

Valles Caldera National Preserve
Stewardship Register
Noxious Weed Control and Eradication Project

Stewardship Action:	Noxious Weed Control and Eradication Project	File Number:	
Target Start Date:	Sept. 8, 2003	Actual Start Date:	September 8, 2003
Target Completion Date:		Actual Completion Date:	

Location: The invasive weed species: Canada; musk; and bull thistle have been found along primary and secondary Preserve roads within road right-of-ways or within a few yards of the road prisms. Surveys over the last two years have encountered these weeds in disturbed areas along Preserve roads and in turnouts. The infestations are near 5 acres in total area and range from less than 1/10th to 1 acre. The infestations occur in a dispersed pattern adjacent to 70 miles of Preserve roads as depicted in the attached map (Exhibit A). The locations and size of these infestations have increased over the last two years.

Purpose and Need: The New Mexico State Department of Agriculture Noxious Weed Act of 1998 lists the Canada thistle a Class ‘A’ weed whose limited distribution in the State sets eradication as the highest priority. Musk thistle is a New Mexico Class ‘B’ weed. Statewide management priority is to contain infestations to current areas, preventing new infestations. Bull thistle is a Class ‘C’ weed recognized by the State as widespread. Suppression is encouraged. The Federal Noxious Weed Act of 1974 encourages elimination or containment of each of these weeds.

Canada thistle is a deep-rooted perennial plant that regenerates successfully from root sprouts. Entire plants can re-grow from only a fragment of root. Dense patches can form and the plant produces photo toxins that inhibit the growth of other plants. Canada thistle is an aggressive colonizer that can cover a 6-foot diameter area within one to two years.

Musk thistle and bull thistle are typically biennial plants, but they may also complete their life cycle in one year as opposed to two years. These plants depend on seed production for reproduction and spread. An average size plant can produce as many as 10,000 seeds in any given year. Thus, these weeds have the ability to quickly colonize areas that have been disturbed and where there are few native plants to prevent germination.

These weed infestations occur along primary and secondary road systems. Traveling Preserve visitors or working personnel can increase the transport of plant seeds and parts to other areas in the Preserve or to adjacent lands. Control and eradication of these occurrences before they spread is important to protecting native plant communities.

Hand cutting, pulling or grubbing are not effective methods to eradicate Canada thistle, musk thistle, or bull thistle. The BLM (Bureau of Land Management) has experienced excellent success using clopyralid to eradicate these weeds in other locations in New Mexico.

The unchecked weed infestations risk expansion of these plants and damage to the natural plant and animal communities within the Preserve. Considering the management principles adopted by the Board of Trustees; goals 1, 4, and 8 are addressed by the proposal. These goals are:

- (1) We will administer the Preserve with the long view in mind, directing our efforts toward the benefit of future generations;
- (4) We will exercise restraint in the implementation of all programs, basing them on sound science and adjusting them consistent with the principles of adaptive management; and
- (8) Recognizing that the Preserve is part of a larger ecological whole, we will cooperate with adjacent landowners and managers to achieve a healthy regional ecosystem.

Description:

Over a three-year period, the Valles Caldera Trust proposes to control the spread and ultimately eradicate infestations of the noxious weeds: Canada thistle (*Cirsium arvense*); musk thistle (*Carduus nutans*); and bull thistle (*Cirsium vulgare*) along roadways and adjacent areas within the Preserve. Hand application of liquid clopyralid (trade name Transline) with the surfactant LI 700 and colorant Hi-Light is proposed to control and ultimately eliminate weed infestations.

Objective: Eliminate 70 % or more of the infestations of noxious weeds at the conclusion of the first year's weed control program. Eradication of these three invasive weed species within the Preserve is sought at the conclusion of the control program in November 2006.

Performance Requirements: The following requirements must be fulfilled in completing the proposed project:

1. Applications to weed infestations must be by backpack sprayer and a hand-held spray nozzle or by a portable sprayer transported by a small, four-track, utility vehicle. Target plants are to be sprayed by wetting exposed surfaces and avoiding non-target plants. Personnel from the Bureau of Land Management office in Cuba are available to apply the registered herbicide and are licensed by the State of New Mexico. Only licensed personnel may spray plants.
2. Contract and Federal workers are required to meet Federal Worker Protection Standards (40 CFR Part 170) and existing State of New Mexico Regulations, including the use of protective clothing. Safety procedures and Material Safety Data Sheets must be reviewed by personnel prior to herbicide applications.

3. All applications must adhere to label directions as well as Federal and State application regulations.
4. Transline is to be applied at a rate up to, but not over, 0.5 pound of acid equivalent per acre (1.33 pints per acre). Clopyralid, the active ingredient in Transline, is a systemic herbicide absorbed by leaf- and stem-surfaces and translocated into stem and root systems. The herbicide, mixed with water, will consist of no more than 100 gallons of diluted solution dispersed on weed infested areas during each year of use.
5. Transline is mixed with the surfactant LI 700 to thoroughly wet the weeds. To ensure effective penetration into the plant leaves and root system, two pints of surfactant per 100 gallons of water is mixed with the herbicide. The spray colorant, Hi-Light, is to be included in the mix to identify where the herbicide is applied. The colorant maximizes coverage and minimizes use. One-half to one pint of colorant per 100 gallons of water is to be mixed with the herbicide.
6. Spray drift is minimized by targeting individual plants with spot applications and avoiding non-target plants. Weeds may be sprayed only if wind speed averages less than 5 miles per hour. To reduce the potential for volatilization, weeds may not be sprayed if the air temperature exceeds 85°F.
7. The spray dries on weed surfaces within six hours. To reduce the potential for runoff during a rain storm, applications may be made only if rain is not anticipated within six hours after weeds are sprayed.
8. All storage, mixing, or backpack refilling of herbicides must be located away from open water in a central location. Individual spray containers must be filled from a single source and may be transported to the weed infestation sites by motor vehicle if secured in transport.
9. Procedures for spill cleanup and emergencies must be established by the project leader and conveyed to each applicator prior to field work.
10. The area must be posted during application, restricting human access to the treatment area until the spray solution has completely dried.

Environmental Documentation:

An Environmental Assessment and Finding of No Significant Impact are attached.

Agencies and Persons Consulted:

Project development included discussions among resource specialists of the Preserve. Resource specialists visited the project area to evaluate the proposal and consider options. In addition to staff discussions, a scoping letter was posted on the VCNP website on July 2, 2003 and electronically distributed to the Valles Caldera Board of Trustees, Federal and State Congressional and Senate Offices, Tribal Offices, the Office of the Governor of the State of New Mexico, and statewide media contacts. The following agencies and persons were consulted:

- Valles Caldera Board of Trustees
- Dennis Trujillo – VCNP Manager

- Brett O’Haver - Bureau of Land Management
- Ana Steffen – Cultural Resources
- Eagle Environmental, Inc.
- Phil Tonne – Botanical Consultant
- Dale Stahlecker – Wildlife Biologist
- Steve McWilliams – Soil and Hydrology Consultant
- Karen Lee – VCNP GIS Coordinator
- Deborah Walker – Cibola National Forest, NEPA Compliance
- Frannie Decker - NM Department of Agriculture

By August 20, 2003, no responses were received regarding the proposal. However, to further consider the proposal, the Trust prepared an environmental assessment and a finding of no significant impact. Both of these documents are combined with this stewardship register to integrate the environmental analysis of the proposal and alternatives. As described in the Trust’s NEPA procedures, the proposed project is approved for implementation when, and only when, this Stewardship Register is signed and dated by the Responsible Official.

Signature of Responsible Official /s/ Dennis Trujillo	Title Preserve Manager	Date Sept. 5, 2003
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Monitored Outcomes:

Known locations of these weed infestations are identified. Specific populations of all three noxious weeds will be sampled by observation to determine overall effectiveness of treatment.

During the short-term, 0 to 3 years, 70% of the identified weeds are estimated to be eliminated and expanding infestations of these species in the Preserve should be under control. After three years, the invasive weeds are anticipated to be eradicated from the Preserve. Infested areas will be inventoried and other locations surveyed for weed infestations. Costs and operational efficiency will be reviewed to measure the effectiveness of the control and eradication method.

In the long-term, invasive weeds will not threaten the ecological integrity of the Preserve.

Evaluation of Monitoring Information:

As information is gained, results will be added to this Stewardship Register.

Valles Caldera National Preserve

Noxious Weed Control and Eradication Project

Environmental Assessment and Finding of No Significant Impact

Sandoval County, New Mexico

August 20, 2003

I. Purpose and need for the proposal (see Stewardship Register)

II. Alternatives

A. Alternatives Considered but Eliminated from Detailed Study

1. Manual Removal: The manual removal of the stems and leaves of Canada thistle does not eliminate infestations. The plants have very weak root collars and the upper portion of the plant breaks off, leaving the root mass to re-sprout. Grubbing is ineffective because the plant aggressively reproduces through rhizome (root) sprouting. New shoots and roots can form almost anywhere along the root system of an established plant (Beck, K.G., 2001). Grubbing may actually lead to the spread of Canada thistle plants as segmenting the roots stimulates new plants (Beck, K.G., 2001).

Due to the enormous amount of seed produced by a single musk or bull thistle and because terminal flower heads develop at different times in the year, hand removal of these species is not an effective way to control or eradicate either.

2. Biological Control Agents: The use of biological controls, such as insects and or pathogens, has not proven to be an effective method of controlling or eradicating Canada, musk, or bull thistle.

Two insects are available to control Canada thistle, *Ceutorhyncus litura* and *Urophora cardui* and are available from the Colorado Department of Agriculture. These insects may be quite effective in croplands where they could be combined with cultural practices such as planting alfalfa or other highly competitive crops, practices which are limited on native rangelands. They are generally not effective when used as a sole control (Duncan, Brown 2001).

The rosette weevil is can be effective on bull thistle but requires 10-12 years to reach a population level that can be considered effective (Beck, K.G. 2001)

At this time, neither mechanical nor biological control methods appear to provide a viable means to control or eradicate the invasive weed species. Because success

seems remote or would require several years to implement, these alternative methods are not studied in greater detail.

B. Alternatives Considered in Detail

Alternative 1. Over a three-year period, the Valles Caldera Trust proposes to control the spread and ultimately eradicate infestations of the noxious weeds: Canada thistle (*Cirsium arvense*); musk thistle (*Carduus nutans*); and bull thistle (*Cirsium vulgare*) along roadways and adjacent areas within the Preserve. Control and eradication is to be achieved by hand spraying the herbicide clopyralid (trade name Transline) along with the surfactant LI 700 and colorant Hi-Light, on approximately 5 acres along 70 miles of primary and secondary roads within the Preserve. If new infestations are found along these roads, they will also be sprayed. Noxious weed control and eradication will begin late in the summer of fall of 2003 and may continue if invasive weeds are present during the field seasons over the following three years. By November 2006, monitoring information from each field season will be summarized to evaluate overall success.

Alternative 2. No action would be taken to control or eradicate the invasive weed species. The continued spread of these weeds would be recorded by on-site visits to known locations and inventory of suspected location within the Preserve.

III. ENVIRONMENTAL IMPACTS OF THE PROPOSAL AND ALTERNATIVES

A. Comparison of Environmental Impacts

	Alternative 1 <i>Proposal</i>	Alternative 2 <i>No Action</i>
<i>Acres to be treated</i>	Approx 5 acres	None
<i>Method of treatment</i>	Spot application with backpack sprayers and hand held nozzles or spray rig attached to quads	None
<i>Herbicide and rate of application</i>	Clopyralid (Transline) ▪ 1.33 pints per acre	None
<i>Potential for spread of noxious weeds</i>	None to minimal	High
<i>Effects to archaeological resources</i>	No ground disturbing activities proposed, thus no effects to historical properties	No effects to historical properties
<i>Effects to traditional cultural properties</i>	No known cultural or traditional concerns with local native American tribes	No effects to traditional cultural properties
<i>Effects to Federally listed plant species</i>	No presence of Federally listed species, habitat is not present for those species	Loss of native plant habitat and species as noxious weed occurrences spread

<i>Effects to soil and hydrological resources</i>	Hand application reduces potential for offsite effects and effects to non-target species	Spread of noxious weeds causes a reduction in native vegetation ground cover, thus increasing erosion potential
<i>Effects to Federally listed wildlife species</i>	No effects to the bald eagle, Mexican spotted owl, or southwestern willow flycatcher or its habitat	Loss of native plant forage used by prey species, loss of habitat for prey species

B. Environmental Impacts and Finding of No Significant Impact (FONSI)

The following information and the stewardship register are used to conclude that the implementation of Alternative 1 will not have a significant impact on the human environment. The proposal, Alternative 1, may proceed without the preparation of an environmental impact statement.

Context: The local context of Alternative 1 is limited to approximately five acres along 70 miles of primary and secondary roads within the Preserve. Based on surveys within the Preserve, the weed infestations are limited to road sides and turnouts where the ground has been disturbed in the past. Alternative 1 would control and eradicate noxious weeds only in these specific locations and any other sites where these weeds are discovered during the next three years. Very few non-target plants would come into contact with the herbicide, and only a small percentage of spray would actually reach the soil surface.

Individual plants would be sprayed in late spring, summer, or fall. Following the first year of treatment, clopyralid would be reapplied only if the treated plants were found resprouting or germinating from seed. Due to the effectiveness of the herbicide, the area needing re-treatment is anticipated to be reduced by 70% (C.Duncan, M.Brown, 2001) following treatment. Treatment over four seasons should eradicate infestations of the weeds.

Canada thistle, musk thistle, and bull thistle aggressively invade native plant communities and are difficult weeds to control (Beck, K.G., 2001). Biological Evaluations for flora and fauna (incorporated by reference and available upon request) indicate that Alternative 1 would not pose any significant short-or long-term effects to non-target plants. Eight studies documented 74-82% control using clopyralid on Canadian Thistle (Duncan, Brown 2001).

Eradication of this weed infestation would prevent the spread of noxious weeds into previously uninfected areas. Alternative 2 poses substantial negative effects on the ecological integrity of the Preserve. Because individual weeds are targeted in Alternative 1, impacts to desirable native vegetation are negligible.

In Alternative 1, there is a potential for the herbicide to be transported into water if soil particles are detached and carried by surface runoff. However, application would occur when rain is not forecasted. In addition, applications would not take place if wind speeds exceed 5 miles per hour. Little or no effect to soil biology, groundwater and surface water is expected because clopyralid has been shown to have little detrimental effect on soil organisms and is broken down rapidly by soil microorganisms (Dow AgroSciences, 1997). Clopyralid would be absorbed by the plant or attached to soil particles before reaching groundwater. The potential for movement off-site would disappear within 3 months (USDA, 1999) of application.

Intensity:

(1) Beneficial and adverse impacts

The only adverse impacts of Alternative 1 are non-significant and short-term effects. The potential short-term effects are:

- Low risk to human health and safety of workers applying the herbicide, such as skin and eye irritation. (USDA, 1999)
- There would be no or very little effect on soil biology, groundwater, or surface water quality. Clopyralid does not leach in any appreciable amounts, nor is translocation by runoff a likely event. Under planned applications and environmental conditions, the risk of herbicide reaching surface water is low (McWilliams, 2002, Dow AgroSciences, 1997).
- With the implemented precautions, the risk of exposure to aquatic organisms is low. The risk of direct mortality to non-target terrestrial species from herbicide exposure is also low.
- In the event of a spill or accident, non-target plants may be affected. However, the application procedure will ensure that only small amounts could possibly be involved in an accidental spill. In addition, clopyralid targets only broadleaf plants (not grasses) and is practically nontoxic to mammals and aquatic organisms. (Material Safety Data Sheet 002805)

The beneficial effects of control and eradication of Canada, Musk, and Bull thistle reduce the risk of spread to other uninfected areas and reduce the risk of the loss of native plant habitat. The short-and long-term adverse impact of not controlling and eradicating these noxious weeds is greatest in the Alternative 2. The short-term effects of Alternative 1 are not significant.

(2) The degree to which the proposal affects public health or safety.

Ground application methods of herbicides have little potential of direct exposure to the public because clopyralid is not easily volatilized into the atmosphere and there is little risk of it entering water. The active ingredient in Clopyralid is classified as relatively non-toxic (Dow AgroScience 1997). Treatment areas would be posted during application, restricting access while spray solutions completely dry. The potential for the public to come into direct contact with the herbicide is low.

Evaluation of existing research completed by the Syracuse Environmental Research Associates summarized the effects of clopyralid on human health and safety. Alternative 1 would apply clopyralid in the same manner as directed in that Syracuse summary. That analysis, used to determine potential effects, concluded that no adverse public health effects are expected from the application of clopyralid. There is a negligible risk to human health or safety by spraying approximately five acres of noxious weeds with clopyralid.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

No parklands, prime farmlands, wild and scenic rivers, wetlands, or ecologically critical areas would be affected. The project area has been surveyed and analyzed by the District Archaeologist for historical and cultural resources. Results of those surveys indicate that implementation of Alternative 1 would not have any effect on any historical or cultural resources eligible for the National Register of Historic Places, nor would it cause the loss or destruction of any significant cultural or historical resources (Steffan, 2002). No significant effects to wetlands are expected to occur as a result of implementing this proposal (McWilliams, 2002).

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The effects of the project on the quality of the human environment are not likely to be highly controversial. Public scoping of the Proposed Action resulted in no comments. The SERA Report (1999) reviewed much of the scientific evidence on potential effects from the use of clopyralid to humans and wildlife. The SERA Report and this evaluation are used to determine that no significant effects would occur from implementation of Alternative 1. Scientific literature supports the use of herbicides to control and eradicate Canada, musk, and bull thistle. In addition, the small size of the project area (approximately five acres distributed in 1/10th - to 1-acre areas adjacent to approximately 70 miles of roads) lessens the potential for controversy.

(5) Degree to which the possible effects on the human environment are highly uncertain or involves unique or unknown risks.

The use of herbicides to control noxious weeds has been extensively researched. The possible effects and levels of risk are well known (SERA, 1999). Not only has the scientific community investigated the effects of herbicides on humans and animals, but the manufacturing companies, Forest Service research stations, and regulating government agencies (i.e., EPA, FDA) have also analyzed extensive data regarding herbicides (SERA, 1999). Based on these studies and the performance requirements of Alternative 1, none of the potential impacts are uncertain, unique, or unknown.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about future consideration.

Alternative 1 would not establish a precedent for future actions, nor would it represent a decision in principle about a future consideration. Any future action to control noxious weeds would be analyzed separately and on its own merits. Future projects require additional evaluations under the Trust's NEPA procedures.

(7) Whether this action is related to other actions with individually insignificant but cumulatively significant impacts.

Project design avoids or minimizes adverse cumulative watershed effects and also protects plants, wildlife, aquatic species, and other sensitive resources. Any residual effects would not be cumulatively significant.

There are no known applications of herbicides planned adjacent to the Preserve. In addition, there are no private lands within the Preserve, negating the possibility of additional applications in the infestation areas. As discussed previously, there is a low risk of herbicides accumulating in water because it is unlikely that it would be transported to a watercourse (McWilliams, 2002). Cumulatively significant effects are highly unlikely.

Clopyralid has limited mobility because it tends to adsorb strongly to soil particles, especially to clay and to iron and aluminum ions. While it is highly soluble in water, it does not tend to leach through the soil profile in the Preserve at the anticipated treatment sites (McWilliams, 2002). There is a very low probability that clopyralid would reach surface water.

The herbicide proposed for use has a very low risk of adversely affecting aquatic organisms applied properly. Spraying away from standing water keeps herbicides out of any stream. This treatment is very unlikely to expose non-target terrestrial or aquatic species to detectable amounts of herbicides. The potential for cumulative effects to aquatic organisms is very low. Because the herbicide does not bioaccumulate (SERA, 1999) and any ingested is rapidly excreted, the possible cumulative effects to wildlife are minimal.

No direct impacts to soil productivity are predicted from the use of clopyralid as proposed. This herbicide would not significantly affect the soil physical, chemical, or biological properties. At the levels proposed for application, clopyralid is not expected to have detrimental effects, considering the following:

- Clopyralid does not leach through the soil in any appreciable amount and has been shown to break down naturally due to soil microorganisms within 3 months of application and has an aerobic half life of 25 days (McWilliams ,2002, SERA 1999, Dow AgroScience 1997); and
- Performance requirements (time of year, wind velocity, period to next rainfall, etc.) significantly reduce the potential for airborne and surface movement of herbicide.

Surveys for Federally listed plant species were completed at the project site last summer (Eagle Environmental, 2002b). No Federally listed plants were found in the project area during surveys. No direct, indirect, or cumulative effects would occur to sensitive plant species.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The archaeological report (Steffan, A. 2002) finds that the proposal does not involve ground disturbance. It is not, under the National Historic Preservation Act, an undertaking with the potential to affect historic properties. Based on the archaeological report and the public response to the initial proposal, there are no known cultural or traditional concerns with local Native American communities regarding Alternative 1.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

A Biological Assessment and Evaluation(BAE) was completed for federally listed wildlife, fish, and plant species (Eagle Environmental, 2002) and is incorporated by reference and available from the Preserve office upon request. A summary of the determination of effects on endangered or threatened species from that BAE follows:

Endangered Species

The southwestern willow flycatcher is the only endangered species known to potentially occur in the project area. However, there is no suitable habitat for this species located within the project area. There would be no effect to this species or its habitat.

Threatened Species

Alternative 1 would have no effect on the bald eagle or Mexican spotted owl, the only species classified as threatened in the area. Project implementation would be completed before bald eagles are expected to return to the Preserve for the winter months. The levels of clopyralid used are not likely to concentrate either in the carrion consumed by bald eagles or in the prey species consumed by Mexican spotted owls.

No threatened plant species are known to occur on the Preserve including the project area, and none were found during the plant surveys completed for this project.

10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

Alternative 1 does not violate Federal, State, or local law, or requirements for the protection of the environment. Alternative 1 complies with all applicable State and federal regulations concerning the use of herbicides.

The effects of projects on neo-tropical, migratory bird species are often addressed by possible impacts on areas identified as important bird areas. None of these areas are in the Preserve. There would be no effects to neo-tropical migratory birds or their habitat. (Eagle Environmental, 2002a). Clopyralid is to be used in low quantities. In addition, it has low toxicity to these species (Dow AgroScience 1997). There are no associations or important links between the project area and the closest known important bird areas.

IV. LISTING OF AGENCIES AND PERSONS CONSULTED (See Stewardship Register)

V. REFERENCES CITED

- Beck, K.G., Colorado State University Cooperative Extension Services, May 2001
- Dow AgroScience, Colpyralid a North American Technical Profile, October 1997
- Duncan, C. and Brown, M., Weed Management Services, Helena Montana, April, 2001
- Eagle Environmental, Biological Assessment and Evaluation for Canada Thistle Control in the Valles Caldera, Stahlecker, D., August, 2002
- Eagle Environmental, Migratory Bird Effects Analysis, Stahlecker, D., August 2002
- Eagle Environmental, Botany Report, Tonne, P., July, 2002
- McWilliams, S. Soils/Hydrology Report, 2002
- Steffan, Anastasia, Archaeological Report, 2002
- USDA, Forest Service, 1990, Application Procedures and Best Management Practices, 2002
- USDA, Forest Service, 1999, Clopyralid (Transline) Final Report. Syracuse Environmental Research Associates.