-going)
3. Keep the brush and trees cut on the roadway. (on-going)
    a. Mechanical implementation
4. Keep the brush and trees cut on fore slopes and ditch bottoms. (on-going)
5. Cut brush withing right-of-way where it may cause deposition of snow onto the roadway or excessive shade keeps roadways wet or icy.
6. Remove all dead trees and brush as time permits and replace with desirable vegetation. Native grasses and forbs will be seeded in right-of-ways where soil has been disturbed. (on-going)
    a. Locate problem areas.
    b. Reseed with no-till application.
7. Brush will be chipped and shredded back into the roadside with the exception of those areas that have large quantities of material. In those instances, wood chips will be removed and stock piled for later use. (on-going)
    a. County's chipper/shredder will be used to perform these duties.
8. Stumps will be treated with herbicide immediately after cutting to prevent regrowth. (on-going)
    a. Suitable chemicals will be used for stump treatment.
9. Controlled burning will help control unwanted woody invasion and help encourage prairie plant community takeover.
    a. Identify problem areas and do controlled burns in the spring of the year.

C. Seeding Plan

Goal:

By using native prairie grass and wildflower species to out-compete weeds we will be able to reduce chemical use, reduce soil erosion, and increase our wildlife habitat.

Objective:

All new regraded roadsides, cleaned out, or disturbed areas will be reseeded with warm season native forbs and grasses unless circumstances dictate otherwise.

Strategy/(Implementation Schedule): (Howard Bright, 12/92)

1. Seed bed preparation: (on-going)
   a. Till the soil making sure as many weeds have been eliminated as possible.
   b. Herbicide burndown will be allowed to reduce weed competition.
2. Seeding: (on-going)
   a. **Frost Seeding** (February-March)
      - Broadcast seed onto a seed bed that was prepared in the fall or previous year and allow freezing and thawing action to work seeds into the soil.
   b. **Spring or Summer Seeding** (April-July)
      i. Broadcast seed onto a firm seed bed.
      ii. Roll or cultipack seed bed.
      iii. Maintain adequate moisture supply the first few weeks.
   c. **Fall Dorman Seeding** (October-December)
      i. Broadcast seed onto a firm, well-prepared see bed.
      ii. Allow Mother Nature to work seed into soil by freezing and thawing action.
3. Maintenance: (on-going) - may vary from site to site.
   a. 1st Year - Keep mowed 4 to 6 inches the first growing season.
   b. 2nd Year - Keep mowed 6 to 8 inches entire season.
   c. 3rd Year - Burn area in March or April. If burning isn't possible, only if weeds become a problem.
   d. Beyond 3rd year - Burn every 3 to 5 years early in the spring. It will bloom and become better each year.
4. Cool Season Non-Native Species: (on-going)
   a. Cool season establishment will be maintained only where healthy stands remain.
   b. Mow periodically to keep brush under control.
   c. Shoulder areas will be maintained with cool season grasses and legumes.
5. Methods of Application:
   a. **No-Till Drill** - Will be used to seed into existing vegetation.
   b. **Conventional Drill** - Conventional drill will be used on sites receptive to this practice.
   c. **Hydro-Seeding** - Will be used on wet site applications as well as steep slopes.
   d. **Broadcast Seeding** - Will be used on small bare site areas and for cover crop application.

D. Burning Plan

Goal:

Native prairie plants have lived with fire for many years. Plant growth is enhanced by the recycling of nutrients and quicker warming of blackened soils. Fire helps remove dead material and keeps unwanted woody vegetation at bay. Burn management is an effective tool to increase plant succession at a quicker rate. Prairie areas will be burned every 2-3 years or more frequently if necessary to keep woody material suppressed. Landowners can see the positive impact to this management technique and have been applying this practice themselves as the following county map will indicate.

Strategy/(Implementation Schedule):

1. Encourage landowner involvement and explain why their assistance is vital to the program. (on-going)

BURNING PLAN AND LANDOWNER COOPERATION

GUIDE TO PRESCRIBED BURNING

Today, more and more prairies are being planted and reconstructed by private individuals and public agencies. However, to help these prairies evolve to full potential requires proper management. This obligation includes periodic controlled burning on a 3 to 5 year basis.

The burning activity is usually done in late March to early April. This will allow the cool season species, such as Fescue and Bromegrass to begin their growing season which enables the fire to destroy these grasses. This will reduce the competition for the warm season prairie species such as the Bluestems and Indian grasses.

There are many benefits to controlled burning:

- Removes excess thatch accumulation for better wildlife habitat.
- Increases and stimulates plant growth.
- Reduces woody plant intrusion.
- Reduces competition of cool season species and returns nutrients to the soil.

Before starting a controlled burn, you must plan ahead and have the necessary equipment.

Your first step in a controlled burn will be to contact and obtain the necessary permits and approvals from your local police and fire departments and either your city or county health agency. A phone call before and after the burn is usually all that is required.

A standard propane torch and canister can be used to easily start a fire line.

Five gallon Indian pump sprayers and used to extinguish small flare ups and control a line of fire on the perimeter.

A mobile water source is recommended to handle any serious fire which may escape.

Personnel should be well-aware of the dangers of smoke inhalation.

Five Sequence:

A. Create a firebreak. This is a burned area 10 to 20 feet wide on the downwind side of the intended burn area. This will prevent the main fire from burning into areas you don't want burned.
B. Now the fire can be ignited from the upwind side of the prairie.
C. Allow the fire to burn completely through the stand.
D. The black residue will allow the soil temperature to warm up quickly in the next few weeks. Within a brief period the prairie will be green, lush, and growing. Suppression of unwanted weeds is evident after burning.
E. Don't burn when smoke is blowing over roadway.

Burn Conditions:

Steady wind 5-15 mph

Temperature 50-70 degrees

Relative Humidity 30-60%

Early to mid-April

Equipment:

Drip torch or other fire apparatus

Portable water tank

Backpack sprayer

2-4 people

Flappers/fire broom

The best firebreak is a 10 foot plowed line. A mowed strip can also be used if fire and manpower are available to control it.

The fire should be started at the downwind side of a field to support and extend the firebreak. The backfire, which is the safest and easiest to control, will burn slowly into the wind. As soon as the backfire is well established, work toward the upwind sides so fire can sweep over entire area.

Before leaving the burn site, put all smoldering areas out and make sure fire break is intact. The Des Moines County Conservation Board has equipment available for landowners to use for burning their roadsides or CRP fields. There is no charge but call ahead to reserve equipment.

E. Education and Public Awareness

Goal:

A variety of informational and educational materials need to be developed to gain public approval of the integrated approach to roadside vegetation management. Slide programs, news articles, a display booth, brochures, and radio spots are helpful to reach the rural community.

Strategy/(Implementation Schedule):

1. Develop programs to educate landowners of the benefits and cooperative opportunities of the IRVM program. (on-going)
    a. Update current slide program.
    b. Use IRVM video.
    c. Use public service announcements.
    d. Distribute IRVM brochures.

2. Submit articles and news releases to publicize the IRVM program. (on-going)
    a. Develop plans for adjacent landowners.
    b. Work with property owners on a one-to-one basis.
    c. Apply buffer strip techniques along back slopes.

3. Plant a demonstration seeding in a highly visible area. (on-going)
    a. Irish Ridge Road
    b. Beaverdale Road
    c. Maintain demonstration plots and publicize them.
    d. Continue these efforts until all districts are represented.

4. Work with relevant agencies and conservation groups promoting IRVM projects. (on-going)
    a. Natural Resources Conservation Service (NRCS)
    b. Farm Service Agency
    c. Des Moines County Conservation Board
    d. County Extension
    e. Pheasants Forever
    f. Ducks Unlimited
    g. Farm Bureau

5. Use display booth to promote conservation practices used by IRVM. (on-going)
    a. County Fairs
    b. Agricultural Seminars
    c. State Fair
    d. Farm Field Days

F. Weed Commissioner Plan

Goal:

The Iowa Code (Chapter 317.16) requires that county's control noxious weeds. This plan was approved by the Des Moines County Board of Supervisors on April 13, 1992.

Strategy:

WEED COMMISSIONER'S PLAN FOR PROPERTY OWNERS

Primary and secondary noxious weeds will be controlled on a "complaint only" basis on private land. The only exception will be teasel (Dipsacus), a biennial. After receiving a complaint of noxious weeds on private land, the Weed Commissioner will visit the land and make an assessment of the problem. A written management plan from the Weed Commissioner will be given to the owner or tenant of the land. If the management plan isn't implemented within fifteen (15) days after receipt, the Weed Commissioner will control weeds and the cost will be assessed against the real estate in accordance with Iowa Code, Chapter 317.

Various practices will be used to control noxious weeds. Timely mowing and burning will kill annual weeds, prevent biennial weeds from going to seed, and reduce food reserves of perennials. Using warm season grasses will control and suppress unwanted plants.

FAILURE TO COMPLY WITH CHAPTER 317.16 OF THE IOWA CODE

A $10.00 fine each day, up to 10 days, will be in effect for tenants or landowners who fail to control weeds. Landowners who fail to comply will be reported to the Country Attorney for legal action.

PRIMARY NOXIOUS WEEDS INCLUDE:

Buckthorn (Rhamnus)
Bull Thistle (Cirsium lanceolatum)
Canada Thistle (Circiurn arvense)
Field Bindweed (Convolvulus arvensis)
Hoary Cress (Cardaria draba)
Horse Nettle (Solanurn carolinense)
Leafy Spurge (Euphorbia esula)
Musk Thistle (Carduus nutans)
Perennial Sow Thislte (Sonchus arvensis)
Quack Grass (Agropyron repens)
Russian Knapweed (Centaurea repens)
Tall Thistle (Cirsium altissimum)

SECONDARY NOXIOUS WEEDS INCLUDE:

Buckhorn Plantain (Plantage lanceolata)
Cocklebur (Xanthium commune)
Curly Dock (Rumex crispus)
Multiflora Roase (Rosa multiflora)
Poison Hemlock (Conium maculatum)
Puncture Vine (Tribulus terrestris)
Purple Loosestrife (Lythrum salicaria)
Shattercane (Sorghum bicolor)

SECONDARY NOXIOUS WEEDS CONT.:

Red Sorrel (Rumex acetosella
Smooth dock (Rumex latissimus)
Teasel (Dipsacus)
Velvet Leaf (Abutilon theophrasti)
Wild Carrot (Daucus carota)
Wild Mustard (Brassica arvensis)
Wild Sunflower (Helianthus annual)

G. Chemical Control Plan

Goal:

Chemical control for Des Moines County right-of-ways will be performed according to the "Integrated Roadside Vegetation Management" outline. Weed and brush control has been an issue for several years. Previously, crews cut trees and brush and left them on site, falling further and further behind on vegetation management because of the amount of time mechanical removal requires. Current practice is to cut the trees, treat the stumps, chip or burn the wood, spot spray selected herbicides for weed control and reseed the area.

Objective:

To manage undesirable vegetation at an acceptable level, Section 317.11 of the Code of Iowa, Weeds on Roads, states: "Spraying for control of noxious weeds shall be limited to those circumstances when it is not practical to mow or otherwise control the noxious weeds. When faced with undesirable vegetation, a combination of more than on vegetation management method, such as mowing, spraying or burning, may be appropriate." All roadside spraying will be done by certified personnel. All efforts will be made to use safe and environmentally sound chemicals.

Strategy:

IRVM controls weeds by:

1. Maintaining a healthy stand of vegetation to keep weeds out.
2. Reseeding bare areas with native grasses and wildflowers, the plants best adapted to Iowa's climate and therefore most able to out-compete weeds.
3. Burning.
4. Spot-spraying.
5. Mowing.

IRVM counties use herbicides responsibly by spot-spraying target species and problem areas. Compared to broadcast spraying, this reduces the stress to desirable plants in the roadside, as well as reduces the money spent on herbicides and the amount of chemical entering the environment.

1. Inventory roadsides and map locations of problem weed areas.
2. Evaluate new chemicals and applications, becoming familiar with a number of herbicides and formulations.

3. Purchase and/or maintain necessary spray equipment.
    a. Truck unit.
    b. Backpack/hand held sprayer.
4. Select herbicides based on objectives, timing of application, and conditions.
5. Train the spray crew. Ensure that they have proper certification and are familiar with Iowa's weed laws.
6. Monitor weed growth and spray at the most opportune time.
    a. Spring time - when plants are actively growing and distinguishable from surrounding vegetation but prior to swelling of the bud (teasel and thistles).
    b. Fall application - thistles and brush can be sprayed in the fall prior to winter dormancy.
7. Return to sprayed locations to evaluate the effectiveness of the weed control program.
8. Return or store excess chemicals.

H. Roadside Inventory

A roadside inventory of the current plant composition and problem areas has been developed and initiated for Des Moines County. The information gathered will be stored in a computerized data base. From this data base, priories will be established to bring the scope of the "IRVM" program together. (Completed November 1, 1992).

The following "Roadside Inventory Process" was made available by the University of Northern Iowa's Coordinator's Office, for counties across the state to develop the same consistency in completing a standard inventory for rural roads.

ROADSIDE INVENTORY PROCESS

Introduction

As counties implement an integrated approach to roadside management, a county roadside cover-type survey is one of the first steps necessary in program development and function.

A roadside cover-type survey was used that is simple to use yet provides the basic information needed in analyzing current rural roadside conditions and planning for future roadside projects and activities. This form is NOT designed to be a detailed, once-in-a-lifetime survey. A follow up vegetative inventory or site investigation will be needed on <u>all</u> roadside segments identified as "extensive" by this survey. The enclosed guidelines should be reviewed and understood before proceeding with the roadside survey. The most current mapping capabilities (GIS and GPS) will be utilized.

Guidelines

This form is designed for one mile or less of roadside cover-type evaluation. One form will be needed for each side of the road. Each form contains four columns to record roadside cover-type information and other data in quarter-mile segments. For safety considerations and recording efficiency, a two person team is necessary. One individual will drive and note mileage, and the other will be a passenger to freely view roadside vegetation and conditions and record pertinent data. A tall vehicle, such as a four-wheel drive pick-up provides better viewing than a low riding sedan.

The recorder is responsible for evaluating roadside vegetation and correctly identifying and recording native prairie grasses, native prairie forbs, perennial weeds, and annual weeds. The majority of rural roadsides will contain non-native Eurasian grasses. The recorder must be able to identify non-native Eurasian grasses and differentiate them from native prairie grasses. Therefore, the recorder must recognize the following plants:

Eurasian Grasses
Brome
Fescue
Bluegrass
Redtop
Timothy
Orchard

Annual Weeds
ragweed
foxtail
lambsquarter
wild parsnip

Native Grasses
switchgrass
big bluestem
little bluestem
Indian grass
side oats grama
Canada wildrye
Needlegrass
Prairie cord grass

Perennial Weeds
All thistles
Leafy spurge
Teasel
Wild carrot
Purple loosestrife

Native Forbs
black-eyed Susan
coneflower
blazing star
compass plant
prairie phlox
Rattlesnake master
Prairie clover
Partridge pea
Goldenrod
Asters

****** The survey was evaluated as coded by the state standard. ******

I. Erosion Control Plan:

Goal:

To protect soil surfaces during and after construction and to develop guidelines to minimize soil erosion and sedimentation on land under construction and development. Erosion and soil deposits in roadsides create serious problems for all counties. When roadsides erode and become filled with sediment due to excessive wind erosion or other elements, either man-made or acts of God, the county is forced to bear the cost of reshaping and reseeding that disturbance. Our goal will be to identify all problem areas and work with landowners and relevant agencies (NRCS, FSA, etc.) to prevent these occurrences from becoming a nuisance with the framework of roadside development.

Objective:

To develop a consistent means of siltation control throughout Des Moines County. Siltation restricts the designed drainage in road ditches and impairs the establishment of vegetative cover that is consistent with the county roadside vegetation management program. The first line of defense is to prevent erosion. This will be accomplished by protecting the soil surface from raindrop impact and overland flow of runoff.

Strategy:

By using a series of erosion control measures designed for use in all situations meeting the following criteria:

1. Any land disturbing activity shall be conducted so as to effectively reduce acceleration soil erosion and resulting sedimentation.
2. Activities must be completed promptly to minimize exposure time for the land.
3. Sediment caused by accelerated soil erosion shall be removed before the responsible individual leaves the site.

Temporary Erosion and Sediment Control:

During project design, temporary erosion and sediment control measures may include by not be limited to:

A. Sediment traps, silt ditches:
    1. Shall be placed at 200 ft. spacing for ditch grades having 1% to 2% vertical height.
    2. Silt ditches will be required when drainage from adjacent ground flows onto the roadway right-of-way.

B. Silt fence:

To be used to intercept and detain small amounts of sediment from disturbed areas during construction operations. Fence will be used with slopes of 2% or greater.

1. Place silt fence near the right-of-way line or a minimum of 10 feet back of the foreslope.
2. The silt fence should be perpendicular to the flow.

C. Silt fence and ditch checks:

Construct at right angles to flow and intercept slope area where possible.

Ditch Grade:	Approx. Spacing
1% to 2%	300 ft.
2% to 3%	200 ft.
3% to 4%	100 ft.
4% or greater	Temporary sediment basins

D. Other temporary controls may include: hydro-seeding, mulching, sodding transplants, straw bale dikes, diversions and other practices consistent with Des Moines County IRVM.

Permanent Erosion and Sediment Control:

A. A permanent vegetative cover will be applied to all completed projects before the end of the construction season. For uncompleted projects, temporary erosion control is to be maintained throughout the winter months until spring planting is established. All temporary erosion and sediment control measures will be disposed of within 30 days after final site stabilization is achieved.
B. Erosion control mats or blankets should be used on soils with 1:1 cut slopes and vertical heights greater than 8 feet.
C. Hydro-mulched recycled paper can be used as an effective tackifier. The material will create a very effective paper mâché cover to promote germination.
D. Straw Mulching is applied to an average of two tons per acre. This control method is used for temporary erosion control until permanent seeding becomes established.
E. Mulch shall be used in conjunction with plantings of trees, shrubs, or certain ground covers which provide overall soil stabilization.

J. Encroachment Plan

Goals:

Disturbances to public roadside vegetation destroys existing desirable vegetation, creates openings for weeds, and restricts the designed drainage. Repairing each disturbance costs time and money. Our goal is the elimination of the right-of-way farming practices and associated herbicide use.

Objective:

Preventing roadside encroachment caused by siltation, farming, mowing, dumping and improper spraying. Alternatively, to encourage voluntary cooperation from landowners through the use of native vegetation.

Strategy/(Implementation Schedule):

1. Talk to individual landowners regarding the importance of buffer stips between roadside and farm fields and the implementation of other conservation practices to prevent runoff related disturbances. (on-going)
2. Work with the Soil and Water Conservation District to gain their support and make use of their experience in dealing with soil loss situations. (on-going)
3. Work with the Secondary Road Department on ditch clean-outs. (on-going)
4. Develop a county ordinance to establish policy and enforcement procedures for landowners who violate IRVM principles set forth by Iowa Code.
    a. Enforcement procedures handled by DCCB and Sheriff's Department personnel. (Fine determined by replacement cost of native vegetation or cost to clean the ditch).
    b. Prohibit removal of native plant material from roadsides.
    c. Prohibit grazing in 66 ft. right-of-way.
    d. Encourage proper disposal of materials (trees, brush, garbage, etc.)
    e. Chemical spraying prohibited without prior approval of Roadside Biologist.
    f. Public areas of roadside development/enforced by Iowa Code 461.A. Public Lands of Iowa.

K. Budget and Finance for Vegetation Management through Road Clearing, Weed Commissioner, and Maintenance Funds.

1. Available to the public at County Auditor's Office.
2. Funding from tax dollars.

Alternative Sources for Funding:

1. Living Roadway Trust Fund/Derived from REAP funding.
    a. Established by legislation in 1990 for counties and state departments to use for roadside enhancement. Grant applications are reviewed once per year in September for approval.
2. Pheasants Forever, Des Moines County Chapter
    a. Money for seed is raised through local chapters and distributed on a priority basis to develop wildlife habitat.
3. Donations and contributions.

314.22 Integrated roadside vegetation management.

1. Objectives. It is declared to be in the general public welfare of Iowa and a highway purpose for the vegetation of Iowa's roadsides to be preserved, planted, and maintained to be safe, transportation shall provide an integrated roadside vegetation management plan and program which shall be designed to accomplish all of the following:

a. Maintain a safe travel environment.
b. Serve a variety of purposes including erosion control, wildlife habitat, climate control, scenic qualities, weed control, utility easements, recreational uses, and sustenance of water quality.
c. Be based on a systematic assessment of conditions existing in roadsides, preservation of valuable vegetation and habitats in the area, and the adoption of a comprehensive plan and strategies for cost-effective maintenance and vegetation planting.
d. Emphasize the establishment of adaptable and long-lived vegetation, often native species, matched to the unique environment found in and adjacent to the roadside.
e. Incorporate integrated management practices for the long-term control of damaging insect populations, weeds, and invader plant species.
f. Build upon a public education program allowing input from adjacent landowners and the general public.
g. Accelerate efforts towards increasing and expanding the effectiveness of plantings to reduce wind-induced and water-induced soil erosion and to increase deposition of snow in desired locations.
h. Incorporate integrated roadside vegetation management with other state agency planning and program activities including the recreational trails program, scenic highways, open space, and tourism development efforts. Agencies should annually report their progress in this area to the general assembly.

2. Counties may adopt plans. A county may adopt an integrated roadside vegetation management plan consistent with the integrated roadside vegetation management plan adopted by the department under subsection 1.

3. Integrated roadside vegetation management technical advisory committee.

a. The director of the department shall appoint members to an integrated roadside vegetation management technical advisory committee which is created to provide advice on the development and implementation of a statewide integrated roadside vegetation management plan and program and related projects. The department shall report annually in January to the general assembly regarding its activities and those of the committee. Activities of the committee may include, but are not limited to, providing advice and assistance in the following areas:

1. Research efforts.
2. Demonstration projects.
3. Education and orientation efforts for property owners, public officials, and the general public.
4. Activities of the integrated roadside vegetation management coordinator for integrated roadside vegetation management.
5. Reviewing applications for funding assistance.
6. Securing funding for research and demonstrations.
7. Determining needs for revising the state weed law and other applicable Code sections.
8. Liaison with the Iowa state association of counties, the league of Iowa municipalities, and other organizations for integrated roadside vegetation management purposes.

b. The director may appoint any number of persons to the committee but, at a minimum, the committee shall consist of all of the following:

1. One member representing the utility industry.
2. One member of the Iowa academy of sciences.
3. One member representing county government.
4. One member representing city government.
5. Two members representing the private sector including community interest groups.
6. One member representing soil conservation interests.
7. One member representing the department of natural resources.
8. One member representing county conservation boards.

Members of the committee shall serve without compensation but may be reimbursed for allowable expenses from the living roadway trust fund created under section 314.21. No more than a simple majority of the members of the committee shall be of the same gender as provided in section 69.1 6A. The director of the department shall appoint the chair of the committee and shall establish a minimum schedule of meetings for the committee.

4. **Integrated roadside vegetation management coordinator.** The integrated roadside vegetation management coordinator shall administer the department's integrated roadside vegetation management coordinator shall administer the department's integrated roadside vegetation management plan and program. The department may create the position of integrated roadside vegetation management coordinator within the department or may contract for the services of the coordinator. The duties of the coordinator include, bur are not limited to, the following:

    a. Conducting education and awareness programs.
    b. Providing technical advice to the department and the department of natural resources, counties, and cities.
    c. Conducting demonstration projects.
    d. Coordinating inventory and implementation activities.
    e. Providing assistance to local community-based groups for undertaking community entryway projects.
    f. Being a clearing house for information from Iowa projects as well as from other states.
    g. Periodically distributing information related to integrated roadside vegetation management.
    h. General coordination of research efforts.
    i. Other duties assigned by the director of transportation.

5. **Education programs**. The department shall develop educational programs and provide educational materials for the general public, landowners, governmental employees, and board members as a part of it's program for integrated roadside vegetation management.

The educational program shall provide all of the following:

a. The development of public service announcements and television programs about the importance of roadside vegetation in Iowa.
b. The expansion of existing training sessions and educational curriculum materials for county weed commissioners, governmental contract sprayers, maintenance staff, and others to include coverage of integrated roadside management topics inventory techniques, vegetation management and planning procedures, planting techniques, maintenance, communication, and public relations. County and municipal engineers, public works staff, planning and zoning representatives, Parks and habitat mangers, and others should be encouraged to participate.
c. The conducting of statewide and regional conferences and seminars about integrated roadside vegetation management, community entryways, scenic values of land adjoining roadways, and other topics relating to roadside vegetation.
d. The preparation, display, and distribution of a variety of public relations materials, in order to better inform and educate the traveling public on roadside vegetation management activities. The public relations material shall inform the motorist of the variety of roadside vegetation issues including the following:
    i. Benefits of various types of roadside vegetation.
    ii. Long-term results expected from planting and maintenance practices.
    iii. Purposes for short-term disturbances in the roadside landscapes.
    iv. Interesting aspects of the Iowa landscape and individual landscape regions.
    v. Other aspects relating to wildlife and soil erosion.
e. Preparation and distribution of educational material designed to inform adjoining property owners, farm operators, and others of the importance of roadside vegetation and their responsibilities of proper stewardship of that vegetation resource.

6. **Research and demonstration projects.** The department, as part of its plan to provide integrated roadside vegetation management, shall conduct research and feasibility studies including demonstration projects of different kinds at a variety of locations around the state. The research and feasibility studies may be conducted in, but are not limited to, any of the following areas:

    a. Cost-effectiveness or comparison of planting, establishing, and maintaining alternative or warm-season, native grass and forb roadside vegetation and traditional cool-season non-native vegetation.
    b. Identification of the relationship that roadsides and roadside vegetation have to maintaining water quality, through drainage wells, sediment and pollution collection and filtration, and other means.
    c. Impacts of burning as an alternative vegetation management tool on all categories of roads.
    d. Techniques for more quickly establishing erosion control and permanent vegetative cover on recently disturbed ground as well as interplanting native species in existing vegetative cover.
    e. Effectiveness of techniques for reduced or selected use of herbicides to control weeds.
    f. Identification of cross section and slope steepness design standards which provide for motorist safety as well as for improved establishment, maintenance, and replacement of different types of vegetation.
    g. Identification of a uniform inventory and assessment technique which could be used by many counties in establishing integrated roadside management programs.
    h. Equipment innovations for seeding and harvesting grasses in difficult terrain settings, roadway ditches, and fore-slopes and black-slopes.
    i. Identification of the perceptions of motorists and landowners to various types of roadside vegetation and configuration of plantings.
    j. Market or economic feasibility studies for native seed, forb, and woody plant production and propagation.
    k. Impacts of vegetation modifications on increasing or decreasing wildlife population in rural and urban areas.
    l. Effects of vegetation on the number and location of wildlife road-kills in rural and urban areas.
    m. Costs to the public for improper off-side resource management adjacent to roadsides.
    n. Advantages, disadvantages, and techniques of establishing pedestrian access adjacent to highways and their impacts on vegetation management.
    o. Identification of alternative techniques for snow catchment on farmland adjacent to roadsides.

7. **Gateways program.** The department shall develop a gateways program to provide meaningful visual impacts including major new plantings at the important highway entry points to the state and its communities. Substantial and distinctive plantings shall also be designed and installed at these points. Creative and artistic design solutions shall be sought for these improvements. Communications about these projects shall be provided to local groups in order to build community involvement, support, and understanding of their importance. Consideration shall be given to a requirement that gateways projects produce a local match or contribution toward the overall project costs.

8. **Vegetation inventories and strategies.**
    a. The department shall coordinate and compile integrated roadside vegetation inventories, classification systems, plans, and implementation strategies for roadsides. Areas of increased program and project emphasis may include, but are not limited to, all of the following:
        i. Additional development and funding of state gateways projects.
        ii. Accelerated replacement of dead and unhealthy plants with native and hardy trees and shrubs.
        iii. Special interest plantings at selected highly visible locations along primary and interstate highways.
        iv. Pilot and demonstration projects.
        v. Additional snow and erosion control plantings.
        vi. Welcome center and rest area plantings with native and aesthetically interesting species to create mini-arboretums around the state.
    b. The department shall coordinate and compile a reconnaissance of lands to develop an inventory of sites having the potential of being harvested for native grass, forb, and woody plant material seed and growing stock. Highway right-of-ways, parks and recreation areas, converted railroad right-of-ways, state board of regent's property, lands owned by counties, and other types of public property shall be surveyed and documented for seed source potential. Sites volunteered by private organizations may also be included in the inventory. Inventory information shall be made available to state agencies' staff, county engineers, county conservation board directors, and others.

317.26 Alternative remediation practices.

The director of the department of natural resources, in cooperation with the secretary of agriculture and county conservation boards and the board of supervisors, shall develop and implement projects which utilize alternative practices in the remediation of noxious weeds and other vegetation within highway rights-of-way.

IOWA DEPARTMENT OF TRANSPORATION

INTEGRATED ROADSIDE VEGETATION MANAGEMENT PLAN

February 1990

DEFINITION:

Integrated Roadside Vegetation management (IRVM)

A long term approach to vegetation management that:

1. Systematically evaluates each area to be managed.
2. Determines which plant communities best fit the area.
3. Develops procedures that will encourage, enhance, or reestablish desirable plant communities.
4. Provides self-sustaining, diversified, visually interesting vegetation.
5. Keeps safety and an improved environment as priorities.
6. Utilizes the most beneficial methods to prevent or correct undesirable situations caused by disturbance or less than optimum vegetative ground cover.

INTRODUCTION:

The prime purpose of road corridors is to transport people and goods safely and efficiently from one location to another.

The prime purpose of roadside vegetation is to hold soil in place with creating hazards.

The Department's vegetation management goals must meet certain safety and functional requirements before aesthetic, recreational, or economic considerations can be addressed. These are to maintain a clear zone recovery area, meet minimal sight distance requirements and provide for erosion control. We are also required by Iowa law to mow or otherwise control noxious weeds.

Through the use of IRVM, we should be able to meet the prime purposes, provide a safe corridor for travel and address other desirable uses for roadside vegetation.

The goals of the Integrated Roadside Management Plan are to:

1. Preserve and provide safe, functional, and environmentally improved corridors of travel throughout the state.
2. Utilize a long-term integrated management program that promotes desirable self-sustaining plant communities. Encourage those plant communities that are native to Iowa through preservation and reestablishment whenever practical.
3. Bring about considerable reduction and possible elimination of the use of chemicals as a control method of undesirable plants.
4. Enhance the scenic qualities of the roadsides and their value as wildlife habitat.

PROCEDURES FOR INTEGRATED ROADSIDE MANAGEMENT:

1. Inventory the sites to be managed.
2. List the existing areas of desirable vegetation as well as those that need improvement.
3. Determine the appropriate management methods needed.
4. Determine the best time to implement management procedures and see that they are accomplished at that time. Temporary procedures may be needed to preserve an area before permanent procedures can be utilized.
5. Evaluate the results periodically.
6. Take further measures if necessary.

INTEGRATED ROADSIDE VEGETATION MAANGMENT METHODS:

Integrated vegetation management includes the use of cultural, mechanical, biological, and chemical practices. Each location must be evaluated to determine the method to be used. Each location must be evaluated to determine the method to be used. One or more of the following will be used:

1. Cultural Methods.

   Cultural controls can be achieved through the introduction and management of desirable plants or the use of mulches to control noxious weeds and other undesirable plants. Many native plants are poor competitors in their early stages of growth, but once established they crowd out most other plants with minimum management.

   Although controlled burning is recognized as a valuable tool for enhancing and maintaining native plant communities, the Department recognizes the potential for creating possible problems when burning to research and demonstrations to gain experience and define proper procedures and parameters.

2. Mechanical Methods.

   This involves anything from complete tillage for reseeding to hand scythes, shovels, large tractor mowers, string trimmers, push mowers, pruning shears, etc. for weed control and desirable vegetation maintenance.

3. Biological Methods.

   This involves the use of animals, insects, bacteria, or virus to control plant growth. One specific bacillus has been used for many years for larval control of insects and could possibly be used in the ROW if necessary. Further research will be needed on other possible biological controls before the Department will recommend them.

4. Chemical Methods.

   Selection of chemicals to be used shall be based on their label constraints and residual effects on the environment. They will be monitored to document their effectiveness and impacts upon target and non-target species. There are several new herbicides with very specific effects on specific plant species. These herbicides can be valuable tools for controlling undesirable plants on a short term basis.

EDUCATION AND INFORMATION

As part of the Department's IRVM plan, it will:

1. Develop a public awareness campaign to gain support for integrated management through media, established organizations, seminars, and brochures.
2. Develop educational and informational material on IRVM to be presented in seminars and distributed to adjacent landowners, the general public, consultants and contractors.
3. Provide guidelines and directives for contractors and others who seed, plant, and maintain roadsides.
4. Prepare and distribute instructions to state, county and city personnel on preservation of desirable areas and treatment of areas that need improvement.
5. Gather, develop and distribute information with other jurisdictions, seed and share information with other states.
6. Encourage research in all aspects of IRVM, ie: road design for improving IRVM, planting methods, management practices, seed sources, seeding rates, seed mixes, planting equipment, etc.
7. Encourage Iowa production of native seeds and plant materials for use in the rights-of-way.

This is a flexible plant that requires common sense interpretations with changes as necessary to fit the ever changing, complex circumstances realized in vegetation management throughout the state of Iowa.

Approved signatures for Des Moines County Roadside Vegetation Management Comprehensive Plan.

Jeff Chase, Roadside Manager
Des Moines County IRVM

Brian J. Carter, P.E. & P.L.S.
Des Moines County Engineer

DES MOINES COUNTY BOARD OF SUPERVISORS

Shane McCampbell, Chair

Thomas Broeker

James Cary

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