APPENDIX 16

RECLAMATION

Presubmission Reclamation Letters

Forage Production Performance Criteria

Fertilizer Letter

Wharf and Golden Reward Weed Management Plans

Weed Control Approval Letters

CEDAR CREEK ASSOCIATES, INC.
5586 Overhill Dr. Fort Collins, Colorado 80526 (970) 223-0775

April 6, 2011

Mr. Ron Waterland
Environmental Manager
Wharf Resources (USA), Inc.
10928 Wharf Road
Lead, South Dakota 57754

Re: Fertilizer rates for revegetation at the Wharf Mine

Dear Ron:

As we've discussed on occasion in the past, application of fertilizer is not recommended for revegetation at the Wharf Mine when native species are seeded into replaced topsoil that was either direct hauled or replaced from a topsoil salvage pile. This recommendation is based on significant observation over the past few years at both your operations as well as a multitude of others around the West. We (as well as most other reclamation professionals) have observed that two negatives tend to occur with fertilization. First, annual invaders (early seral weeds) are given a significant competitive edge and usually take full advantage of the additional nutrients, especially nitrogen. Artificially enhanced populations of such weeds slows the germination and establishment of desirable taxa, leads to weed control issues, or both. Second, diversity of desirable species is harmed because the more aggressive species, especially when given additional nutrients, take advantage and are able to outcompete less aggressive taxa. We have found repeatedly that native species are well adapted to dealing with lower nutrient and/or natural nutrient circumstances and therefore, are provided with the competitive advantage (when fertilizer is not used). It takes a little longer for thick stands of herbaceous species to develop, but when they do, they are more diverse and far more resilient to perturbation. Therefore, unless replaced growth media is extremely poor in nutrient content (i.e., something other than topsoil or subsoil), supplemental fertilizer will tend to do more harm than good to the reclaimed plant community.

If you have any additional questions on this or another reclamation-related matter, please don't hesitate to ask.

Sincerely,
CEDAR CREEK ASSOCIATES, INC.

Steven R. Viert
Principal

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
South Dakota Field Office
310 Roundup Street
Belle Fourche, South Dakota 57717-1698
www.blm.gov/mt

TAKE PRIDE IN AMERICA

In Reply Refer To:

3800

June 20, 2011

Mr. Ron Waterland
Wharf Resources
10928 Wharf Road
Lead, SD 57754

Dear Mr. Waterland:

This is in response to your letter of April 8, 2011. Due to the limited area of BLM surface lands on these claims, the reclamation seed mix that you have proposed for both the nurse crop and the reclamation species is acceptable.

Any surface disturbing actions would need to be reviewed by the South Dakota Field Office regarding conformance with the South Dakota Resource Management Plan and federal mining law requirements.

Sincerely,

Marian Atkins
South Dakota Field Manager
Bureau of Land Management

401-07

MIDDAKOTA VEGETATION MANAGEMENT

35920 CANHAM PLACE
MILLER, SD 57362

ANDREW CANHAM
605-853-3287 OR 605-530-8089

JACK DOOLITTLE
605-852-2869 OR 870-0130

April 26, 2011

Dear Ron,

Attached is the report for the Wharf Mining Area Noxious Weed Control. Our company specializes in Noxious Weed Management including chemical application, GPS mapping and GIS applications, grant writing, and researching.

Our company has worked with Wharf Mines since 2003. Invasive non-native weeds have decreased in both density levels and infestation areas. Canada Thistle, Hounds Tongue, Mullen, St. Johns Wart, Tansy were the main weeds of concern. Knapweed and bi-annual thistles were located in various areas with small infestations. With the introduction of new herbicides and aggressive application methods we have decreased the noxious weeds immensely. Application timing is very critical due to the elevation, various weed species, and growth rates of those species. A spring/early summer application followed up with a fall application offers the widest window of opportunity for best control.

If you have any questions please feel free to call me at 605-853-3287 - Cell: 605-530-8089 or my partner Jack Doolittle at 605-852-2689 - Cell: 605-870-0130.

Sincerely,

Andrew Canham

Andrew Canham and Jack Doolittle

10:43 AM
04/26/11

Mid Dakota Vegetation Management
Find Report

Date	Name	Memo	Acco...	Amount	Balance
2010	Wharf Mine	Deposit	Sales	- 3,432.62	- 3,432.62
2009	Wharf Mine	Deposit	Sales	-15,424.84	-18,857.46
2008	Wharf Mine	Deposit	Sales	-18,005.77	-36,863.23
2007	Wharf Mine	Deposit	Sales	-19,911.58	-56,774.81
2006	Wharf Mine	Deposit	Sales	-18,788.96	-75,563.77
2005	Wharf Mine	Deposit	Sales	-16,980.48	-92,544.25
Total				-92,544.25	-92,544.25

Deposits for 2010

Deposits for 2009

Deposits for 2008

Deposits for 2007

Deposits for 2006

Deposits for 2005

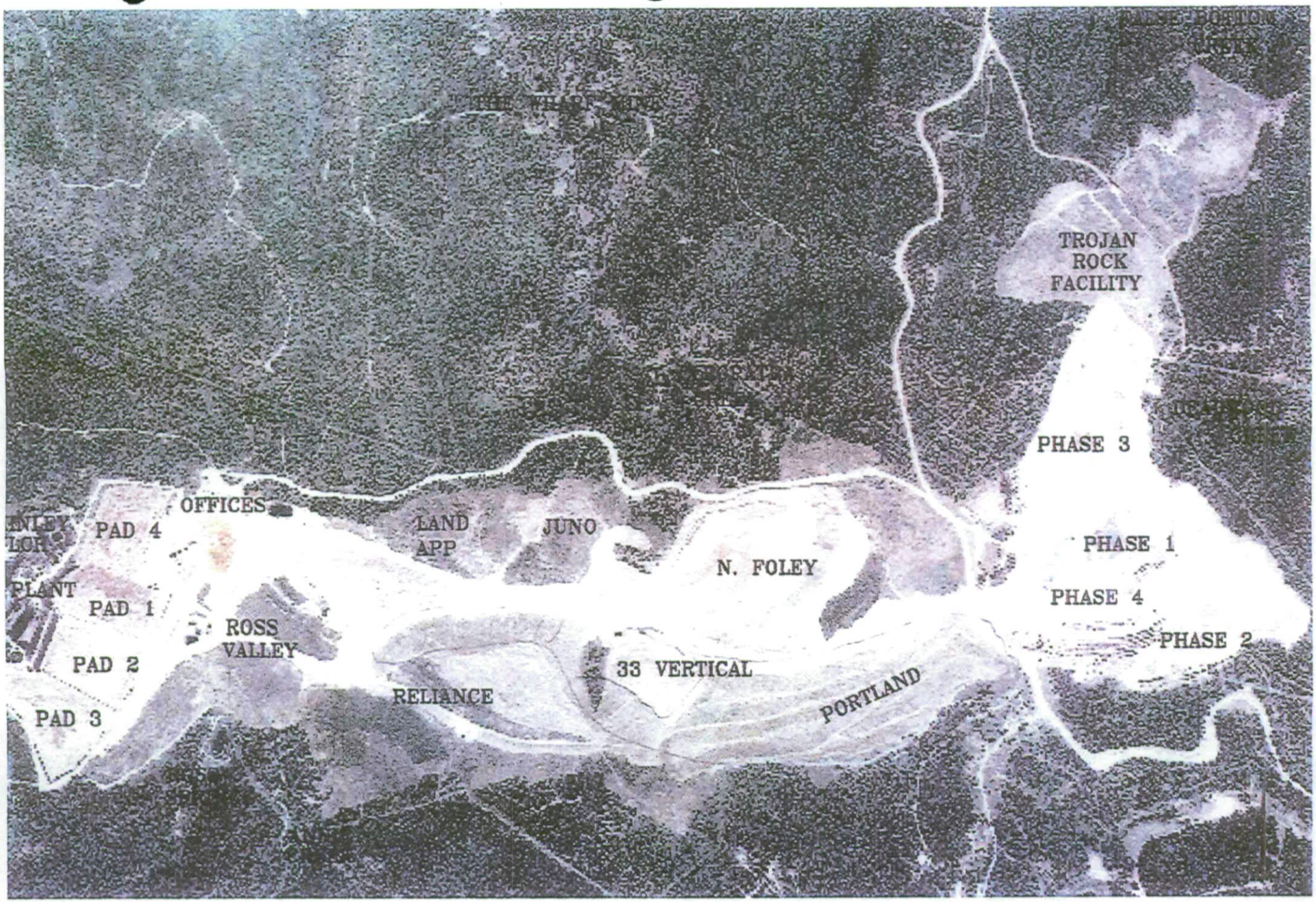
WHARF AREAS

1. Warbonnet Topsoil
2. North Foley
3. Juno
4. Land Application
5. Plant Pad
6. Ross Valley
7. Lower Reliance
8. Upper Reliance
9. 33 Vertical
10. Portland
11. A Frame
12. TRF
13. False Bottom Creek
14. Deadwood Creek
15. Cleopatra Creek
16. Main Road
17. Richmond Hill Road

AREA	WEEDS	TREES/SHRUBS	APP. METHOD	COMMENTS	
Warbonnet Topsoil	St. John's Wart, Tansy, C. Thistle, Mullen	None – however to the SW by the old school there were new trees planted	Steep slopes, hose and reel and hand work.	This has been a problem area however this area has been totally changed.	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
North Foley	C Thistle, Tansy, Mullen	Established trees around the outside	ATV's and Hand	This area has changed in the past 2 years.	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
Juno	C. Thistle, Tansy, Mullen	Est. trees to the north and east	ATV's and hand	Some areas are difficult to access from the mine side. Access was attained from the outside rd.	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
Land Application	Fairly clean	Up by the roads	Hand, ATV	This area needs attention towards the road and office.	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
Plant Pad	C. Thistle, Tansy, Scotch Thistle, Mullen	None	Hand, ATV	Behind the pads and office area inside the fence	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water

					Liberate Surfactant @ 1 quart per 100 gallons water
A Frame	Scattered weeds	Established trees	ATV's	Maintained in the yard	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
TRF	C. Thistle, Tansy, Scotch Thistle, Mullen, Leafy Spurge	Established trees around the outside and some within the area	ATV's	Large area, weeds scattered throughout	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
False Bottom Creek	C. Thistle, Tansy, Scotch Thistle, Mullen, Leafy Spurge	Established trees around the outside and some within the area	ATV's	Large area, weeds scattered throughout	**Aquatic 2-4D 2 qts**
Deadwood Creek	Fairly clean				**Aquatic 2-4D 2 qts**
Cleopatra Creek	C. Thistle, Tansy, Scotch Thistle, Mullen, Leafy Spurge	Established trees	ATV's and Hand	Large area, weeds scattered throughout, steep slopes and riparian area	**Aquatic 2-4D 2 qts**
Main Road	C. Thistle, Tansy, Scotch Thistle, Mullen, Leafy Spurge		ATV's	weeds scattered throughout roadside	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
Richmond Hill Rd	C. Thistle, Tansy, Scotch Thistle, Mullen, Leafy Spurge		ATV's	Large area, weeds scattered throughout	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water

Ross Valley	C. Thistle, Tansy, St. John's Wart, Mullen	Small trees in designated areas	Hand, limited ATV	Thick by the roads, large rocks, steep and terraced. Ross Springs area is heavily infested	**Aquatic 2-4D 2 qts around ponds and Annie creek drainage** Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
Lower Reliance	Hounds Tongue, Mullen, C. Thistle	Small trees in designated areas	Hand, limited ATV	Thick by the roads, large rocks, steep and terraced Annie Creek needs to be rechecked	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfac[redacted] @ 1 quart per 100 gallons water
Upper Reliance	Hounds Tongue, Mullen, C. Thistle	Small trees in designated areas	Hand, limited ATV	Thick by the roads, large rocks, steep and terraced Access is hard.	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
33 Vertical	Hounds Tongue, Mullen, C. Thistle	Some trees and shrubs	Hand, limited ATV along roads	East side heavily infected	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water
Portland	C Thistle, Mullen	Established trees outside fence	ATV's on outside	Not much spray activity	Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces


TROJAN
ROCK
FACILITY
PHASE 3
PHASE 1
PHASE 4
PHASE 2
OFFICES
PAD 4
LAND
APP
JUNO
N. FOLEY
PLANT
PAD 1
ROSS
VALLEY
PAD 2
33 VERTICAL
RELIANCE
PORTLAND
PAD 3

10:43 AM
04/26/11
Accrual Basis

Mid Dakota Vegetation Management
Find Report
All Transactions

Date	Name	Memo	Acco...	Amount	Balance
2010	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 10,916.70	- 10,916.70
2009	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 16,360.84	- 27,277.54
2008	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 38,901.27	- 66,178.81
2007	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 36,393.92	-102,572.73
2006	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 20,138.56	-122,711.29
2005	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 32,768.58	-155,479.87
Total				-155,479.87	-155,479.87

Deposits for 2010

Deposits for 2009

Deposits for 2008

Deposits for 2007

Deposits for 2006

Deposits for 2005

Crop Production Services
TIMBERLAND DIVISION

5230 AIRPORT ROAD
SPEARFISH, SOUTH DAKOTA 57783
VEGETATION MANAGEMENT PRODUCTS / VEGETATION MANAGEMENT CONSULTING

(866) 642-3800 Office Toll Free
(605) 642-3800 Office
(605) 642-3784 Fax Line
(605) 645-1636 Bill's Mobile Phone

April 25, 2011

Mid Dakota Vegetation Management
Attn: Andy Canham
Miller, SD

SUBJECT: WARF/GOLDEN REWARD MINE SPRAYING

Andy,

Here are my recommendations for the sites and weeds at Warf/Golden Reward mine.

Streamline Herbicide @ 6 ounces per acre
Liberate Surfactant @ 1 quart per 100 gallons

This would work on all listed weeds on all sites, has no haying and grazing labeling as of yet but they should have no livestock running around the mine.

Costs per acre = $35.25 per acre on the Streamline
=$1.00 per 15 gal. Load for Liberate

Approximate total costs per acre = $36.25 per acre on the low to $40.25 per acre on the high.

You would need this program for sure on the Leafy Spurge sites as Streamline will do a better job on the Leafy Spurge then other products.

If you want you could use this program on all sites that do not have Leafy Spurge on them.

Milestone Herbicide @ 7 ounces
Escort XP Herbicide @ 1.5 ounces
Liberate Surfactant @ 1 quart per 100 gallons water

Costs per acre = $16.50 per acre for Milestone
= $13.50 per acre for Escort XP
= $1.00 per 15 gal. Load for Liberate

Approximate total costs per acre = $31.00 per acre on the low to $36.00 per acre on the high "BUT" you will have to go back and do the Leafy Spurge later or use something added into the mix to get the Leafy Spurge as this mix will not get the Leafy Spurge.

If you have any questions please contact me at any of the above numbers.

Sincerely,

William "Bill" Walker
Territory Manager
CPS / Timberland Division
SD, ND, NE, IA

STATE NOXIOUS WEEDS

Leafy spurge (*Euphorbia esula*) SD Distribution map
Canada thistle (*Cirsium arvense*) SD Distribution map
Perennial sow thistle (*Sonchus arvensis*) SD Distribution map
Hoary cress (*Cardaria draba*) SD Distribution map
Russian knapweed (*Centaurea repens*) SD Distribution map
Purple loosestrife (*Lythrum salicaria*) SD Distribution map
Salt Cedar (*Tamarix aphylla, T. chinensis, T. gallica, T. parviflora and T. ramosissima*) SD Distribution map

STATE DECLARED PESTS

Gypsy moth (*Lymantria dispar*)

LOCAL NOXIOUS WEEDS

Bull thistle (*Cirsium vulgare*) SD Distribution map
Absinth wormwood (*Artemisia absinthium*) SD Distribution map
Musk thistle (*Carduus nutans*) SD Distribution map
Plumeless thistle (*Carduus acanthoides*) SD Distribution map
Puncturevine (*Tribulus terrestris*) SD Distribution map
Scotch thistle (*Onopordum acanthium*) SD Distribution map
St. Johnswort (*Hypericum perforatum*) SD Distribution map
Spotted knapweed (*Centaurea maculosa*) SD Distribution map
Chicory (*Cichorium intybus*) SD Distribution map
Common Burdock (*Arctium minus*) SD Distribution map
Common mullein (*Verbascum thapsus*) SD Distribution map
Common tansy (*Tanacetum vulgare*) SD Distribution map
Poison Hemlock (*Conium maculatum*) SD Distribution map
Dalmatian toadflax (*Linaria dalmatica*) SD Distribution Map
Yellow toadflax (*Linaria vulgaris*) SD Distribution Map
Houndstongue (*Cynoglossum officinale*) SD Distribution Map
Diffuse knapweed (*Centaurea diffusa*) SD Distribution Map
Giant Knotweed (polygonum sachalinense) SD Distribution Map

LOCAL DECLARED PESTS

Mountain pine beetle (*Dendroctonum ponderosae*)

⇨⇨Integrated Weed Management | Weed Bio-Control⇦⇦

Return to Plant Protection Program

Canada Thistle

Cirsium arvense (L.) Scop.
Sunflower family (Asteraceae)

NATIVE RANGE

Temperate regions of Eurasia

DESCRIPTION

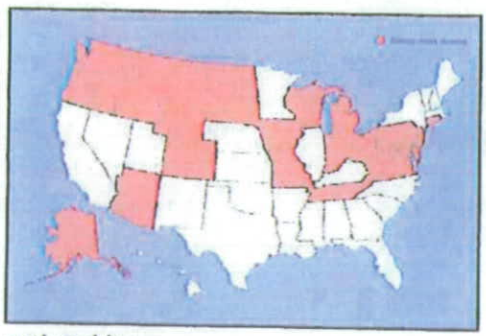
Canada thistle is an herbaceous perennial with erect stems 1½-4 feet tall, prickly leaves and an extensive creeping rootstock. Stems are branched, often slightly hairy, and ridged. Leaves are lance-shaped, irregularly lobed with spiny, toothed margins and are borne singly and alternately along the stem. Rose-purple, lavender, or sometimes white flower heads appear from June through October, generally, and occur in rounded, umbrella-shaped clusters.

The small, dry, single-seeded fruits of Canada thistle, called achenes, are 1-1½ inches long and have a feathery structure attached to the seed base. Many native species of thistle occur in the U.S., some of which are rare. Because of the possibility of confusion with native species, Canada thistle should be accurately identified before any control is attempted.

ECOLOGICAL THREAT

Natural communities that are threatened by Canada thistle include non-forested plant communities such as prairies, barrens, savannas, glades, sand dunes, fields and meadows that have been impacted by disturbance. As it establishes itself in an area, Canada thistle crowds out and replaces native plants, changes the structure and species composition of natural plant communities and reduces plant and animal diversity. This highly invasive thistle prevents the coexistence of other plant species through shading, competition for soil resources and possibly through the release of chemical toxins poisonous to other plants.

Canada thistle is declared a "noxious weed" throughout the U.S. and has long been recognized as a major agricultural pest, costing tens of millions of dollars in direct crop losses annually and additional millions costs for control. Only recently have the harmful impacts of Canada thistle to native species and natural ecosystems received notable attention.



DISTRIBUTION IN THE UNITED STATES

Canada thistle is distributed throughout the northern U.S., from northern California to Maine and southward to Virginia. It is also found in Canada, for which it was named. Canada thistle has been identified as a management problem on many national parks and on preserves of The Nature Conservancy in the upper Midwest, Plains states, and the Pacific northwest.

HABITAT IN THE UNITED STATES

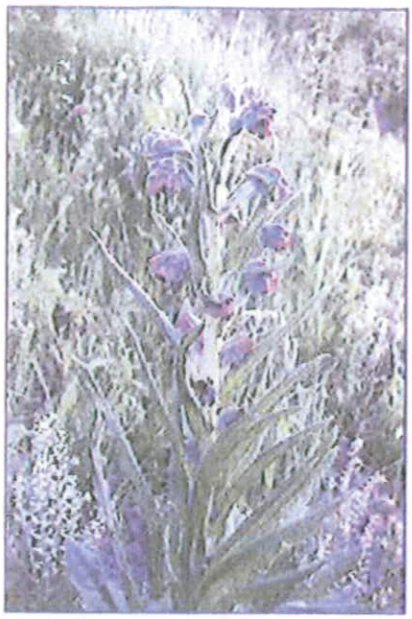
Canada thistle grows in barrens, glades, meadows, prairies, fields, pastures, and waste places. It does best in disturbed upland areas but also invades wet areas with fluctuating water levels such as streambank sedge meadows and wet prairies.

BACKGROUND

Canada thistle was introduced to the United States, probably by accident, in the early 1600s and, by 1954, had been declared a noxious weed in forty three states. In Canada and the U.S., it is considered one of the most tenacious and economically important agricultural weeds, but only in recent years has it been recognized as a problem in natural areas.

Hounds-tongue
Cynoglossum officinale L.

Family: Boraginaceae, Borage
Genus: Cynoglossum



(click on image for full size)

Description
General: coarse, single-stemmed biennial, 30-120 cm tall, leafy to the top, softly long-hairy throughout, from taproots.
Leaves: forming a large basal rosette in the 1st year. In the 2nd year alternate, the lowermost ones oblanceolate or narrowly elliptic, tapering to the stalk, 10-30 cm long overall and 2-5 cm wide, the others stalkless and more oblong or lanceolate, numerous, only gradually reduced upward.
Flowers: many on several long, 1-sided branches from the upper leaf axils. Mature flower stalks curved-spreading. Sepals broad, blunt-tipped, 5-8 mm long in fruit. Corolla dull reddish-purple, broadly bell-shaped, the limb about 1 cm wide or a little less, the fornices protruding, broadly rounded. The anthers seated about at the corolla throat.
Flowering time: May-July.
Fruits: 4 nutlets, 5-7 mm long, ovate, descending-spreading, forming a broad low-pyramidal fruit, remaining attached to the style above even after drying, covered with short, barbed prickles.

Distribution
A weed in disturbed sites, especially along roadsides, in most parts of MT. Native of Europe, now well established in N. America.

Medicinal plant: see below.

Minnesota Department of Natural Resources

search

Common tansy (*Tanacetum vulgare*)

Description:

Appearance: Perennial herbaceous plant, 3' tall, up to 5' in shaded areas, and erect. A single stem branches extensively toward the top into short stems forming a flat-topped cluster of numerous button-like flower heads; plants have medicinal properties.

Leaves: Alternate, pinnately compound (leaflets arranged on both sides of a common stalk), irregularly lobed. Leaves become smaller towards the top of the stalk, and are strongly aromatic when crushed.

Flowers: Bright yellow daisy-like discs up to 0.5" wide, lacking rays, blooming from July through October.

Seeds: Numerous tufted seed dispersed by wind and water.

Roots: Spreads vegetatively forming new plants from even small root fragments.

Ecological Threat:

- Common tansy is wide spread across most northern United States and Canadian provinces.
- It is still cultivated in gardens and is common along roadsides and abandoned farmyards in northern Minnesota and along the north shore of Lake Superior. South sloping open areas are most vulnerable.
- It was introduced to the United States from Europe for medicinal and horticultural purposes.
- Common tansy is on the MDA **Secondary noxious weeds** list in Minnesota.

Control Methods:

Grazing

Tansy is distasteful and even toxic to some grazing animals, however, one source claims that sheep graze it and are not affected

Chemical

Spot-spraying with selective broadleaf herbicide such as clopyralid,

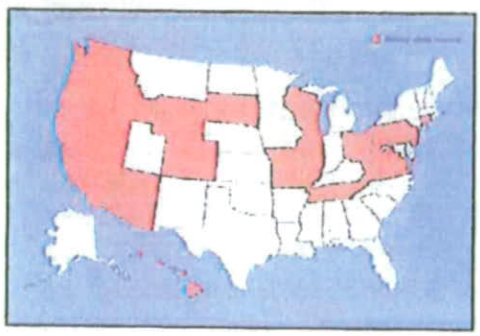
Common Mullein

Verbascum thapsus L.
Figwort family (Scrophulariaceae)

NATIVE RANGE
Europe and Asia

DESCRIPTION
Common mullein, also known as wooly mullein, is an erect herb. First year mullein plants are low-growing rosettes of bluish gray-green, feltlike leaves that range from 4-12 inches in length and 1-5 inches in width. Mature flowering plants are produced the second year, and grow to 5 to 10 feet in height, including the conspicuous flowering stalk. The five-petaled yellow flowers are arranged in a leafy spike and bloom a few at a time from June-August. Leaves alternate along the flowering stalks and are much larger toward the base of the plant. The tiny seeds are pitted and rough with wavy ridges and deep grooves and can germinate after lying dormant in the soil for several decades.

ECOLOGICAL THREAT
Common mullein threatens natural meadows and forest openings, where it adapts easily to a wide variety of site conditions. Once established, it grows more vigorously than many native herbs and shrubs, and its growth can overtake a site in fairly short order. Common mullein is a prolific seeder and its seeds last a very long time in the soil. An established population of common mullein can be extremely difficult to eradicate.



DISTRIBUTION IN THE UNITED STATES
Common mullein was first introduced into the U.S. in the mid-1700's, where it was used as a piscicide, or fish poison, in Virginia. It quickly spread throughout the U.S. and is well established throughout the eastern states. Records show that it was first described in Michigan in 1839 and on the Pacific coast in 1876, probably due to multiple introductions as a medicinal herb.

HABITAT IN THE UNITED STATES
Common mullein can be found where mean annual precipitation is greater than 3-6 inches and the growing season lasts for a minimum of 140 days. Intolerant of shade, mullein will grow in almost any open area including natural meadows and forest openings as well as neglected pastures, road cuts, industrial areas. Common mullein prefers, but is not limited to, dry sandy soils.

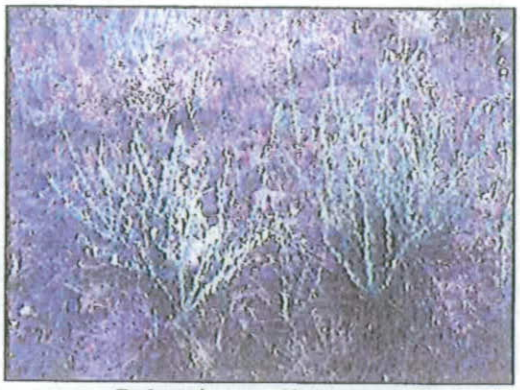
BACKGROUND
Common mullein is a monocarpic perennial (i.e., takes two or more years to flower and die). Brought over from Europe by settlers, it was used as a medicinal herb, as a remedy for coughs and diarrhea and a respiratory stimulant for the lungs when smoked. A methanol extract from common mullein has been used as an insecticide for mosquito larvae.

BIOLOGY & SPREAD
During the first summer after germination mullein produces a tap root and a rosette of leaves. During this vegetative stage, the rosette increases in size during the growing season until low temperatures arrest growth sometime during the autumn and winter. Beginning the next spring, second year plants bolt into maturity, flower, produce seed during the summer, and then die, completing the plant's normal life cycle. Flowers mature from the base to the tip of the stalk. The length of the flowering period is a function of stalk height; longer stalks can continue to flower into early October. It is

Dalmatian Toadflax
Yellow Toadflax

by Rich Hansen, USDA-APHIS-PPQ, Forestry Sciences Lab, Montana State University, Bozeman, MT 59717-0278.

Dalmatian toadflax, *Linaria dalmatica* (L.) Mill. (Scrophulariaceae), is a plant native from central Europe east to central Asia. Dalmatian toadflax was originally introduced into North America as an ornamental plant, beginning in the late 1800's. By the 1920's, *L. dalmatica* populations had escaped from cultivation and become weedy; presently, Dalmatian toadflax is found in at least 22 US states and seven Canadian provinces, but it is most widely distributed in the western US and Canada.



Dalmatian toadflax plant.
R.Hansen, USDA-APHIS

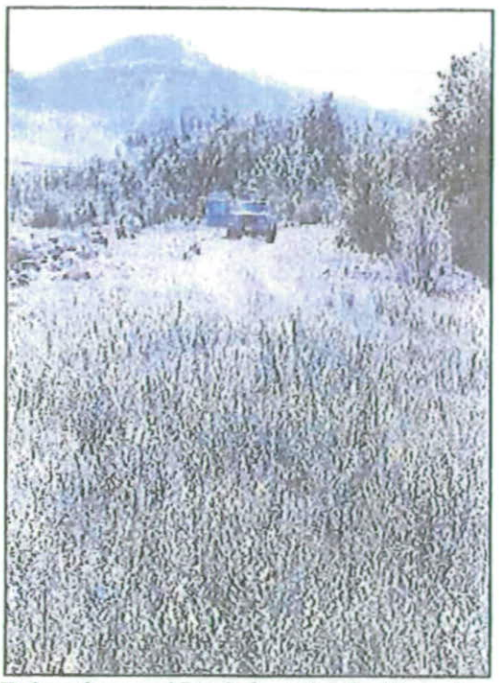
Dalmatian toadflax plant.
R.Hansen, USDA-APHIS

Linaria dalmatica is a short-lived perennial with a taproot that may extend 1 m or more into the soil. Most aboveground growth dies back in the fall, with the exception of short, prostrate stems that persist through the winter. In spring, erect shoots begin growth from root buds, reaching a height of 0.4 to 1.0 m; a single plant may produce 10 or more stems.

Flowers are bright yellow with orange markings and elongate spurs and occur in simple racemes on the stems. Flowering occurs from mid-summer to early fall. Flowers are pollinated by insects producing capsules containing 100-200 seeds. A single plant may produce several hundred thousand seeds. Dalmatian toadflax also reproduces vegetatively, from adventitious buds originating on horizontal roots.

Dalmatian toadflax is typically found along roadsides or railroads and in idle cropland, pastures, and rangelands, usually on comparatively dry sites with coarse, well-drained soils. Because seedlings are relatively poor competitors for soil moisture, establishment is favored by soil disturbances, such as road construction, or by overgrazing. Once established, however, Dalmatian toadflax may become an effective competitor, reducing the abundance of grasses and other forbs. In addition, Dalmatian toadflax contains alkaloids that may be

deleterious to grazing mammals, though livestock and wildlife species rarely consume the weed. Thus, the primary economic impact of *L. dalmatica* lies in reduced livestock production on infested pastures and rangeland.



Dalmatian toadflax infestation in Wyoming.
W.Hartung, NRCS

Yellow Toadflax, *Linaria vulgaris*

Yellow toadflax, sometimes called common toadflax and butter and eggs, resembles the snapdragon in appearance and is a member of the Figwort family. It was introduced from Europe as an ornamental and has now become a serious problem to rangeland and mountain meadows. It is a perennial reproducing from seed, as well as from underground root stalks. The stems of yellow toadflax ar efrom 8 inches to 2 feet tall and leafy. Leaves are pale green, alternate, narrow, and pointed at both ends. The flowers are bright yellow with deep orange centers. These flowers are about an inch long and blossom in dense clusters along the stem as it lengthens and grows. The fruit is round, about 1/4 inch in diameter, brown, and contains many seeds.

Yellow toadflax emerges in April and May in most parts of Colorado. It is adapted to a variety of site conditions, from moist to dry and does well in all types of soils. Its displacement of desirable grasses not only reduces ecological diversity, it 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.

Management Strategies | List of Troublesome Weeds | Back to Weed District

Description

Spotted knapweed generally is a short-lived perennial, reproducing solely by seeds. Seeds are brownish, less than 1/4 inch long, notched on one side of the base, with a short tuft of bristles at the tip. The seeds may germinate from spring through early fall. Seedlings emerging in the fall often overwinter as a rosette of leaves, resuming growth again in the spring (Figure 1). The plant grows 2 to 4 feet tall and bears alternate, pale green leaves which are 1 to 3 inches long. Leaf margins of the lower leaves are divided and smooth while the surface of the leaf is rough. The upper leaves are linear in shape. Stems are erect and rough, with slender branches. Numerous flowers are produced from early July through August. Flowers are pink to light purple and are borne on tips of terminal or axillary stems (Figure 2). The flower petals are surrounded by stiff, black-tipped bracts, giving the flower head a spotted appearance (Figure 3). Spotted knapweed can be distinguished most easily from Russian knapweed (a long-lived perennial of the same genus) on the basis of floral characteristics. Russian knapweed flowers are smaller than those of spotted knapweed and do not have black mottling on the flower bracts.

Figure 1. Spotted knapweed -- Rosette.

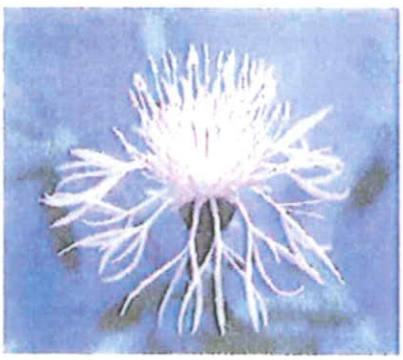


Figure 2. Spotted knapweed flower.

Figure 3. Spotted knapweed -- Flowering plant, notice black-tipped flower bracts.

Musk thistle (*Carduus nutans*)

Roots: Fleshy taproot.

Stems: Erect, 2-4 feet tall, spiny winged, highly branched.

Leaves: Alternate, serrated, no hairs, spiny.

Seed: Tufted, spread by wind, the only means of reproduction.

Flowers: Rose purple or may be white, 2 inches wide or wider, tend to lean over or nod, solitary on stem.

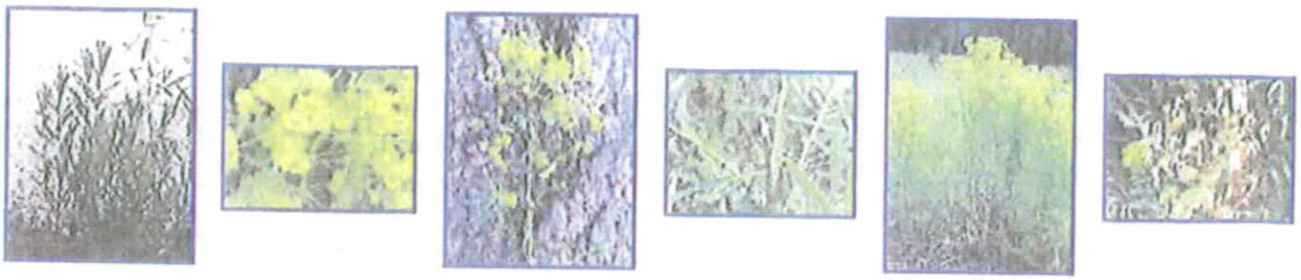
Origin: Eurasia.

Poisoning: None.

⇨⇨Musk thistle bio-control⇦⇦

Return to Plant Protection Program

Leafy Spurge (*Euphorbia esula)*



Roots: Numerous pink buds, deep, reddish-brown, spreading, large nutrient reserves.

Stems: Erect, smooth, branched at the top, normally 1-2 feet tall.

Leaves: Alternate, narrow, length 1 to 4 inches

Seed: Born in exploding capsules that can expel seed to 15 feet, longevity 5 to 8 years.

Flowers: yellowish-green to yellowish-orange surrounded by yellow-green bracts.

Origin: Eurasia, thought to have entered the USA as a crop seed contaminant.

Poisoning: Milky latex sap throughout the plant may cause dermatitis on human skin. Toxic to cattle, sheep and goats do not seem to be affected.

⇨⇨Leafy spurge bio-control⇦⇦

Return to Plant Protection Program

Chicory

Cichorium intybus (Asteraceae)

A slender perennial, easily established from seed, producing a deep taproot. A native of Europe, it has escaped from cultivation and naturalized throughout North America. The plant contains a white, milky sap that appears if the stem is broken. Flowers are blue, remaining on the plant for only a single day. Prefers full sun in well-drained soils.

Average planting success with this species: 80%
Height: 2-4 feet
Germination: 7-21 days
Optimum soil temperature for germination: 65-75F
Sowing depth: 1/16"
Blooming period: May-October
Average seeds per pound: 426,000
Seeding rate: 5 lbs. per acre
Suggested use: Herb gardens, isolated areas.
Miscellaneous: When World War II disrupted shipping, most U.S. "coffee" was produced from chicory. Caffine-free, it is regaining popularity.

401-07

MIDDAKOTA VEGETATION MANAGEMENT

35920 CANHAM PLACE
MILLER, SD 57362

ANDREW CANHAM
605-853-3287 OR 605-530-8089

JACK DOOLITTLE
605-852-2869 OR 870-0130

April 26, 2011

Dear Ron,

Attached is the report for the Wharf Mining Area Noxious Weed Control. Our company specializes in Noxious Weed Management including chemical application, GPS mapping and GIS applications, grant writing, and researching.

Our company has worked with Wharf Mines since 2003. Invasive non-native weeds have decreased in both density levels and infestation areas. Canada Thistle, Hounds Tongue, Mullen, St. Johns Wart, Tansy were the main weeds of concern. Knapweed and bi-annual thistles were located in various areas with small infestations. With the introduction of new herbicides and aggressive application methods we have decreased the noxious weeds immensely. Application timing is very critical due to the elevation, various weed species, and growth rates of those species. A spring/early summer application followed up with a fall application offers the widest window of opportunity for best control.

If you have any questions please feel free to call me at 605-853-3287 - Cell: 605-530-8089 or my partner Jack Doolittle at 605-852-2689 - Cell: 605-870-0130.

Sincerely,

Andrew Canham and Jack Doolittle

10:43 AM

04/26/11

Accrual Basis

Mid Dakota Vegetation Management
Find Report
All Transactions

Date	Name	Memo	Acco...	Amount	Balance
2010	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 10,916.70	- 10,916.70
2009	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 16,360.84	- 27,277.54
2008	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 38,901.27	- 66,178.81
2007	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 36,393.92	-102,572.73
2006	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 20,138.56	-122,711.29
2005	Taxable non-gov't Golden Rewards Mining Co. LP	Deposit	Sales	- 32,768.58	-155,479.87
Total				-155,479.87	-155,479.87

Deposits for 2010

Deposits for 2009

Deposits for 2008

Deposits for 2007

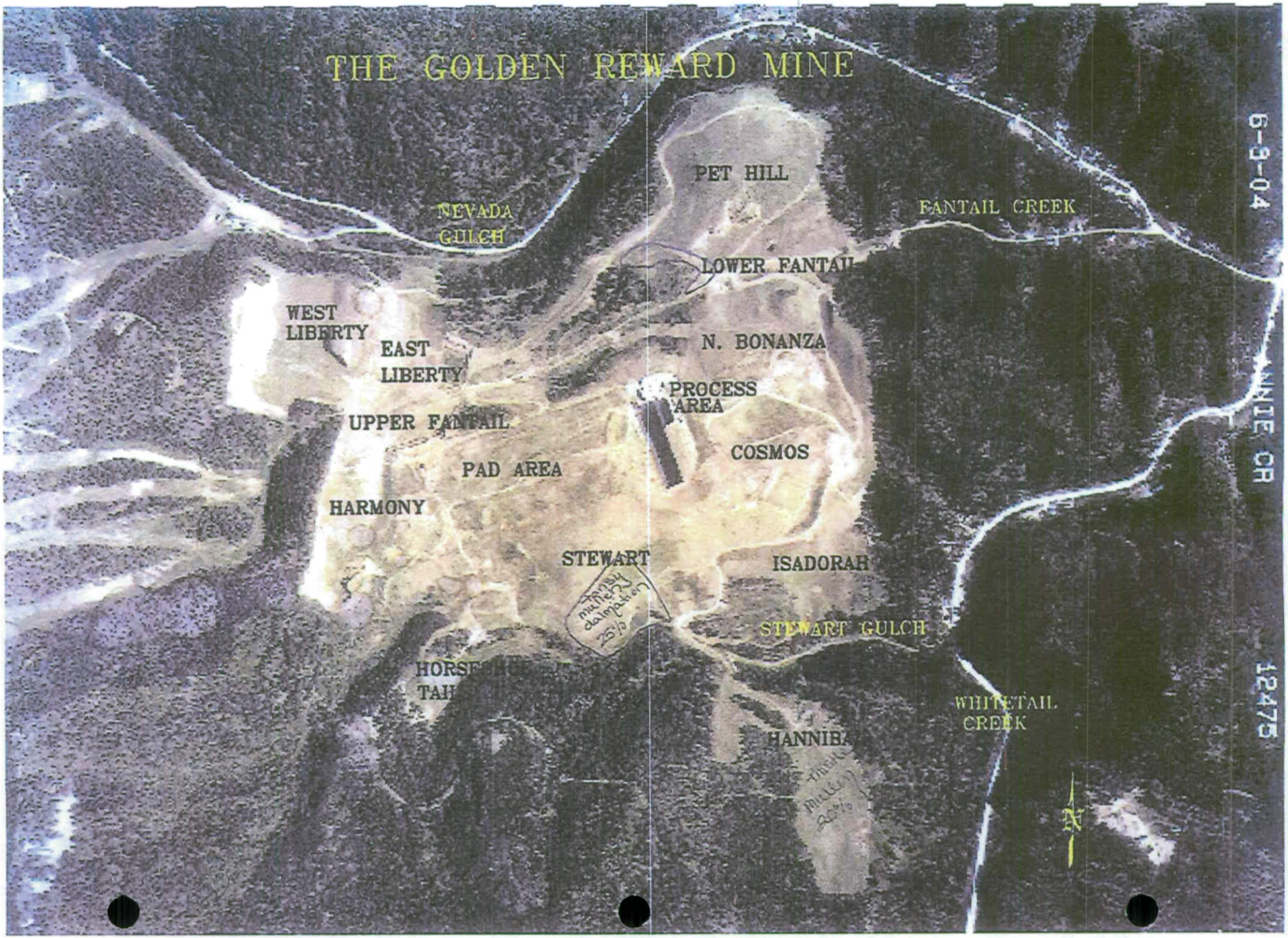
Deposits for 2006

Deposits for 2005

GOLDEN REWARD
WHARF
PROBLEM WEEDS

Golden Reward Mine

1. Pet Hill
2. Lower Fantail
3. N. Bonanza
4. Process Area
5. Cosmos
6. Isadorah
7. Hannibal
8. Stewart
9. Horseshoe Tahs
10. Harmony
11. Pad Area
12. Upper Fantail
13. West Liberty
14. East Liberty
15. Fantail Creek Rd
16. Stewart Gulch Rd
17. Whitetail Creek Rd
18. Nevada Gulch Rd


THE GOLDEN REWARD MINE
6-9-04
PET HILL
NEVADA GULCH
FANTAIL CREEK
LOWER FANTAIL
WEST LIBERTY
EAST LIBERTY
N. BONANZA
PROCESS AREA
UPPER FANTAIL
COSMOS
PAD AREA
HARMONY
STEWART
ISADORAH
STEWART GULCH
WHITETAIL CREEK
N
12475

	flax				**gallons water**
Whitetail Creek Rd	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	No planted trees	ATV	Scattered Weeds	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Nevada Gulch Rd	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	No planted trees	ATV	Scattered Weeds	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**

AREA	WEEDS	TREES/SHRUBS	APP. METHOD	COMMENTS	
Pet Hill	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Some	ATV, Hand	Steep slopes, roadsides and disturbed areas	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Lower Fantail	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue, Dalmatian Toadflax	Scattered trees and shrubs	ATV, Hand, Pickup	Riparian Areas and trees have a lot of weeds.	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
N. Bonanza	C. Thistle, Tansy, Scotch Hounds Tongue	Not much	ATV's	Cleaner than most, east slope is getting better.	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Process Area	C. Thistle, Tansy, Scotch Thistle, Mullen, Knap Weed Hounds Tongue	Not much	ATV's	Weeds around the building site – some Knap Weed was found	**Streamline Herbicide @ 6 ounces per acre Liberate Surfactant @ 1 quart per 100 gallons**
Cosmos	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Scattered	ATV's Hand	Steep slopes, big slopes,	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Isadorah	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Scattered	ATV's Hand	Steep Slopes, weeds at the bottom around the ponds.	**Aquatic 2-4D Aimne 1 qt per acre Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Hannibal	C. Thistle, Tansy, Scotch Thistle, Mullen Hounds Tongue Dalmatian toad flax	Scattered	ATV	Mullen and Thistle about 20%	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**

Stewart	C. Thistle, Tansy, Scotch Hounds Tongue Dalmatian toad flax	Scattered	ATV, hand	Steep slopes, weeds around the water and canal	**Aquatic 2-4D Aimne 1 qt per acre Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Horseshoe Tails	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue, Dalmatian toad flax	Scattered	ATV, Hand	Weeds found along the drainage	**Aquatic 2-4D Aimne 1 qt per acre Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Harmony	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Scattered	ATV, Hand		**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Pad Area	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Scattered	ATV, Hand	Weeds not bad	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Upper Fantail	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue, Dalmatian toad flax	Scattered	ATV, Hand	Weeds not bad	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
West Liberty	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Scattered	ATV, Hand	Weeds not bad	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
East Liberty	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue	Scattered	ATV, Hand	Weeds not bad	**Milestone Herbicide @ 7 ounces Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100 gallons water**
Fantail Creek Rd	C. Thistle, Tansy, Scotch Thistle, Mullen, Hounds Tongue, Dalmatian toad	No planted trees	ATV	Dalmatian toad flax around roadway	**Aquatic 2-4D Aimne 1 qt per acre Escort XP Herbicide @ 1.5 ounces Liberate Surfactant @ 1 quart per 100**

STATE NOXIOUS WEEDS

Leafy spurge (*Euphorbia esula*) SD Distribution map
Canada thistle (*Cirsium arvense*) SD Distribution map
Perennial sow thistle (*Sonchus arvensis*) SD Distribution map
Hoary cress (*Cardaria draba*) SD Distribution map
Russian knapweed (*Centaurea repens*) SD Distribution map
Purple loosestrife (*Lythrum salicaria*) SD Distribution map
Salt Cedar (*Tamarix aphylla, T. chinensis, T. gallica, T. parviflora and T. ramosissima*) SD Distribution map

STATE DECLARED PESTS

Gypsy moth (*Lymantria dispar*)

LOCAL NOXIOUS WEEDS

Bull thistle (*Cirsium vulgare*) SD Distribution map
Absinth wormwood (*Artemisia absinthium*) SD Distribution map
Musk thistle (*Carduus nutans*) SD Distribution map
Plumeless thistle (*Carduus acanthoides*) SD Distribution map
Puncturevine (*Tribulus terrestris*) SD Distribution map
Scotch thistle (*Onopordum acanthium*) SD Distribution map
St. Johnswort (*Hypericum perforatum*) SD Distribution map
Spotted knapweed (*Centaurea maculosa*) SD Distribution map
Chicory (*Cichorium intybus*) SD Distribution map
Common Burdock (*Arctium minus*) SD Distribution map
Common mullein (*Verbascum thapsus*) SD Distribution map
Common tansy (*Tanacetum vulgare*) SD Distribution map
Poison Hemlock (*Conium maculatum*) SD Distribution map
Dalmatian toadflax (*Linaria dalmatica*) SD Distribution Map
Yellow toadflax (*Linaria vulgaris*) SD Distribution Map
Houndstongue (*Cynoglossum officinale*) SD Distribution Map
Diffuse knapweed (*Centaurea diffusa*) SD Distribution Map
Giant Knotweed (polygonum sachalinense) SD Distribution Map

LOCAL DECLARED PESTS

Mountain pine beetle (*Dendroctonum ponderosae*)

⇨⇨Integrated Weed Management | Weed Bio-Control⇦⇦

Return to Plant Protection Program

Canada Thistle

Cirsium arvense (L.) Scop.
Sunflower family (Asteraceae)

NATIVE RANGE

Temperate regions of Eurasia

DESCRIPTION

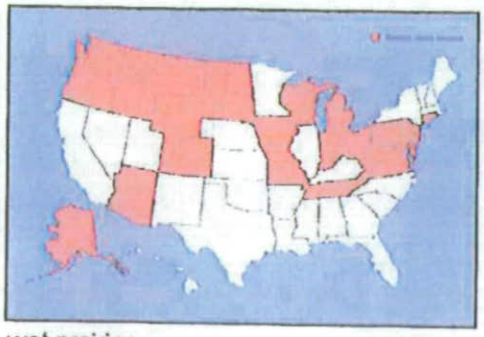
Canada thistle is an herbaceous perennial with erect stems 1½-4 feet tall, prickly leaves and an extensive creeping rootstock. Stems are branched, often slightly hairy, and ridged. Leaves are lance-shaped, irregularly lobed with spiny, toothed margins and are borne singly and alternately along the stem. Rose-purple, lavender, or sometimes white flower heads appear from June through October, generally, and occur in rounded, umbrella-shaped clusters.

The small, dry, single-seeded fruits of Canada thistle, called achenes, are 1-1½ inches long and have a feathery structure attached to the seed base. Many native species of thistle occur in the U.S., some of which are rare. Because of the possibility of confusion with native species, Canada thistle should be accurately identified before any control is attempted.

ECOLOGICAL THREAT

Natural communities that are threatened by Canada thistle include non-forested plant communities such as prairies, barrens, savannas, glades, sand dunes, fields and meadows that have been impacted by disturbance. As it establishes itself in an area, Canada thistle crowds out and replaces native plants, changes the structure and species composition of natural plant communities and reduces plant and animal diversity. This highly invasive thistle prevents the coexistence of other plant species through shading, competition for soil resources and possibly through the release of chemical toxins poisonous to other plants.

Canada thistle is declared a "noxious weed" throughout the U.S. and has long been recognized as a major agricultural pest, costing tens of millions of dollars in direct crop losses annually and additional millions costs for control. Only recently have the harmful impacts of Canada thistle to native species and natural ecosystems received notable attention.



DISTRIBUTION IN THE UNITED STATES

Canada thistle is distributed throughout the northern U.S., from northern California to Maine and southward to Virginia. It is also found in Canada, for which it was named. Canada thistle has been identified as a management problem on many national parks and on preserves of The Nature Conservancy in the upper Midwest, Plains states, and the Pacific northwest.

HABITAT IN THE UNITED STATES

Canada thistle grows in barrens, glades, meadows, prairies, fields, pastures, and waste places. It does best in disturbed upland areas but also invades wet areas with fluctuating water levels such as streambank sedge meadows and wet prairies.

BACKGROUND

Canada thistle was introduced to the United States, probably by accident, in the early 1600s and, by 1954, had been declared a noxious weed in forty three states. In Canada and the U.S., it is considered one of the most tenacious and economically important agricultural weeds, but only in recent years has it been recognized as a problem in natural areas.

Hounds-tongue
Cynoglossum officinale L.

Family: Boraginaceae, Borage
Genus: Cynoglossum

(click on image for full size)

Description
General: coarse, single-stemmed biennial, 30-120 cm tall, leafy to the top, softly long-hairy throughout, from taproots.
Leaves: forming a large basal rosette in the 1st year. In the 2nd year alternate, the lowermost ones oblanceolate or narrowly elliptic, tapering to the stalk, 10-30 cm long overall and 2-5 cm wide, the others stalkless and more oblong or lanceolate, numerous, only gradually reduced upward.
Flowers: many on several long, 1-sided branches from the upper leaf axils. Mature flower stalks curved-spreading. Sepals broad, blunt-tipped, 5-8 mm long in fruit. Corolla dull reddish-purple, broadly bell-shaped, the limb about 1 cm wide or a little less, the fornices protruding, broadly rounded. The anthers seated about at the corolla throat.
Flowering time: May-July.
Fruits: 4 nutlets, 5-7 mm long, ovate, descending-spreading, forming a broad low-pyramidal fruit, remaining attached to the style above even after drying, covered with short, barbed prickles.

Distribution
A weed in disturbed sites, especially along roadsides, in most parts of MT. Native of Europe, now well established in N. America.

Medicinal plant: see below.

Minnesota Department of Natural Resources

search

Common tansy (*Tanacetum vulgare*)

Description:

Appearance: Perennial herbaceous plant, 3' tall, up to 5' in shaded areas, and erect. A single stem branches extensively toward the top into short stems forming a flat-topped cluster of numerous button-like flower heads; plants have medicinal properties.

Leaves: Alternate, pinnately compound (leaflets arranged on both sides of a common stalk), irregularly lobed. Leaves become smaller towards the top of the stalk, and are strongly aromatic when crushed.

Flowers: Bright yellow daisy-like discs up to 0.5" wide, lacking rays, blooming from July through October.

Seeds: Numerous tufted seed dispersed by wind and water.

Roots: Spreads vegetatively forming new plants from even small root fragments.

Ecological Threat:

- Common tansy is wide spread across most northern United States and Canadian provinces.
- It is still cultivated in gardens and is common along roadsides and abandoned farmyards in northern Minnesota and along the north shore of Lake Superior. South sloping open areas are most vulnerable.
- It was introduced to the United States from Europe for medicinal and horticultural purposes.
- Common tansy is on the MDA **Secondary noxious weeds** list in Minnesota.

Control Methods:

Grazing

Tansy is distasteful and even toxic to some grazing animals, however, one source claims that sheep graze it and are not affected

Chemical

Spot-spraying with selective broadleaf herbicide such as clopyralid,

Common Mullein

Verbascum thapsus L.
Figwort family (Scrophulariaceae)

NATIVE RANGE

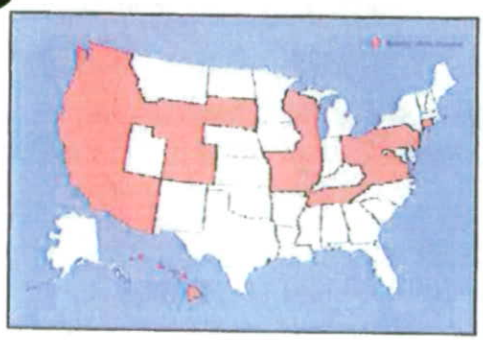
Europe and Asia

DESCRIPTION

Common mullein, also known as wooly mullein, is an erect herb. First year mullein plants are low-growing rosettes of bluish gray-green, feltlike leaves that range from 4-12 inches in length and 1-5 inches in width. Mature flowering plants are produced the second year, and grow to 5 to 10 feet in height, including the conspicuous flowering stalk. The five-petaled yellow flowers are arranged in a leafy spike and bloom a few at a time from June-August. Leaves alternate along the flowering stalks and are much larger toward the base of the plant. The tiny seeds are pitted and rough with wavy ridges and deep grooves and can germinate after lying dormant in the soil for several decades.

ECOLOGICAL THREAT

Common mullein threatens natural meadows and forest openings, where it adapts easily to a wide variety of site conditions. Once established, it grows more vigorously than many native herbs and shrubs, and its growth can overtake a site in fairly short order. Common mullein is a prolific seeder and its seeds last a very long time in the soil. An established population of common mullein can be extremely difficult to eradicate.



DISTRIBUTION IN THE UNITED STATES

Common mullein was first introduced into the U.S. in the mid-1700's, where it was used as a piscicide, or fish poison, in Virginia. It quickly spread throughout the U.S. and is well established throughout the eastern states. Records show that it was first described in Michigan in 1839 and on the Pacific coast in 1876, probably due to multiple introductions as a medicinal herb.

HABITAT IN THE UNITED STATES

Common mullein can be found where mean annual precipitation is greater than 3-6 inches and the growing season lasts for a minimum of 140 days. Intolerant of shade, mullein will grow in almost any open area including natural meadows and forest openings as well as neglected pastures, road cuts, industrial areas. Common mullein prefers, but is not limited to, dry sandy soils.

BACKGROUND

Common mullein is a monocarpic perennial (i.e., takes two or more years to flower and die). Brought over from Europe by settlers, it was used as a medicinal herb, as a remedy for coughs and diarrhea and a respiratory stimulant for the lungs when smoked. A methanol extract from common mullein has been used as an insecticide for mosquito larvae.

BIOLOGY & SPREAD

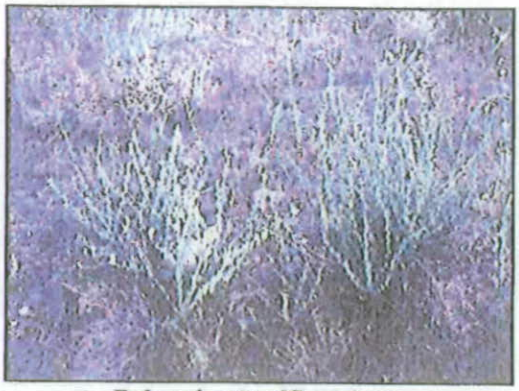
During the first summer after germination mullein produces a tap root and a rosette of leaves. During this vegetative stage, the rosette increases in size during the growing season until low temperatures arrest growth sometime during the autumn and winter. Beginning the next spring, second year plants bolt into maturity, flower, produce seed during the summer, and then die, completing the plant's normal life cycle. Flowers mature from the base to the tip of the stalk. The length of the flowering period is a function of stalk height; longer stalks can continue to flower into early October. It is

Plant Conservation Alliance's Alien Plant Working Group
Weeds Gone Wild: Alien Plant Invaders of Natural Areas
http://www.nps.gov/plants/alien/

Dalmatian Toadflax
Yellow Toadflax

by Rich Hansen, USDA-APHIS-PPQ, Forestry Sciences Lab, Montana State University, Bozeman, MT 59717-0278.

Dalmatian toadflax, *Linaria dalmatica* (L.) Mill. (Scrophulariaceae), is a plant native from central Europe east to central Asia. Dalmatian toadflax was originally introduced into North America as an ornamental plant, beginning in the late 1800's. By the 1920's, *L. dalmatica* populations had escaped from cultivation and become weedy; presently, Dalmatian toadflax is found in at least 22 US states and seven Canadian provinces, but it is most widely distributed in the western US and Canada.



Dalmatian toadflax plant.
R.Hansen, USDA-APHIS

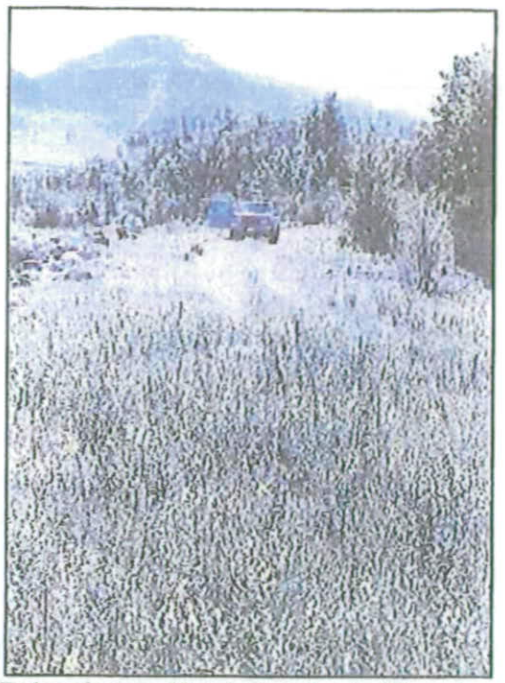
Dalmatian toadflax plant.
R.Hansen, USDA-APHIS

Linaria dalmatica is a short-lived perennial with a taproot that may extend 1 m or more into the soil. Most aboveground growth dies back in the fall, with the exception of short, prostrate stems that persist through the winter. In spring, erect shoots begin growth from root buds, reaching a height of 0.4 to 1.0 m; a single plant may produce 10 or more stems.

Flowers are bright yellow with orange markings and elongate spurs and occur in simple racemes on the stems. Flowering occurs from mid-summer to early fall. Flowers are pollinated by insects producing capsules containing 100-200 seeds. A single plant may produce several hundred thousand seeds. Dalmatian toadflax also reproduces vegetatively, from adventitious buds originating on horizontal roots.

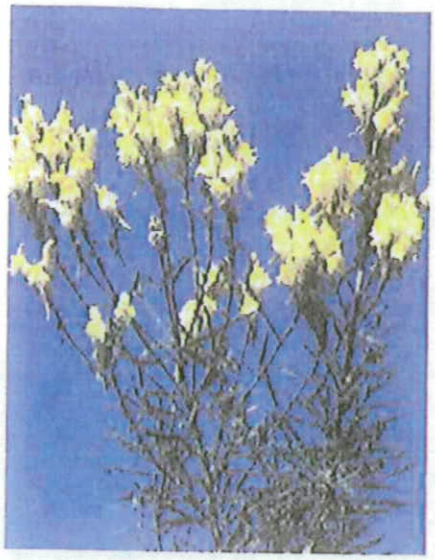
Dalmatian toadflax is typically found along roadsides or railroads and in idle cropland, pastures, and rangelands, usually on comparatively dry sites with coarse, well-drained soils. Because seedlings are relatively poor competitors for soil moisture, establishment is favored by soil disturbances, such as road construction, or by overgrazing. Once established, however, Dalmatian toadflax may become an effective competitor, reducing the abundance of grasses and other forbs. In addition, Dalmatian toadflax contains alkaloids that may be

deleterious to grazing mammals, though livestock and wildlife species rarely consume the weed. Thus, the primary economic impact of *L. dalmatica* lies in reduced livestock production on infested pastures and rangeland.



Dalmatian toadflax infestation in Wyoming. W.Hartung, NRCS

Yellow Toadflax, *Linaria vulgaris*



Yellow toadflax, sometimes called common toadflax and butter and eggs, resembles the snapdragon in appearance and is a member of the Figwort family. It was introduced from Europe as an ornamental and has now become a serious problem to rangeland and mountain meadows. It is a perennial reproducing from seed, as well as from underground root stalks. The stems of yellow toadflax ar efrom 8 inches to 2 feet tall and leafy. Leaves are pale green, alternate, narrow, and pointed at both ends. The flowers are bright yellow with deep orange centers. These flowers are about an inch long and blossom in dense clusters along the stem as it lengthens and grows. The fruit is round, about 1/4 inch in diameter, brown, and contains many seeds.

Yellow toadflax emerges in April and May in most parts of Colorado. It is adapted to a variety of site conditions, from moist to dry and does well in all types of soils. Its displacement of desirable grasses not only reduces ecological diversity, it 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.

Management Strategies | List of Troublesome Weeds | Back to Weed District

Description

Spotted knapweed generally is a short-lived perennial, reproducing solely by seeds. Seeds are brownish, less than 1/4 inch long, notched on one side of the base, with a short tuft of bristles at the tip. The seeds may germinate from spring through early fall. Seedlings emerging in the fall often overwinter as a rosette of leaves, resuming growth again in the spring (Figure 1). The plant grows 2 to 4 feet tall and bears alternate, pale green leaves which are 1 to 3 inches long. Leaf margins of the lower leaves are divided and smooth while the surface of the leaf is rough. The upper leaves are linear in shape. Stems are erect and rough, with slender branches. Numerous flowers are produced from early July through August. Flowers are pink to light purple and are borne on tips of terminal or axillary stems (Figure 2). The flower petals are surrounded by stiff, black-tipped bracts, giving the flower head a spotted appearance (Figure 3). Spotted knapweed can be distinguished most easily from Russian knapweed (a long-lived perennial of the same genus) on the basis of floral characteristics. Russian knapweed flowers are smaller than those of spotted knapweed and do not have black mottling on the flower bracts.

Figure 1. Spotted knapweed -- Rosette.

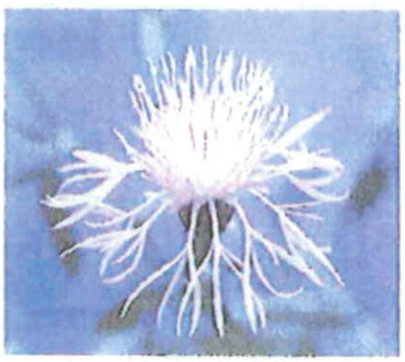


Figure 2. Spotted knapweed flower.

Figure 3. Spotted knapweed -- Flowering plant, notice black-tipped flower bracts.

Musk thistle (*Carduus nutans*)

Roots: Fleshy taproot.

Stems: Erect, 2-4 feet tall, spiny winged, highly branched.

Leaves: Alternate, serrated, no hairs, spiny.

Seed: Tufted, spread by wind, the only means of reproduction.

Flowers: Rose purple or may be white, 2 inches wide or wider, tend to lean over or nod, solitary on stem.

Origin: Eurasia.

Poisoning: None.

⇨⇨Musk thistle bio-control⇦⇦

Return to Plant Protection Program

Leafy Spurge (*Euphorbia esula)*

Roots: Numerous pink buds, deep, reddish-brown, spreading, large nutrient reserves.

Stems: Erect, smooth, branched at the top, normally 1-2 feet tall.

Leaves: Alternate, narrow, length 1 to 4 inches

Seed: Born in exploding capsules that can expel seed to 15 feet, longevity 5 to 8 years.

Flowers: yellowish-green to yellowish-orange surrounded by yellow-green bracts.

Origin: Eurasia, thought to have entered the USA as a crop seed contaminant.

Poisoning: Milky latex sap throughout the plant may cause dermatitis on human skin. Toxic to cattle, sheep and goats do not seem to be affected.

⇨⇨Leafy spurge bio-control⇦⇦

Return to Plant Protection Program

Chicory

Cichorium intybus (Asteraceae)

A slender perennial, easily established from seed, producing a deep taproot. A native of Europe, it has escaped from cultivation and naturalized throughout North America. The plant contains a white, milky sap that appears if the stem is broken. Flowers are blue, remaining on the plant for only a single day. Prefers full sun in well-drained soils.

Average planting success with this species: 80%
Height: 2-4 feet
Germination: 7-21 days
Optimum soil temperature for germination: 65-75F
Sowing depth: 1/16"
Blooming period: May-October
Average seeds per pound: 426,000
Seeding rate: 5 lbs. per acre
Suggested use: Herb gardens, isolated areas.
Miscellaneous: When World War II disrupted shipping, most U.S. "coffee" was produced from chicory. Caffine-free, it is regaining popularity.

MIDDAKOTA VEGETATION MANAGEMENT

35920 CANHAM PLACE
MILLER, SD 57362

ANDREW CANHAM
605-853-3287 OR 605-530-8089

JACK DOOLITTLE
605-852-2869 OR 870-0130

April 26, 2011

Dear Ron,

Attached is the report for the Wharf Mining Area Noxious Weed Control. Our company specializes in Noxious Weed Management including chemical application, GPS mapping and GIS applications, grant writing, and researching.

Our company has worked with Wharf Mines since 2003. Invasive non-native weeds have decreased in both density levels and infestation areas. Canada Thistle, Hounds Tongue, Mullen, St. Johns Wart, Tansy were the main weeds of concern. Knapweed and bi-annual thistles were located in various areas with small infestations. With the introduction of new herbicides and aggressive application methods we have decreased the noxious weeds immensely. Application timing is very critical due to the elevation, various weed species, and growth rates of those species. A spring/early summer application followed up with a fall application offers the widest window of opportunity for best control.

If you have any questions please feel free to call me at 605-853-3287 - Cell: 605-530-8089 or my partner Jack Doolittle at 605-852-2689 - Cell: 605-870-0130.

Sincerely,

Andrew Canham

Andrew Canham and Jack Doolittle

I have reviewed and confer w/ program as submitted

David Heck - May 1st 2011

Ron Waterland

From: David Heck [sb1522008@yahoo.com]
Sent: Thursday, March 24, 2011 5:29 PM
To: Ron Waterland
Subject: Re: Wharf Weed Plan

Ron,

I agree with your weed management plan, I would like to come up and tour when the DENR visits for an inspection some time this upcoming summer. As far as I know your still contracting with Mid Dakota, also are some new products for you to consider using (streamline) is one of them is from DuPont mild environmental and works on everything like Tordon used to but is a way friendlier product and a better product.

David

From: Ron Waterland <ron.waterland@goldcorp.com>
To: David Heck <sb1522008@yahoo.com>
Sent: Thu, March 24, 2011 1:22:27 PM
Subject: FW: Wharf Weed Plan

Hello David,
This is a reminder that we need some sort of written document from you that indicates that you agree with our weed management plan as described below. You can reply by e-mail or send a letter to my attention at Wharf Resources (USA), Inc. 10928 Wharf road, Lead, SD 57754.
Thanks

Ron Waterland
Environmental Manager
Wharf Resources (USA)
(605) 584-4155
ron.waterland@goldcorp.com

From: Ron Waterland
Sent: Wednesday, March 02, 2011 12:02 PM
To: David Heck
Subject: FW: Wharf Weed Plan

Hello David,

I am sending this e-mail to request confirmation that you agree with our proposal for weed management that consists of what we have been doing on our existing property as described in the e-mail below.
Regards
Ron

Ron Waterland
Environmental Manager
Wharf Resources (USA)
(605) 584-4155
ron.waterland@goldcorp.com

From: Ron Waterland
Sent: Monday, February 07, 2011 3:33 PM
To: David Heck; Meyers, Zindie - Spearfish, SD
Subject: Wharf Weed Plan

Hello David and Zindy,

Wharf will be sending an application for a new permit to mine areas near our existing mine and the Golden Reward mine. We propose to continue using the same weed control plan that we have in place at Wharf and Golden Reward. The new permit application requires us to consult with the Lawrence County Conservation Board and the Lawrence County Weed Board to develop our weed management plan. The plan we develope in cooperation with your groups will be used in the proposed new areas. Essentially we conduct a yearly property inspection; identify locations of weed growth; and treat weeds annually through chemical control.

Please let me know if this plan is acceptable or if we need to meet. We will need some proof that we have consulted with Lawrence County Weed Management on our proposed weed control program. Please respond to me at this e-mail madress.
Kind Regards

Ron Waterland
Environmental Manager
Wharf Resources (USA)
(605) 584-4155
ron.waterland@goldcorp.com

Ron Waterland

From: Meyers, Zindie - Spearfish, SD [zindie.meyers@sd.nacdnet.net]
Sent: Thursday, February 10, 2011 10:04 AM
To: Ron Waterland
Subject: RE: Wharf Weed Plan

To: Ron Waterland, Environmental Manager, Wharf Resources
From: Zindie Meyers, District Manager, on behalf of the Lawrence Conservation District Board of Supervisors
Re: Weed Management Plan

The Lawrence Conservation District Board concurs with the recommendations of the Lawrence County Invasive Species Management Department regarding the weed control plan to be used under a new permit to mine for Wharf Resources. Additionally, the board would ask that Wharf consult with them and the Natural Resources Conservation Service, Belle Fourche office, concerning any planting mixes used on new sites.

From: Ron Waterland [mailto:ron.waterland@goldcorp.com]
Sent: Monday, February 07, 2011 3:33 PM
To: David Heck; Meyers, Zindie - Spearfish, SD
Subject: Wharf Weed Plan

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Kind Regards

Ron Waterland
Environmental Manager
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(605) 584-4155
ron.waterland@goldcorp.com