

GARFIELD COUNTY NOXIOUS WEED MANAGEMENT PLAN

**Adopted by the Board of County Commissioners
May 1, 2000**

**Revegetation Guidelines and Reclamation Standards
Amended May 7, 2001**

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October 21, 2002**

Prepared by Garfield County Vegetation Management
and the Garfield County Weed Advisory Board

**GARFIELD COUNTY
NOXIOUS WEED MANAGEMENT PLAN**

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SECTION I
INTRODUCTION

“A thing is right when it tends to preserve the integrity, stability, and beauty of a biotic community. It is wrong when it tends to do otherwise.”

Aldo Leopold, A Sand County Almanac

1.01 Mission Statement:

The health of our environment is a high priority for residents of Garfield County. The health and productivity of natural plant communities and agricultural lands is threatened by the introduction of numerous invasive alien plants. Without an effective integrated weed management plan these aggressive plants will continue to infest and degrade the lands we value so highly.

Rapid expansion of noxious weeds is an obstacle to maintaining healthy ecosystems and restoring disturbed native plant communities and habitats. Because noxious weeds tend to be highly invasive and harmful to native vegetation, they can quickly dominate many sites and often cause permanent damage to plant communities. Estimates indicate that 70 million acres of private, state, and federal land are infested with noxious weeds in just eleven western states. This is occurring in both disturbed and relatively undisturbed areas.

The intent of the Colorado Noxious Weed Act and the goal of the Garfield County Weed Advisory Board is to curb the degradation of our valued environment by implementing an Integrated Weed Management Plan to stop the spread of noxious weeds. Management of weeds may seem overwhelming, but through developing partnerships at all levels – local, regional, and national – we hope that the likelihood of reaching our weed management goals will be high. The challenge for all involved is to develop management systems, support and direction for preventing the spread of weeds before the situation becomes even more serious and economically unfeasible.

1.02 Purpose of the Plan:

The purpose of the Plan is to provide guidelines for managing designated noxious weeds which represent a threat to the continued economic, environmental and agricultural value of lands in Garfield County. This plan provides for the implementation of the Colorado Noxious Weed Act by detailing integrated management options for designated noxious weeds. Options include education, preventive measures, good stewardship, and control techniques. The intent is to incorporate those options that are the least environmentally damaging and are practical, timely, and economically feasible. Further, it is the responsibility of all landowners to use integrated methods to manage noxious weeds, and the

responsibility of local governing bodies to assure that these plants are in fact managed on public and private lands.

1.03 Enactment Authority:

The Colorado Weed Management Act (C.R.S. 35-5.5-101, et. seq.) was signed into state law in 1990 and amended in 1996. Now known as the Colorado Noxious Weed Act, it states that noxious weeds pose a threat to the natural resources of Colorado. The Act also directs that the Board of County Commissioners of each county shall adopt a Noxious Weed Management Plan for all unincorporated land within the county. Municipalities shall adopt a weed management plan for all lands within their boundaries. The county and municipalities may cooperate, through an intergovernmental agreement, for the powers and authorities of the Act. The Act directs the Board of County Commissioners to appoint a local Weed Advisory Board, whose power and duties are as follows:

1. To develop a noxious weed list;
2. To develop a Weed Management Plan for managing designated noxious weeds;
3. To recommend to the Board of County Commissioners that identified landowners be required to submit an integrated weed management plan for managing designated noxious weeds on their properties.

1.04 Garfield County Noxious Weed List:

The State of Colorado has three noxious weed lists designated by rule of the Colorado Department of Agriculture.

The State has designated 68 plants as State Noxious Weeds. This list is available through the Garfield County Vegetation Management Department or the State of Colorado. These weeds comprise the “A” List. Ten of the sixty-eight plants have been prioritized by the State as being the most widespread and causing the greatest economic impact. These plants are the “B” list. The third or “C” list contains fifteen plants that are not widespread in Colorado; however local advisory boards are encouraged to contain and eradicate these species before they significantly impact the economic and environmental values of the State.

An extensive survey of weed managers throughout Colorado determined the comprehensive “A” list. This list, created by administrative rule, allows each local governing board to specify which plants cause serious local impacts. The local governing board may create a designated noxious weed list, containing all or portions of the State’s list depending upon the local situation and priorities. Most jurisdictions would not be able to dedicate the resources to manage all of the plants on the comprehensive list, so many local governing boards adopt a list of plants most threatening to their area.

In addition to the list of weeds designated by the State of Colorado, the Garfield County Weed Advisory Board has specified certain plants as noxious weeds in our area. These are alien plants that present a threat to the well being of land within Garfield County. These noxious weeds are aggressive, fast spreading, and capable of displacing native plant species that provide habitat for wildlife and food for people and livestock.

The Garfield County Designated Noxious Weed List includes the following:

1. Canada thistle (*Cirsium arvense*)
2. Chicory (*Cichorium intybus*)
3. Common burdock (*Arctium minus*)
4. Dalmatian toadflax (*Linaria dalmatica*)
5. Diffuse knapweed (*Centaurea diffusa*)
6. Hoary cress (*Cardaria draba*)
7. Houndstongue (*Cynoglossum officinale*)
8. Jointed goatgrass (*Aegilops cylindrica*)
9. Leafy spurge (*Euphorbia esula*)
10. Musk thistle (*Carduus acanthoides*)
11. Oxeye daisy (*Chrysanthemum leucanthemum*)
12. Plumeless thistle (*Carduus acanthoides*)
13. Purple loosestrife (*Lythrum salicaria*)
14. Russian knapweed (*Acroptilon repens*)
15. Russian olive (*Elaeagnus angustifolia*)
16. Salt cedar (*Tamarix ramosissima*)
17. Salt cedar (*Tamarix parviflora*)
18. Scotch thistle (*Onopordum acanthium*)
19. Spotted knapweed (*Centaurea maculosa*)
20. Yellow starthistle (*Centaurea solstitialis*)
21. Yellow toadflax (*Linaria vulgaris*)

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SECTION II

WEED IDENTIFICATION

GARFIELD COUNTY'S 21 NOXIOUS WEEDS

Noxious weeds threaten many of the reasons we live, work, and recreate in Garfield County. The Garfield County Weed Advisory Board encourages you to become more knowledgeable about noxious weeds. Our natural resource and agricultural heritage depend on your involvement.

2.01 Description of Designated Noxious Weeds:

Canada Thistle (*Cirsium arvense*)

Canada thistle is a member of the Aster family and was introduced from Europe. It is a creeping perennial, which reproduces by seeds and fleshy, horizontal roots. The erect stem is hollow, smooth and slightly hairy, 1 to 5 feet tall, simple, and branched at the top. The flower color is primarily lavender, pink, or purple. Canada thistle emerges in May in most parts of Garfield County. It is one of the most widespread and economically damaging noxious weeds in Colorado. Infestations are found in cultivated fields, riparian areas, pastures, rangeland, forests, lawns and gardens, roadsides, and in waste areas. Because of its seeding habits, vigorous growth, and extensive underground root system, control and eradication are difficult.

Chicory (*Chicorium intybus*)

Chicory belongs to the Sunflower family. Chicory, a simple perennial, reproduces only by seed. The plant has a deep fleshy root and tufted basal leaves that resemble those of a dandelion. The stem is multi-branched and can reach over five feet tall. The flowers are bright blue, purple, or occasionally white, and occur along the stems of the plant. The plant is closely related to the cultivated endive and is grown in some areas for the succulent leaves and the fleshy roots. The roots are dried and used as a substitute for coffee. Other names for chicory are succory, blue daisy, blue sailors, and coffeeweed. Chicory is scattered throughout western Garfield County.

Common Burdock (*Arctium minus*)

Common burdock is a member of the Aster family. It is an introduced biennial, which reproduces by seeds. In the first year of growth the plant forms a rosette. The second year the plant grows erect. Burdock grows to 6 feet tall, has enormous leaves and a prickly bur. The flowers are purple and white in numerous heads. Burdock grows along roadsides, ditch banks, and neglected areas. This plant is a very serious threat to sheep as the burs can significantly damage the quality of their wool. Burdock will cause eye infections in cattle.

Dalmatian Toadflax (*Linaria genistifolia*)

Dalmatian toadflax is a member of the Figwort family. It was introduced as an ornamental from Europe, and is common in Glenwood Springs. It is a creeping perennial with stems from 2 to 4 feet tall. The flowers are snapdragon-shaped, bright yellow, with orange centers; the leaves are waxy and heart-shaped. Dalmatian toadflax is especially well adapted to arid sites and can spread rapidly once established. Because of its deep, extensive root system and heavy seed production, this plant is difficult to manage.

Diffuse Knapweed (*Centaurea diffusa*)

Diffuse knapweed is a member of the Aster family. Diffuse knapweed was introduced from Europe and is a biennial or short-lived perennial forb, which reproduces only by seed. The plant usually produces a single main multi-branched stem that is 1 ½ to 2 feet tall. The flower is white or pink with bracts. The largest infestation of diffuse knapweed in Garfield County is south of Glenwood Springs at the Glenwood Airport and old rodeo grounds.

Hoary Cress (*Cardaria draba*)

Hoary cress, also known as whitetop, is a member of the Mustard family, and was probably introduced from Europe in alfalfa seed. It is a creeping perennial, which reproduces by seed and creeping roots. The extensive root system spreads horizontally and vertically with frequent shoots arising from the rootstock. It grows erect from 10 to 18 inches high and has a gray-white colored leaf. The flowers are white and numerous in compact flat-topped clusters which give the plant its name. Hoary cress is one of the earliest perennial weeds to emerge in the spring, producing flowers in May or June. It grows in waste places, cultivated fields, and pastures, and is capable of vigorous growth. It is found throughout Garfield County.

Houndstongue (*Cynoglossum officinale*)

Houndstongue is a member of the Borage family. It is a biennial that was introduced from Europe. It reproduces by seed and appears as a leafy rosette in its first year. The plant grows 1 ½ to 3 feet high with reddish-purple flowers. Houndstongue is commonly known as the "Velcro weed" because of its small nutlets that are rapidly spread by people, domestic animals, wildlife and vehicles. ***Houndstongue grows on ranges, pastures, trails and roadsides and is toxic to horses and cattle, as it contains alkaloids that may cause liver cells to stop reproducing.*** It is common throughout Garfield County.

Jointed Goatgrass (*Aegilops cylindrica*)

Jointed goatgrass is a member of the Grass family, Barley tribe. It is a non-native grass introduced from Turkey in the late 1800s. It is a winter annual, reproducing by seed and grows 15 to 30 inches tall in erect stems which branch at the base to give the plant a tufted appearance. Seeds of jointed goatgrass are attached to their rachis segment and shed in June and July, during and prior to wheat harvest. The seeds are very similar in size and shape to wheat seed and therefore are difficult to screen out. Jointed goatgrass is found in the Harvey Gap area and in west Mamm Creek.

Leafy Spurge (*Euphorbia esula*)

Leafy spurge, a member of the Spurge family, was introduced from Europe. It is a creeping perennial that reproduces by seed and extensive creeping roots. The roots can extend as deep as 30 feet from a plant that grows 1 to 3 feet tall, with pale green shoots and small yellow-green flowers. ***The plant, including the root, has milky latex that is damaging to eyes and sensitive skin.*** Leafy spurge is an extremely difficult plant to control because of its extensive sprouting root. It is adapted to a wide variety of Colorado habitats and is very competitive with other plant species. If it becomes established in rangeland, pasture, and riparian sites, it may exclude all other vegetation due to its competitive nature. There is plant is found scattered in the Wallace Creek area and there are a few plants found on the I-70 right-of-way west of Glenwood Springs.

Musk Thistle (*Carduus nutans*)

Musk thistle is a member of the Aster family. Introduced from Eurasia, it is a winter annual or biennial which reproduces by seed. The first year's growth is a large, compact rosette from a large, fleshy, corky taproot. The second year stem is erect, spiny, 2 to 6 feet tall and branched at the top. The waxy leaves are dark green with a light green midrib and mostly white margins; flowers are purple or occasionally white. Musk thistle is also known as "nodding thistle" and is commonly found in pastures, roadsides, and waste places. It prefers moist bottomland soil, but also can be found on drier uplands. It is found throughout Garfield County.

Oxeye Daisy (*Chrysanthemum leucanthemum*)

Oxeye daisy, a member of the Aster family, is a native of Eurasia. It is an erect perennial plant with white ray and yellow disk flowers, which bloom from June through August. Oxeye daisy is commonly sold in wildflower seed mixes or transplanted as an ornamental despite its tendency to crowd out more desirable vegetation. It is scattered throughout Garfield County.

Plumeless Thistle (*Carduus acanthoides*)

Plumeless thistle is a member of the Aster family. Introduced from Eurasia, it is a winter annual or biennial which reproduces by seed. This plant can be distinguished from musk thistle by its smaller flowers from ½ to 1 inch in diameter. The leaves of plumeless thistle lack the prominent white margin present on musk thistle leaves. The plant may grow to a height of 5 feet or more. Flowers are reddish-purple and are either solitary or clustered. Taproots are large and fleshy. Plumeless thistle is an extremely prolific seed producer. It is found in pastures, river valleys, and along roadsides. It is found throughout southern Garfield County and is becoming a problem south of Battlement Mesa.

Purple Loosestrife (*Lythrum salicaria*)

Purple loosestrife is a member of the Loosestrife family. It is a perennial introduced from Europe. The erect, square stem can reach 1 ½ to 8 feet tall with magenta-colored flowers. Purple loosestrife is a highly aggressive invader species that can be found in most wetland sites throughout the state. If left unchecked, a wetland will eventually

become a monoculture of loosestrife, posing a severe threat to waterfowl habitat and impeding water flow in irrigation ditches. There are no confirmed locations in Garfield County.

Russian Knapweed (*Acrotilon repens*)

Russian knapweed is a member of the Aster family introduced from Europe. It is a creeping perennial that reproduces by seed and creeping, horizontal roots. The ridged stems are stiff and 1 to 3 feet high, with thistle-like flowers that are lavender to white. It is very difficult to control or eradicate once it becomes established. It grows in cultivated fields, along ditch banks, fence rows, roadsides, and in waste places. **Russian knapweed is toxic to horses.** It is most common in the Dry Hollow, Silt Mesa, and Missouri Heights areas.

Russian Olive (*Elaeagnus angustifolia*)

Russian Olive is a member of the Oleaster family. A hardy, fast-growing tree from Europe, Russian Olive has been promoted for windrow and ornamental plantings. This tree may reach heights from 10 to 25 feet. The trunks and branches are armed with 1 to 2 inch woody thorns. The leaves are covered with small scales which give the foliage a distinctive silvery appearance. The fruit is berry-like, and is silvery when first formed but turns brown at maturity. Very common in western Garfield County especially along the Colorado River between Silt and Rifle.

Salt Cedar (*Tamarix ramosissima*, *Tamarix parviflora*)

Salt cedar is a member of the Tamarisk family. It is a deciduous or evergreen shrub or small tree, 5 to 25 feet tall. Tamarisk may live 50 to 100 years. It has a wide range of tolerance to saline and alkaline soil and water. It copes with high concentrations of dissolved solids by absorbing them through its roots and excreting salts through glands in its stem and leaves. The excreted salts eventually form a saline crust on the soil. A single plant of saltcedar will use about 200 gallons of water per day while it is actively growing. The bark on the saplings and stems is reddish-brown. Leaves are small and scale-like, on highly branched slender stems. *Ramosissima* is 5-petaled and pink to white. *Parviflora* is 4-petaled. Introduced from Eurasia, tamarisk is widespread in Garfield County, along the Colorado River from Glenwood Canyon to the Mesa County Line.

Scotch Thistle (*Onopordum acanthium*)

Scotch thistle is a member of the Aster family. It is a biennial that was introduced from Europe or eastern Asia and can reach a height of 8 feet. The rosette forms the first year and can have leaves up to 2 feet long and 1 foot wide. The second year the plant produces flowers that are reddish-purple to violet. It is found primarily along roadsides and railroads, but can become an impassable obstacle to livestock on rangeland and pastures. Common between Glenwood Springs and New Castle.

Spotted Knapweed (*Centaurea maculosa*)

Spotted knapweed is a member of the Aster family. Native to Central Europe, it is a simple perennial that reproduces from seed and forms a new shoot each year from a taproot. The plant can have one or more shoots up to 4 feet tall. Flower color is usually lavender to purple. Spotted knapweed occupies dry meadows, pastures, stony hills, roadsides, and the sandy or gravel flood plains of streams and rivers, where soils are light textured, well-drained, and receive summer precipitation. Spotted knapweed tolerates dry conditions, similar to diffuse knapweed, but will survive in higher moisture areas as well. There is a small infestation south of Battlement Mesa and scattered, isolated patches are increasing in Garfield County.

Yellow Starthistle (*Centaurea solstitialis*)

Yellow starthistle is a member of the Aster family. It is an annual, 2 to 3 feet tall, that was introduced from Europe. Flowers are yellow, located singly on ends of branches, and armed with sharp straw-colored thorns up to $\frac{3}{4}$ inch long. ***“Chewing disease” results when horses are forced to eat yellow starthistle.*** Currently, there are no confirmed reports of starthistle in the Garfield County, however single plants have been reported in the past. There are known infestations in neighboring counties.

Yellow Toadflax (*Linaria vulgaris*)

Yellow toadflax is a member of the Figwort family and is sometimes called common toadflax or “butter and eggs.” It was introduced from Europe as an ornamental and has now become a serious problem to rangelands and mountain meadows. It is a perennial reproducing from seed, as well as from underground rootstalk. The flowers are bright yellow with deep orange centers that resemble the snapdragon. Yellow toadflax does well in all types of soils. Its displacement of desirable grasses not only reduces ecological diversity, but also reduces rangeland value and can lead to erosion problems. Because of its early vigorous growth, extensive underground root system, and effective seed dispersal methods, yellow toadflax is difficult to control. Yellow toadflax infests thousands of acres in the Flat Tops Wilderness.

2.02 How To Distinguish Varieties Of Thistle, Knapweed Or Toadflax:

THISTLES

Four types of thistles are on the Garfield County Noxious Weed List. Canada thistle is a perennial; it has an extensive root system. Plumeless, Scotch, and musk thistles are biennials; they are relatively shallow rooted and reproduce by seed only. Canada and plumeless thistle are often mistaken for each other, however it is very simple to tell them apart. Canada has a smooth stem; plumeless has spiny stem leaves. The bracts under the flower of Canada are spineless; the bracts under the flower of plumeless appear as sharp spines. The flowers of musk thistle are about three times larger than those of Canada or plumeless. Musk thistle seedlings have a very prominent white midrib. Scotch thistle leaves are larger than those of the other thistles. They grow up to 2 feet in length and 1 foot wide. The leaves are covered with dense hairs, which give them a gray appearance. All of the biennial thistles may grow to heights of greater than six feet. Canada thistle may grow from 1 to 4 feet tall.

Colorado has several species of thistle which are native and do not cause the problems of the noxious species. Native thistles have mostly white, sometimes very pale lavender flowers and are more succulent than the noxious species. The flowers may have a hairy or fuzzy appearance and stems of some species are reddish.

KNAPWEEDS

Russian knapweed is a perennial with an extensive underground root system. Spotted knapweed is a biennial, or occasionally a short-lived perennial with a short taproot. Generally, the flowers of spotted and Russian knapweed are pinkish-purple, diffuse flowers are white, however there are exceptions. The best way to distinguish between the knapweeds is by the bracts. The bracts of Russian knapweed are white and papery-thin. Diffuse knapweed has sharp-toothed bracts. Spotted knapweed bracts are more like a fringe (not as spiny) with a black spot on each bract.

TOADFLAX

The best way to distinguish the different toadflaxes is to look at the shape of the leaves. Yellow toadflax has narrow leaves that are pointed at both ends; the leaves of Dalmatian toadflax are heart-shaped, clasp the stem, and are waxy with a blue green color. Yellow toadflax tends to be a smaller plant than Dalmatian toadflax.

2.03 The Threat Of Escaped Ornamentals:

Most plants used for landscaping purposes cannot proliferate outside the cultivated environment of the home garden. But certain exotic plants and seeds were imported to the United States for their aggressive growth habits, xeriscape potential, or re-seeding capabilities. Such plants, known as escaped ornamentals or invasive ornamentals, include oxeye daisy, purple loosestrife, dalmatian toadflax, chicory, Russian olive, and yellow toadflax. The very traits that make these plants desirable for a garden or landscape may also enable them to thrive outside cultivated areas and become fierce competitors with our native vegetation. Because they exist here without the presence of any natural predators, these plants have the ability to spread extensively and pose a severe threat to the delicate balance of our native ecosystems.

Since various invasive ornamental plants are attractive and establish themselves quickly, they are popular with landscapers and gardeners and may be purchased through certain nurseries in Garfield County. It is imperative that we educate landscape architects, gardeners, and nursery growers about the need to eliminate such plants from their landscape plans. Otherwise these plants will inevitably escape from the cultivated garden and jeopardize the natural wildflower and plant communities that we cherish. Native wildflowers such as Colorado Blue Columbine, our state flower, cannot compete with invasive ornamental plants for nutrients, sunlight, and water. As a result, our biologically diverse mountain meadows, grasslands, wetlands, and agricultural lands are in danger of being overrun by non-native invasive ornamental plants.

2.04 Integrated Weed Management – Treatment Methods:

Management techniques include cultural, mechanical, biological and chemical strategies. The optimum method or methods for weed management will vary depending on a number of site specific variables. Factors to be considered should include soil type and stability, grade, associated vegetation, existing and proposed land use, proximity to water, availability of irrigation water, weed type and stage of growth, and severity of infestation. The management method selected should be the least environmentally damaging, yet practical and reasonable in achieving the desired results. When considering weed management on a property, work on the areas that may transport weed seeds. These areas include ditches, streams, roadsides, driveways, trails, livestock concentrated areas, and equipment storage sites.

The following recommendations are intended to be a reference for weed management in Garfield County. The information is not intended to be a complete guide to weed management. Before using any chemical, you should thoroughly read the label. Any use of a herbicide inconsistent with the label is neither legal nor recommended.

Changes in herbicide registrations occur constantly. The herbicide label is the legal document on herbicide use. ***Read and follow all directions carefully.*** The use of a pesticide in a manner not consistent with the label can lead to injury of crops, humans, animals, and the environment.

Specific chemical recommendations are available from the Garfield County Vegetation Management Department and/or licensed applicators and are not listed in the Plan.

CANADA THISTLE

- Description: Perennial. Reproduces from vegetative buds in root system and from seed.
- Comments: Canada thistle is best managed through an integrated management system that emphasizes competitive, desirable plants.
- Biological control: Three insects currently available. It is best to release a *complex* of insects (different insects that will stress different parts of the plant.) *Ceutorhyncus litura* – a weevil that stresses the crown of the plant. *Urophora carduii* – a stem and shoot gall fly. *Cassida rubiginosa* – leaf beetle.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Maintain soil fertility and moisture at optimum levels to favor grass growth.
- Mechanical control: Research indicates that mowing of Canada thistle may be effective when done repeatedly at two week intervals over a period of

several years. Pulling and digging up Canada thistle is ineffective as the plant has such an extensive root system.

CHICORY

- Description: Simple perennial.
- Comments: Chicory is well established in western Garfield County (Parachute) and is spreading rapidly in other parts of the County.
- Biological control: Close grazing by sheep will control the chicory in pastures.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Re-seed disturbed areas adjacent to chicory infestations with appropriate perennial grasses.
- Mechanical control: None available.

COMMON BURDOCK

- Description: Biennial. Prolific seed producer.
- Comments: Burs may become entangled in the hair of livestock, wildlife, or pets allowing seed to be distributed to new areas.
- Biological control: None currently available.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Minimize soil disturbances, encourage desirable plant growth.
- Mechanical control: Top growth removal through mowing or cutting is effective as is pulling or digging out the plant at flowering or early seed formation.

DALMATIAN TOADFLAX

- Description: Aggressive perennial, escaped ornamental.
- Comments: Widespread in Glenwood Springs.
- Biological control: The defoliating moth, *Calophasia lunula*, has been released on Dalmatian and yellow toadflax. It may defoliate up to 20% of the leaves of the plant.

- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Re-seed disturbed areas adjacent to toadflax infestations with appropriate perennial grasses.
- Mechanical control: Repeated mowing 2-3 times per year will slow spread and reduce seed production.
- Education: The key to Dalmatian toadflax management is to create an awareness among homeowners, nurseries, landscapers, and landscape architects that Dalmatian toadflax is a noxious weed and therefore should not be specified in plantings, sold in nurseries or planted in home gardens or large-scale landscape projects.

DIFFUSE KNAPWEED

- Description: Biennial, reproduces by seed.
- Comments: Increasingly common in Garfield County. The largest infestation is at the Glenwood Springs Airport.
- Biological control: Two seed head flies, *Urophora affinis* and *U. quadrifasciata*, are available. They reduce seed production. A root-boring moth, *Agapeta zoegana*, causes considerable damage to roots.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Reseeding of disturbed sites with fast growing grasses helps prevent diffuse knapweed establishment.
- Mechanical control: Handpulling has been effective, if done persistently over time.

HOARY CRESS

- Description: A very competitive, deep-rooted perennial that reproduces by root segments and by seed.
- Comments: Common in Garfield County.
- Biological control: None currently available.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Mowing or cultivation effectiveness will be increased if other plants like perennial native grasses or alfalfa are seeded in the hoary cress stand as competitors. Maintain range and pasture in

good condition. Promote healthy grass growth through proper irrigation and fertilization. Do not overgraze.

Mechanical control: Removal of top growth is somewhat effective. Repeated treatments may reduce seed production and spread.

HOUNDSTONGUE

Description: Biennial. Prolific seed producer. Seed nutlets break apart at maturity and cling to clothing or animals.

Comments: Widespread throughout Garfield County.

Biological control: None currently available.

Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.

Cultural control: Re-seed disturbed sites with fast growing native grasses. Maintain range and pasture in good condition. Promote healthy grass growth through proper irrigation and fertilization. Do not overgraze.

Mechanical control: Houndstongue is a prolific seed producer, and the seeds are readily spread by their ability to stick to wildlife and domestic animals. Physical removal of the plant at flowering or in early seed formation, by pulling or digging, will break the cycle of the plant.

LEAFY SPURGE

Description: A perennial up to three feet tall that reproduces by vigorous root stalks and seed.

Comments: Leafy spurge is primarily found in Wallace Creek in western Garfield County. An extremely difficult-to-control perennial weed that will require re-treatments to achieve adequate control. Development of a management plan is helpful to manage large areas of leafy spurge.

Biological control: Sheep or goats will graze leafy spurge. If livestock graze leafy spurge after seed formation, hold animals in a corral for at least seven days before moving them to an uninfested area to avoid seed spread.

Several flea beetles (*Apthona spp.*) are available from the Colorado Department of Agriculture Insectary in Palisade. These insects are available upon request at no charge to the public. The larvae bore into leafy spurge roots and the adults feed on the leaves. Also available from the Insectary are *Oberea erythrocephala*, a stem

and root crown mining long-horned beetle, and *Spurgia esulae*, a shoot tip gall midge.

Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.

Cultural control: Any activity that encourages vigorous grass growth is very important. Overgrazing stresses grasses and makes them less competitive to leafy spurge.

Mechanical control: Mowing leafy spurge at 14 to 21 day intervals may cause higher susceptibility to fall applied herbicides.

MUSK THISTLE

Description: Musk thistle is a biennial and the key to its successful management is to prevent seed formation.

Comments: Scattered throughout the County, heaviest in the Crystal River Valley.

Biological control: The musk thistle seed head weevil, *Rhinocyllus conicus*, is widespread in Colorado. Larvae of this insect destroy developing seeds but are not 100 percent effective by themselves. The weevil normally impacts seed production by about 50 percent. Herbicides can be combined with weevils if the insects are allowed to complete their life cycles. Another weevil, *Trichosiocalus horridus*, attacks the crown area of musk thistle rosettes and weakens the plant before it bolts. This weevil has reduced stand density in areas where it has become well established. A leaf feeding beetle, *Cassida rubiginosa*, causes considerable damage by skeletonizing leaves. It is recommended to release more than one type of insect on a weed since each type may work on different parts of the plant.

Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.

Cultural control: Musk thistle, like other biennial thistles, thrives on disturbance. The best management is to minimize disturbance. If it does occur be certain to revegetate with competitive perennial grasses.

Mechanical control: The most effective type of mechanical control is to hand pull this plant prior to flowering. This can be unrealistic on large acreage or when the ground is very dry. Another option is to use a shovel to cut the root below the surface of the soil, taking care not to disturb the soil more than necessary. If this is done prior to flowering the plant can be left in place after it is cut. If it has

already flowered the plant should be removed and placed in a bag and disposed of. Mowing is not effective on this species unless repeated numerous times throughout the growing season since musk thistle will flower and produce seed even after one or two mowings.

OXEYE DAISY

- Description: A rhizomatous perennial, escaped ornamental.
- Comments: A rapidly spreading weed in Garfield County.
- Biological control: None currently available.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: None available.
- Mechanical control: No information available.
- Education: The key to oxeye daisy management is to create an awareness among homeowners, nurseries, landscapers, and landscape architects that oxeye is a noxious weed and therefore should not be specified in plantings, sold in nurseries or planted in home gardens or large-scale landscape projects.

PLUMELESS THISTLE

- Description: A biennial, prolific seed producer.
- Comments: Common in southern Garfield County, rapidly spreading south of Battlement Mesa.
- Biological control: The same seed head weevil, *Rhinocyllus conicus*, that attacks musk thistle also feeds on plumeless thistle seeds. Another musk thistle weevil, *Trichosirocalus horridus*, has been released on plumeless thistle in Garfield County. This weevil appears to be ineffective on plumeless.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Plumeless thistle, like other biennial thistles, thrives on disturbance. The best management is to minimize disturbance and revegetate with competitive perennial species.
- Mechanical control: Mowing is generally not effective on plumeless due to the plant's capacity for rapid re-growth. Hand cutting is not effective unless

there are repeated follow-up treatments. Hand cutting should only be conducted if there is a commitment to follow-up efforts. Plumeless tends to branch out where it is cut and then it re-flowers. Pulling plumeless can be very effective, especially if done after a light rain. Hand pulling, with a good set of gloves, is preferable to shoveling. Shoveling disturbs the ground thus creating a potential seedbed for future infestations.

PURPLE LOOSESTRIFE

- Description: An introduced perennial. This escaped ornamental is also a prolific seed producer, able to produce over 10,000 seeds per square yard.
- Comments: The US Fish and Wildlife Service and the Colorado Division of Wildlife are extremely alarmed about the proliferation of purple loosestrife in wetland and riparian habitats.
- Biological control: Biological control may eventually bring weed populations under control, but it will not eliminate or prevent the spread of noxious weeds. A survey of loosestrife populations in Europe has resulted in the selection of five insects which may have potential as biocontrols. Three of these species have completed initial screening tests conducted by the International Institute of Biological Control, in Switzerland and one, *Hylobius transversovittatus*, a root mining weevil which attacks the vascular tissue of the plant, was subsequently released in New York in 1991.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Not available.
- Mechanical control: Mechanical methods include hand pulling, mowing, and flooding. Hand pulling is effective when infestations are detected early. The root system must be completely removed, since the root sections can sprout and form new plants. For this reason hand pulling is only effective on small plants.
- Education: The key to purple loosestrife management and other escaped ornamentals is to create an awareness among homeowners, nurseries, landscapers, and landscape architects that purple loosestrife is a noxious weed and therefore should not be specified in plantings, sold in nurseries or planted in home gardens or large-scale landscape projects.

RUSSIAN KNAPWEED

- Description: A perennial with an extensive underground root system.
- Comments: This weed is very common in Garfield County. Like other creeping perennials, the key to Russian knapweed control is to stress the weed and cause it to expend nutrient stores in its root system. An integrated management plan should be developed that places continual stress on the weed. Currently, the best management plan includes cultural control combined with mechanical and/or chemical control techniques. A single control strategy, such as mowing or a herbicide, usually is not sufficient. ***The plant is toxic to horses, however they must consume it over a period of time before poisoning will occur. Once poisoning occurs horses are unable to chew and advance food to the back of their mouths, swallowing is impaired and horses can drink only if they immerse their head in water far enough to get water to the back of their mouths. Poisoning is irreversible and death by starvation will occur.***
- Biological control: None currently available.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Russian knapweed tends to form monocultures by eliminating other plants. Therefore, sowing desirable plant species is necessary after the weed is controlled. Research indicates that the native grasses, streambank wheatgrass and thickspike wheatgrass will establish in an area after Russian knapweed is suppressed with herbicides. If the Russian knapweed stand is not too old and grasses are still present, stimulating grass growth by irrigation (where possible) should increase grass competition with knapweed and keep it under continual stress.
- Mechanical controls: Repeated mowing combined with herbicide applications will gradually stress the plant.

RUSSIAN OLIVE

- Description: A tree that may reach heights from 10 to 25 feet.
- Comments: Very common along the Colorado River and other drainages in western Garfield County.
- Biological control: None available.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.

Cultural control: Plant native trees or less aggressive introduced trees. In riparian areas establish native riparian vegetation.

Mechanical control: Small trees may be controlled mechanically by using an appropriate tool or shovel.

SALT CEDAR

Description: Shrub or small tree.

Comments: Widespread throughout Garfield County.

Biological control: There are experimental projects being conducted in a few areas in the West involving the release of mealybugs and leafbeetles. These are not cleared for general release. The recent listing of the Southwestern Willow Flycatcher (a native species that nests in saltcedar) under the Endangered Species Act has challenged efforts to move forward with release of insects for biocontrol.

Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.

Cultural control: Establish native riparian vegetation.

Mechanical control: Historical saltcedar management projects have included root plowing and raking, dozing, mowing, and prescribed burning. These methods provide only short-term benefits and are labor intensive.

SCOTCH THISTLE

Description: A biennial.

Comments: Common in Garfield County, the worst infestations are located between Glenwood Springs and New Castle.

Biological control: None currently available.

Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.

Cultural control: Reseed disturbed sites with appropriate perennial grasses.

Mechanical control: Digging the plant at the rosette stage is effective.

SPOTTED KNAPWEED

- Description: A short-lived, non-creeping perennial that reproduces from seed and forms a new shoot each year from a taproot.
- Comments: One of the most invasive, aggressive weeds to plague the western United States. Small infestation located in the Battlements.
- Biological control: The seedhead flies, *Urophora affinis* and *Urophora quadrifasciata*, have been released in many Front Range counties. These insects cause plants to produce fewer viable seeds and abort terminal or lateral flowers. Root feeding insects may have more of a detrimental effect on knapweed populations than seed feeding insects. Larvae of the yellow winged knapweed moth feed in the roots of both knapweed species.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: If desirable grass competition is evident in spotted knapweed stands, judicious herbicide application that does not injure grasses may release them to compete effectively with the weeds. Irrigation may help stimulate grass competition in these cases. Seeding suitable perennial grasses is necessary to prevent weed re-invasion.
- Mechanical control: None available.

YELLOW STARHISTLE

- Description: Annual, prolific seed producer.
- Comments: In California alone, this plant has infested more than 20 million acres. There are no known infestations in Garfield County; however there have been reports in the past of single-plant infestations.
- Biological control: A seed-feeding beetle, *Bangasterus orientalis*, has been released in California and Idaho. Seed weevils and seed flies have also been released. In Garfield County, we hope to detect and eradicate any infestations of starthistle before biocontrols are necessary.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Vigorous competitive grass is essential to maintain a plant community's resistance to starthistle invasion.
- Mechanical control: Mowing or cutting starthistle is rarely effective.

YELLOW TOADFLAX

- Description: An escaped ornamental perennial reproducing by seed and rootstalk.
- Comment: Prevalent in the Flattops.
- Biological control: One insect species *Calophasia lunula* a defoliating moth has been released on yellow toadflax. It may defoliate up to 20 percent of the leaves.
- Chemical control: Contact Garfield County Vegetation Management or a licensed applicator for specific recommendations.
- Cultural control: Attempt to maintain competitive communities of desirable species. Re-seed any open ground with perennial grasses to prevent invasion by other weed species.
- Education: The key to management of yellow toadflax and other escaped ornamentals is to create an awareness among homeowners, nurseries, landscapers, and landscape architects that yellow toadflax is a noxious weed and therefore should not be specified in plantings, sold in nurseries or planted in home gardens or large-scale landscape projects.
- Mechanical control: Digging and pulling where feasible, can provide effective control of toadflax if conducted annually for 10 to 15 years.

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SECTION III

JURISDICTIONAL OVERVIEW OF AREAS OF INFESTATION IN GARFIELD COUNTY

3.01 Overview:

The County has adopted an “*early detection, early treatment*” philosophy. Early detection is identifying and documenting recently introduced weed species into an area. Early treatment is the follow-up that could possibly eradicate new infestations.

3.02 County Land:

County property is categorized as Roads, Airport, and the Landfill.

Roads:

Garfield County has over 900 miles of county roads. Roadsides shall be managed regarding the 21 weeds on Garfield County’s noxious weed list. A Priority List will be established each growing season based upon input from the Road and Bridge District Foremen, the public, and past observations by staff. The roadsides will be selectively spot treated for noxious weeds. There will be no general herbicide applications to non-listed weeds unless specifically requested by the Road and Bridge Foremen, or the County Commissioners, to treat a roadside for safety and sight reasons.

Roadside treatment will start in the warmer, western end of the county in mid-April and move to the east and south as the growing season progresses. Each road on the Priority List will be treated at least once. If time and workload allows some of the heavily infested roadsides will be treated a second time.

Airport:

The Airport will be treated on an as-needed basis for noxious weeds. There are scattered infestations of Russian knapweed and musk thistle on Airport property.

Landfill:

The Anvil Points Landfill will be treated on an as-needed basis for noxious weeds. There are isolated musk thistle plants at the Landfill.

It is the goal of Garfield County to develop and implement a comprehensive noxious weed management program on all County-owned property.

3.03 State Lands:

Colorado Department of Transportation:

Garfield County has an Intergovernmental Agreement with CDOT to treat noxious weeds on Interstate 70, State Highways 13, 133, 82, 325 and US 6&24. This agreement is on an annual basis and is for the treatment of designated noxious weeds.

Colorado Division of Wildlife:

The Colorado Division of Wildlife has a weed management program in place for the Garfield Creek State Wildlife Area. Garfield County has worked with the DOW at the Rifle Falls Fish Hatchery to monitor and treat isolated patches of yellow toadflax.

Colorado State Parks:

Rifle Gap, Rifle Falls, and Harvey Gap have weed management programs for their properties. Garfield County is available to provide technical assistance and weed identification upon request.

3.04 Federal Land:

Bureau of Land Management:

Garfield County has Intergovernmental Agreements with the Grand Junction Field Office and Glenwood Springs Field Office to treat noxious weeds on BLM land. These agreements are reviewed and modified on an annual basis.

White River National Forest:

The WRNF (within Garfield County) manages its noxious weeds through their Ranger Districts in Rifle and Carbondale, and through the Supervisor's Office in Glenwood Springs. Garfield County and the Rifle Ranger District have tentative plans for a cooperative agreement in 2000.

3.05 Municipalities:

Carbondale, Glenwood Springs, New Castle, Parachute, Rifle, and Silt are the six incorporated communities in Garfield County. Once Garfield County adopts this plan it will be presented to the municipalities for their consideration. Municipalities have specific responsibilities as described in the Colorado Noxious Weed Act. (See Section 1.03 of the Plan.)

3.06 Railroads:

There are two rail lines within Garfield County. The Roaring Fork Railroad Holding Authority (RFRHA) is a consortium of local governments that owns the rail line between Glenwood Springs and Carbondale. RFRHA has a Weed Management Plan in place. Union Pacific owns the rail line that generally runs parallel to I-70. Garfield County has requested a Weed Management Plan from UP.

SECTION IV
PLAN OF WORK

4.01 Objectives and Goals:

Goals and Objectives of the Garfield County Weed Management Plan

- A. Develop and implement a comprehensive noxious weed management program on all County-owned property.
- B. Educate the public concerning weed management issues.
- C. Foster a spirit of cooperation among federal, state and local government agencies and private landowners.
- D. Work with other government agencies and departments to institute “Best Management Practices” and/or policies that stress prevention as a weed management tool.
- E. Promote and use integrated management techniques.
- F. Establish and maintain healthy plant communities with native or beneficial vegetation.
- G. Restore and maintain desirable plant communities, healthy ecosystems, and productive agricultural lands in Garfield County.
- H. Stop the spread of noxious weeds to uninfested lands.
- I. Contain heavily weed-infested areas.
- J. Implement “Title 35 Article 5.5, The Colorado Weed Management Act.”

Management Goals for Weed Species

Management goals will vary from species to species, by location, and over time. For some species, such as yellow starthistle, complete eradication of existing infestations and total suppression of newly identified infestations is feasible and appropriate. Containment of existing intentional plantings, exclusion of seed from new wildland or open space mixes, and elimination of targeted escaped infestations are three different management goals for certain ornamentals such as oxeye daisy. Russian knapweed, saltcedar, and Russian olive infestations are so widespread that they must be managed, in many cases, merely for containment and reduction in the rate of spread. Eradication of these stands may only be viewed as impossible in some instances, or as a long range objective.

In all cases, revegetation, either from the existing seed bank or through supplemental planting, must be included as a management goal. Without revegetation, disturbed or denuded soils invite adventitious weed infestation.

4.02 Prevention and Detection:

Prevention is the highest priority weed management technique on non-infested lands. Among government officials, land managers, farmers, ranchers, and the general public there is growing recognition that protecting weed-free plant communities is the most economical and efficient land management practice. The benefits are obvious. Weed-free plant communities:

- Provide essential wildlife habitat and forage.
- Save ranchers and farmers many billions of dollars in labor costs and lost production.
- Ensure aesthetic and recreational qualities of an area.
- Prevent soil erosion and improve water quality.

The spread of noxious weeds is most likely to occur where soil has been disturbed either by human activities (road and trail cuts, construction sites, the spread of gravel, road fill and topsoil contaminated with noxious weed seed, or overgrazing) or by natural events (fire, avalanches, mudslides, flooding). Disturbed land provides opportunity for noxious weeds.

Exotic plants and seeds such as oxeye daisy, purple loosestrife, chicory, toadflax, and Russian olive escape from our yards and gardens. Since they are attractive and establish themselves quickly, they are popular with landscapers and gardeners for ornamental planting and may be purchased through nurseries. They have the same ability to dominate and spread, however, as other better known noxious weeds.

Still other known methods of weed introduction include:

- Contaminated seed, feed grain, hay, straw, and mulch.
- Movement of contaminated equipment, cars, bikes, etc. across uncontaminated lands.
- Animal fur, fleece, human clothing.
- Dried flower arrangements.

Prevention is best accomplished by ensuring that new weed species seed or vegetative reproductive plant parts of weeds are not introduced into new areas, and by early detection of any new weed species before they become widespread.

STRATEGIES to prevent the introduction or establishment of noxious weeds in areas not already infested include:

- Identification and eradication of small, new infestations.
- Continuous monitoring and evaluation to prevent recurrence.
- Identification of existing conditions, disturbances, and activities that represent a potential threat to native habitat.
- Identification of recently introduced weed species that represent a future threat.

- Timely revegetation and reclamation of disturbed sites using appropriate native plant species.
- The use of weed free seeds and mulch.
- Countywide promotion of the Colorado Weed Free Hay and Forage program.
- Prioritization of weed management along areas of entry and dispersal.
- Discouraging the sale of weedy ornamental plants and seed packets that contain weeds.

PREVENTION WILL ALWAYS BE THE MOST EFFECTIVE NOXIOUS WEED CONTROL AVAILABLE.

4.03 Garfield County Gravel Purchase Guidelines

The County shall require the following before agreeing to purchase any gravel for County projects:

- A. The gravel pit shall be inventoried and mapped by the pit operator for all plant species on Garfield County’s noxious weed list on an annual basis.
- B. The gravel pit operator shall provide the County with a weed management plan. Noxious weeds shall be treated prior to seed formation.
- C. The gravel pit operator must supply the County with a detailed treatment record.
- D. The County will inspect the pit, the inventory, and the application records two weeks prior to the purchase of gravel or other aggregates.

4.04 Education and Awareness:

Education must play a major role in implementing this weed management plan. Groups targeted for public education include the following: farmers and ranchers, homeowners associations, private citizens, developers, gardeners, landscapers, nurseries, public and private land management agencies, recreational users, youth groups, schools, oil and gas companies, pipelines, and other utilities.

A partnership of the public and private sectors, along with awareness of what noxious weeds are and the problems they cause, is essential to maintain or create plant communities that are free of noxious weeds. Knowledge about how to identify weeds, how and where weeds are spread, and what it takes to manage weeds is needed. Continuation and expansion of current educational programs as well as the development of new programs is a priority of the Garfield County Noxious Weed Management Plan. The Garfield County Vegetation Management Department and/or other governmental agencies will provide this instruction. Workshops will be held throughout the year to enhance public awareness. Opportunities for education include:

- Widespread distribution of informative printed material.

- Offering weed tours and talks to the public.
- Private applicator certification, applicator safety, and laws/regulations.
- Proper calibration of spraying equipment.
- Contacting area nurseries, landscapers, and landscape architects, to emphasize the problems created by escaped ornamentals.
- Cooperation with local media to disseminate weed information.
- Custom weed management recommendations for individual landowners.

WEED MANAGEMENT BEGINS WITH EDUCATION.

4.05 **Land Stewardship:**

The Colorado Noxious Weed Act requires that all property owners use integrated methods to manage noxious weeds. Weed management must be ongoing, requiring an integrated approach in which proper land stewardship practices are utilized. Most weed species, if detected early, can be managed.

STRATEGIES:

- Identify your plants.
- Understand the target weed. Does it reproduce by seed or roots or both?
- Maintain inventory maps.
- Develop a noxious weed database.
- Develop site specific weed management plans in cooperation with other individual landowners and public agencies.
- Develop a decision-making process that uses site-specific information to make decisions about treatment choices.
- Develop a long-term strategy including regular monitoring of treatment areas.
- Alleviate the situation, or practices, that allowed the weeds to spread.
- Take the necessary action.

MAINTAINING LAND THAT IS FREE OF WEEDS IS GOOD STEWARDSHIP. LANDOWNERS WHO DO NOT MANAGE THEIR WEEDS PLACE THEIR NEIGHBORS' LANDS AT RISK.

4.06 **Revegetation and Rehabilitation:**

A crucial part of any weed management plan is the reintroduction of site appropriate vegetation.

Establishing a desirable plant community after noxious weeds have been removed from a highly infested area requires timely cultivation and reseeding. Since the seeds from noxious weeds may lay dormant for many years, removing all visible signs of the noxious weeds does not ensure against their return. Revegetation can help prevent the germination of weed seeds. It is important to inspect the land regularly to identify and treat small, new

infestations. For proper reclamation, managed irrigation of dry areas, fertilization, and reseeded are essential to establish desirable plant communities.

Native plants are most appropriate when the goal is restoration (trying to restore native habitat). Weed-free seeds of native Colorado grasses, wildflowers or plant species appropriate to the site may be purchased, but the best source for seeds is from native species that grow in the immediate vicinity of the infestation. They will be best adapted to local conditions and will help maintain local integrity and genetic viability. Using native plants or seeds to reclaim disturbed land reduces degradation of native ecosystems, reduces the need for herbicides and conserves water resources. Native plants will provide a broad biological diversity and help keep Colorado looking like Colorado with a unique regional landscape that sets us apart from other areas of the country.

When the goal is reclamation (reseeding for quick ground cover establishment or erosion control), it may be appropriate to use introduced, non-aggressive grasses and forbs.

Contact the Natural Resources Conservation Service or Colorado State University Cooperative Extension for seeding recommendations. The *Native Plant Revegetation Guide for Colorado*, published by the Colorado State Parks Natural Areas Program, is an excellent guide for native plant reseeded. Contact the Garfield County Vegetation Management office for further information on this material.

STRATEGIES:

- Study all vegetation in the area and surrounding areas.
- Preserve plant species native to Colorado.
- Test the soil for pH balance. Try to retain and utilize as much on-site topsoil as possible.
- Select a predominant species that is appropriate to the site. Then choose a few complimentary species to provide a balanced plant community.
- Choose plants that are healthy, vigorous and pest free.
- Use weed-free seeds. Use non-hybrid seeds. Avoid commercial seedpackets containing exotic plant species.
- Choose plants that are horticulturally appropriate, i.e. plant species that are adaptable to climate, soil and topographical conditions of the designated area.
- Consider the use of water, its availability and the vegetative requirements.
- To landscape for wildlife, choose native plants that provide cover, forage, browse, seeds for birds and rodents, and shade.
- Be site-specific; revegetation strategies may vary for small lots, farms, ranches or construction sites.
- Establish a vegetative cover that is diverse, effective and long lasting, capable of self-regeneration.
- Stabilize the surface.

4.07 Requirements (Soil Plan, Revegetation Plan & Security Adopted May 7, 2001):

- At the discretion of the Board of County Commissioners, as part of the Planning and Zoning approval process, for land disturbances outside the building envelope, the County may require, at preliminary plan and prior to Final Plat, the following items:

A Soil Plan to include:

- Provisions for salvaging on-site topsoil.
- A timetable for eliminating topsoil and/or aggregate piles.
- A plan that provides for soil cover if any disturbances or stockpiles will sit exposed for a period of 90 days or more.

A Revegetation Plan to include:

- Plant material list (be specific, scientific and common names required).
- Planting schedule (to include timing, methods, and provisions for watering, if applicable).
- A map of the area impacted at preliminary plan (where the soil will be disturbed).
- A revegetation bond. (Agricultural practices are exempt from revegetation requirements unless they are in association with a subdivision or land use proposal).

A revegetation security may be required if, in the determination of the Board of County Commissioners, the proposed project has:

- A potential to facilitate the spread of noxious weeds.
- A potential to impact watershed areas.
- A potential for visual impacts from public viewing corridors
- Steep slopes (15% or greater) or unstable areas.
- Disturbs large areas (Half an acre or greater).

The revegetation security will be in an amount to be determined by the Board of County Commissioners that will be site-specific and based on the amount of disturbance. The security shall be held by Garfield County until vegetation has been successfully reestablished according to the following Reclamation Standards. The Board of County Commissioners will designate a member of their staff to evaluate the reclamation prior to the release of the security.

4.08 Reclamation Standards (Adopted May 7, 2001)

1. Site stability

- A. The reclaimed area shall be stable and exhibit none of the following characteristics:

1. Large rills or gullies.

2. Perceptible soil movement or head cutting in drainages.
 3. Slope instability on or adjacent to the reclaimed area.
- B. Slopes shall be stabilized using appropriate reshaping and earthwork measures, including proper placement of soils and other materials.

2. Soil Management

Topsoil management shall be salvaged from areas to be disturbed and managed for later use in reclamation.

3. Erosion Prevention

The surface area disturbed at any one time during the development of a project shall be kept to the minimum necessary and the disturbed areas reclaimed within ninety days to prevent unnecessary or undue degradation resulting from erosion.

- A. The soil surface must be stable and have adequate surface roughness to reduce run-off, capture rainfall and snow melt, and allow for revegetation.
- B. Application of certified noxious weed free mulch or erosion netting may be necessary to reduce soil movement, retain soil moisture, and promote revegetation.
- C. Soil conservation measures, including surface manipulation, reduction in slope angle, revegetation, and water management techniques, shall be used.
- D. Sediment retention structures or devices shall be located as close to the source of the sediment generating activities as possible to increase their effectiveness and reduce environmental impacts.

4. Revegetation

When the final landform is achieved, the surface shall be stabilized by vegetation or other means to reduce further soil erosion from wind or water, provide forage and cover, and reduce visual impacts. Specific criteria for evaluating revegetation success must be site-specific and included as a part of the reclamation plan.

- A. Vegetation production, species diversity, and cover, shall support the post-disturbance land use. Areas where the post-disturbance land use does not include lawns, gardens, and flower beds; shall approximate the surrounding undisturbed area or be revegetated to a desired plant community with a composition of species and plant cover typical to that site.
- B. The vegetation shall stabilize the site and support the planned post-disturbance

land use, provide natural plant community succession and development, and be capable of renewing itself. This shall be demonstrated by:

1. Using certified noxious weed free seed.
 2. Successful onsite establishment of the species included in the planting mixture and/or other desirable species.
 3. Evidence of vegetation reproduction, either spreading by rhizomatous species or seed reproduction.
 4. Evidence of overall site stability and sustainability.
- C. The revegetation plan shall provide for the greatest probability of success in plant establishment and vegetation development by considering environmental factors such as seasonal patterns of precipitation, temperature and wind; soil texture and fertility; slope stability; and direction of slope faces.
- D. To insure the establishment of a diverse and long-lasting vegetative cover, the permittee shall employ appropriate techniques of site preparation and protection. species diversity should be selected for long-term land uses and to provide for a reduction in visual contrast.
- E. Where revegetation is to be used, a diversity of vegetation species shall be used to establish a resilient, self-perpetuating ecosystem capable of supporting the post-disturbance land use. Species planted shall include those that will provide for quick soil stabilization, provide litter and nutrients for soil building and are self-renewing.
- F. Integrated Weed Management (IWM) methods shall be employed for all noxious weed species on the Garfield County List. Weed management methods shall be used whenever the inhabitation of the reclaimed area by noxious weeds threaten nearby areas.
- G. Where revegetation is impractical or inconsistent with the surrounding undisturbed areas, other forms of surface stabilization shall be used.

Contact Steve Anthony, Garfield County Vegetation Manager, at 970-625-3969 for information on weed management and reclamation.

Contact Dennis Davidson, Natural Resources Conservation Service, at 970-945-5494, ext. 101, for reclamation and seeding recommendations.

4.09 Mapping and Inventory:

Mapping is a valuable tool in integrated weed management. As such, the Vegetation Manager will establish and maintain visual maps of past and present infestations of noxious weeds on county land. This will provide a graphic representation of weed management progress and needs. The primary goal of mapping will be to record the noxious weed

species present, areas infested, density of infestations, and other site factors pertinent to successfully managing the infestation.

SECTION V

ENFORCEMENT

5.01 Compliance: Private Lands:

A. Inspection.

(1) Garfield County, through its delegates, agents, and employees, shall have the right to enter upon any premises, lands, or places, whether public or private, during reasonable business hours for the purpose of inspecting for the existence of noxious weed infestations, when at least one of the following has occurred: (a) The landowner has requested an inspection; (b) A neighboring landowner or occupant has reported a suspected noxious weed infestation and requested an inspection; or (c) An authorized agent of the local government has made a visual observation from a public right-of-way or area and has reason to believe that a noxious weed infestation exists.

(2) (a) No entry upon any premises, lands, or places shall be permitted until the landowner or occupant has been notified by certified mail that such inspection is pending. Where possible, inspections shall be scheduled and conducted with the concurrence of the landowner or occupant. (b) If, after receiving notice that an inspection is pending the landowner or occupant denies access to the inspector of the local governing body, the inspector may seek an inspection warrant issued by a municipal, county, or district court having jurisdiction over the land. The court shall issue an inspection warrant upon presentation by the local governing body, through its agent or employee, of an affidavit stating: i) the information which gives the inspector reasonable cause to believe that any provision of this article is being or has been violated; ii) that the occupant or landowner has denied access to the inspector; and iii) a general description of the location of the affected land. No landowner or occupant shall deny access to such land when presented with an inspection warrant.

B. Management.

(1) If following inspection pursuant to section 5.01(A), land is found to contain designated undesirable plants, the landowner shall be given written notice, personally or by certified mail. The notice shall name the undesirable plants, identify the location of the plants, advise the landowner to control the undesirable plants, and specify the best available control methods of integrated management. The notice shall include an offer to consult with the landowner in the development

of a management plan for the control of undesirable plants on the land. The notice also shall state that the landowner shall, within a reasonable time not to exceed 10 days, either (I) comply with the terms of the notification; (II) acknowledge the terms of the notification and submit an acceptable plan and schedule for the completion of the plan for compliance; or (III) request an arbitration panel to determine the final management plan.

(2) If the landowner chooses action option I, the Garfield County Vegetation Management Department, or its representative, will re-inspect the land to confirm compliance.

(3) If the landowner chooses action option II, the Garfield County Vegetation Management Department, or its representative will review the proposed weed management plan and determine its efficacy. If the plan is acceptable, no further action will be taken except to monitor compliance, including re-inspection.

(4) If the landowner chooses action option III, an arbitration panel will be selected by the Board of County Commissioners, in accordance with CRS 35-5.5-109(4)(b). The state statute currently anticipates that the arbitration panel shall be comprised of a weed management specialist or weed scientist, a landowner of similar land in the same county, and a third panel member chosen by agreement of the first two panel members. The landowner or occupant shall be entitled to challenge any one member of the panel, and the local governing body shall name a new panel member from the same category. The decision of the arbitration panel shall be final. A hearing shall be set for a time and date as soon as practical after the panel is complete. The Garfield County Vegetation Management Department, or its representative, shall give written notice, personally or by mail, of the hearing to any complainant. The landowner is entitled to appear before the panel, individually and/or by representative, as is any complainant. The arbitration panel will be required to determine the final management plan not more than two calendar weeks after the hearing is completed. In the event of non-compliance with any management plan, in addition to remedies set forth in paragraph 5.01C. The arbitration panel shall have the ability to award cost of the arbitration to the prevailing party including arbitration panel fees and expenses. These fees and expenses may include, but are not limited to, salary, wages, travel, and per deim expenses.

C. Failure to Comply.

1. Public Nuisance.

If the landowner fails to comply with the notice to control the designated undesirable plants, fails to submit an acceptable management plan, fails to comply with an accepted management plan, or fails to comply with a management plan as determined by the arbitration panel, the Board of County Commissioners, at a public hearing at least 10 days after notice thereof to the property owner, may declare the infested property a public nuisance for which the remedies for abatement of a public nuisance shall be available as provided in C.R.S. 35-5.5-113. Once declared, such

nuisances are subject to all laws and remedies relating to the prevention and abatement of nuisances.

2. Other remedies.

In addition to, or as an alternative to the nuisance remedy Garfield County may compel management of the weeds in the following manner: the Garfield County Vegetation Management Department, or its representative, shall give written notice of a hearing before the Board of County Commissioners to the landowner by personal delivery or by certified mail which will include the date and time of the hearing, 10 days prior to the hearing date. The notice will include (i) description of the land, (ii) name of the undesirable plants and their location(s) on the land, (iii) date the Garfield County Vegetation Management Department, or its representative, will perform weed control on the land, (iv) method of control to be applied, (v) a statement that the land will be assessed the entire cost of the weed control plus 20% surcharge for the cost of inspection and other incidental costs, which total will be a lien on the land (or the tract of which it is a part) until paid, and (vi) a statement should the landowner refuse admission to the land for application of the weed control, the County will seek civil and/or criminal penalties and court-enforced abatement of a public nuisance. Such an assessment under this section shall have priority over all other liens except general taxes and prior special assessments may be certified by Garfield County Vegetation Management to the County Treasurer and collected and paid over in the same manner as provided for collection of taxes. Costs of providing for and compelling weed management shall not be assessed until the level of management called for in the notice or as developed by the arbitration panel has been successfully achieved.

3. Other Occupants.

Whenever the land is known to the Garfield County Vegetation Management Department, or its representative, to be occupied by someone other than the record owner, written notices also shall be given to the occupant, and the occupant shall be informed that C.R.S. 35-5.5-109 and this regulation imposes on occupants the same responsibilities for undesirable plant control as it imposes on landowners.

4. Notice.

Whenever notice is given by mail, it shall be deemed given when deposited in a regular depository of the United States Postal Service, postage prepaid. Notice to landowners shall be mailed to the last known address as shown in the County's Assessment Roll unless the landowner has provided the Garfield County Vegetation Management Department a different address for notice. Notice to occupants shall be mailed to the land's physical address unless the occupant has provided the Garfield County Vegetation Management Department with a different address for notice.

5. Condition Precedent.

No private land management shall be compelled without first applying the same or greater management measures to county land or rights-of-way that are adjacent to the private property.

5.02 State Public Lands:

C.R.S. 35-5.5-110 and the Governor’s Executive Order for Noxious Weed Management Programs govern compliance on lands owned by the state of Colorado or its agencies.

5.03 County Rights-of-Way:

It shall be the duty of Garfield County to confirm that all county roads, highways, rights-of-way, and any easements appurtenant thereto, are in compliance with the Colorado Noxious Weed Act and this management plan, and any violations of this article by the county shall be the financial responsibility of the county.

SECTION VI

6.01 PLAN EVALUATION

The goals and plan of work in the Garfield County Noxious Weed Management Plan will be reviewed and evaluated annually at the February Garfield County Weed Advisory Board meeting. Any proposed additions or changes shall be recommended by the Garfield County Weed Advisory Board and approved by ordinance by the Board of County Commissioners before becoming final.

The Garfield County Noxious Weed Management Plan shall be reviewed by the Weed Advisory Board at least every three years, per CRS 35-5.5-107(4)(a); and the management plan and any recommended amendments to the plan shall be transmitted to the Board of County Commissioners for approval, modification, or rejection.

SECTION VII

RESOURCE DIRECTORY AND SOURCES OF INFORMATION

7.01 Government & Other Organizations

Bureau of Land Management
Glenwood Springs Field Office
PO Box 1009
Glenwood Springs, CO 81602

(970) 947-2800

Colorado Department of Agriculture
Eric Lane, State Weed Coordinator
700 Kipling St., Suite 4000

Lakewood, CO 80215-5894
(303) 239-4182

Colorado Department of Ag. Insectary
P.O. Box 400
Palisade, CO 81526
(970) 464-7916

Colorado Division of Wildlife
50633 US Hwy 6 & 24
Glenwood Springs, CO 81601
(970) 945-7228

Colorado Department of Transportation
226 S. 6th St., Room 317
Grand Junction, CO 81501
(970) 248-7361

Colorado State University
Extension Weed Science Specialist
116 Weed Research
Ft. Collins CO 80523
(970) 491-7568

Colorado State University
Cooperative Extension
PO Box 1112
Rifle, CO 81650
(970) 625-3969

Colorado Weed Management Association
P.O. Box 1910
Granby, CO 80446-1910
(970) 887-1228

Eagle County Weed Department
PO Box 239
Eagle, CO 81631
(970) 328-8778

Garfield County Vegetation
Management
PO Box 1112
Rifle, Co 81650
(970) 625-3969

Natural Resources Conservation Service
Bookcliff Soil Conservation District
Mount Sopris Soil Conservation District
Southside Soil Conservation District

PO Box 1302
Glenwood Springs, CO 81601
(970) 945-5494

Pitkin County Land Management
76 Service Center Road
Aspen, CO 81611
(970) 920-5214

Roaring Fork Railroad Holding Authority
PO Box 1270
Carbondale, CO 81623
(970) 704-9282

White River National Forest
900 Grand Ave.
Glenwood Springs, CO 81601
(970) 945-2521

7.02 **Internet Websites**

Colorado Weed Management Association
<http://www.fortnet.org/CWMA>

Native Plant Conservation Initiative
<http://www.nature.nps.gov/npci/>

Bureau of Land Management
<http://www.blm.gov/education.html>

National Wildlife Federation
<http://www.nwf.org>

Pesticide Information
[http://164.159.187.239?NWRSFiles/Internet resources/Pesticide.html](http://164.159.187.239?NWRSFiles/Internet%20resources/Pesticide.html)

Noxious Weeds, Exotic and Invasive
Plant Management Resources
<http://164.159.187.239/NWRSFiles/InternetResources/Weeds.html>

Weed Science Society of America
<http://piked2.agn.uic.edu/wssa/>

Colorado Natural Heritage Program
<http://colostate.edu/Orgs/CNHP>

Colorado Natural Areas Program
<http://elbert.state.co.us/cnap>

Chemical Label Information
<http://greenbook.net>

7.03 **BOOKS**

Weeds of the West
University of Wyoming Bulletin Room
(307) 766-2115

Colorado Flora, Western Slope
William Weber and Ronald Wittman
Available in most bookstores

Native Plant Revegetation Guide for Colorado
Colorado Natural Areas Program
(303) 866-3437

Biology and Management of Noxious Rangeland Weeds
University of Arizona Press
1230 N. Park Ave. Suite 102
Tucson, AZ 86719
1-800-426-3797

Trees and Shrubs of Colorado
By: Jack Carter
Available in most bookstores

Troublesome Weeds of the Rocky Mountain West
Colorado Weed Management Assoc.
Available through Garfield County
(970) 625-3969

SECTION VIII

8.01 DEFINITIONS

1. Act – The Colorado Noxious Weed Act, Title 35 C.R.S., Article 5.5 as amended.
2. Adjacent – Having a common boundary that meets or touches at some point.
3. Aggressive – Fast growing, tending to spread quickly.
4. Agriculture – Uses involving the cultivation of land, production of crops, and/or the keeping of livestock and the preparation of these products for man’s use and disposal.
5. Alien Plant – A plant species that is not indigenous to the State of Colorado.
6. Annual – A plant that lasts one growing season, completing its life cycle from seed to seed in one year.
7. Biennial – A plant that lives in two calendar years. The first year is usually a vegetative form, such as a rosette of leaves. The second year the plant grows a flowering shoot, sets seeds and dies.
8. Biological Management – The use of organisms to disrupt the growth of noxious weeds.
9. Bolt – To flower or produce seeds prematurely or develop a flowering stem from a rosette.
10. Bract – A reduced or modified leaf often surrounding the base of a flower.
11. Browse - Tender shoots, twigs, and leaves of trees and shrubs fit for food for wildlife.
12. Chemical Management – The use of agents or plant growth regulators to disrupt or inhibit the growth of noxious weeds.
13. Commissioners – The Garfield County Board of Commissioners.
14. County – The unincorporated areas of Garfield County.
15. Cultural Management – Methods or management practices which favor the growth of desirable plants over noxious weeds, including maintaining optimum fertility and plant moisture status in an area, planting at optimum density and spatial arrangement in an area, and planting species most suited to a particular area.

16. Designated Noxious Weed – A non-native, invasive plant or plant parts that is identified as a threat to native plant communities and included on the Garfield County Noxious Weed list.
17. Desirable Plants – Plants considered to be advantageous and beneficial to the environmental viability of the county.
18. Escaped Ornamental -A plant originally intended for horticultural or landscape situations that has escaped its intended boundaries.
19. Exotic Plant – A plant that is not a regular member of the native or natural community in which it is found.
20. Forb - A broad-leafed, non-woody plant other than grass that dies back to the ground after each growing season.
21. Forage - Food for animals, especially when taken by browsing or grazing.
22. Garfield County Weed Advisory Board – A group of individuals appointed by the Board of County Commissioners of Garfield County to advise on matters of management of noxious weeds.
23. Herbaceous - Applies to plants of soft texture whose stems die back to the ground after each growing season; green and leaf like, not woody.
24. Infestation – Growth of an undesirable plant which has become harmful or bothersome.
 - ◆ Heavy Infestation – Dense, 25-100 percent canopy cover.
 - ◆ Moderate Infestation – Widely scattered plants, 5-25 percent canopy cover.
 - ◆ Light Infestation – Occasional plant per acre, less than 5 percent canopy cover.
25. Integrated Management – The planning and implementation of a coordinated program utilizing a variety of methods for managing noxious weeds, the purpose of which is to achieve desirable plant communities. Such methods may include but are not limited to education, preventive measures, good stewardship and biological, cultural, herbicide and mechanical management.
26. Invasive – Aggressive, capable of invading a plant community and creating a monoculture.
27. Invasive Ornamental -A plant originally intended for horticultural or landscape situations that has escaped its intended boundaries and is capable of invading a plant community and creating a monoculture.
28. Landowner – Any owner of record of state, municipal or private property including an owner of any easement, right-of-way, or estate within the county.

29. Lobe - A division or segment of a leaf or other plant part, especially a rounded one.
30. Local Noxious Weed – Any plant of local importance which has been declared an invasive or undesirable plant by the Garfield County Weed Advisory Board.
31. Management – Any activity that prevents a plant from establishing, reproducing, or dispersing itself.
32. Management Plan – A plan developed by the local Weed Advisory Board and implemented by the Board of County Commissioners in order to control the spread of noxious weeds.
33. Mechanical Management – Methods or management practices that physically disrupt plant growth including tilling, mowing, burning, flooding, mulching, hand-pulling, shoveling, hoeing and chopping.
34. Monoculture – A single homogeneous crop without diversity.
35. Native Plant – A plant species that is indigenous to a particular locale.
36. Neighboring – Any property located within a one-half mile radius of the boundary of a subject property.
37. Noxious Weed – An alien plant or parts of an alien plant that has been designated as being invasive and undesirable and has been declared a noxious weed by the County Weed Advisory Board and meets one or more of the following criteria:
 - a) aggressively invades or is physically destructive to economic crops or native plant communities;
 - b) is detrimental directly or indirectly to the environmentally sound management of natural or agricultural ecosystems;
 - c) is poisonous to livestock;
 - d) is a carrier of detrimental insects, diseases or parasites.
38. Noxious Weed Management – The planning and implementation of an integrated program to manage undesirable or problematic plant species.
39. Ornamental - A decorative, aggressive, non-native plant often sold through nurseries or spread through seed collection; a threat to native plant species because it has no natural predators and thus competes against the plants of the natural ecosystem.
40. Perennial - A plant that grows for three years or more. Usually flowering and producing fruit each year. The above ground part of the plant may die, but new growth comes from the roots or the crown each spring.
41. Petiole - A slender stem that supports the blade of a foliage leaf.

42. Rhizome - An elongated subterranean plant stem that produces shoots above and roots below, and is distinguished from a true root by possessing buds, nodes and scalelike leaves.
43. Rosette - A cluster of closely crowded leaves in a compact circle, usually at ground level.
44. State Noxious Weed – Any weed identified by the commissioner of the State of Colorado Department of Agriculture after surveying the Local Weed Advisory Boards and prioritizing the top ten problematic plants. Said survey is to be conducted every three years.
45. Subject Lands - All public and private lands within unincorporated Garfield County with the exception of:
 - a) any municipal property owned or leased to an incorporated municipality;
 - b) any land managed or administered by a federal agency.
46. Surfactant - A compound that improves the emulsifying, dispersing, spreading, wetting, or other surface modifying properties of liquids.
47. Weed Inspector – The agent or employee appointed to conduct the duties and functions as defined under this plan.
48. Weed Office – The office of the Weed Inspector, or Vegetation Management Director, out of which all noxious weed administration and enforcement activities are conducted.
49. Wildflower – The flower of a wild or uncultivated plant or the plant bearing it.
50. Xeriscape – Landscaping with water conservation as a major objective.