

ENVIRONMENTAL ASSESSMENT
for
CONTROL OF NOXIOUS WEEDS AND OTHER UNDESIRABLE VEGETATION
on the
UINTA NATIONAL FOREST

July 1994

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Uinta National Forest

Purpose and Need for Action

In October of 1986, the U.S. Forest Service, Intermountain Region, issued a Final Environmental Impact Statement (FEIS) on the control of noxious weeds in the Intermountain Region of the Forest Service covering the states of Utah, Nevada, Southern Idaho, Western Wyoming, and small portions of California and Colorado.

The FEIS evaluated alternatives for control of noxious weeds on the National Forest System lands in the areas involved. Under the selected Alternative, the Forest Service proposed an Integrated Pest Management Program (IPM) for controlling noxious weeds and other undesirable plants on National Forest System lands, including pesticides applied by ground vehicle, hand, and aerial methods; hand pulling and grubbing; biological controls; range management practices; prescribed fire; and establishment of desirable vegetation. The FEIS is a programmatic document which describes the environmental consequences of controlling noxious weeds in the area involved and the impacts on human health expected from these actions. The FEIS also required specific Environmental Assessments (EA) tiered to the FEIS for individual projects and actions.

An EA tiered to the previously mentioned FEIS was prepared for the Uinta National Forest in April 1988, and the Forest's noxious weed and undesirable plant control program has been operated, thereunder, since that time. That EA specified that it would be in effect until the Uinta National Forest Land and Resource Management Plan (Forest Plan) was revised in 1994. The decision was recently made to defer the revision of the Forest Plan, until 1997 or later. Thus, there is a need to extend or amend the EA if the current program is to continue beyond the 1994 field season.

Several other factors come into play when considering the need to revise the existing EA. More information is now available on the risks of using herbicides than was available when the Regional FEIS was prepared in 1986. Also, new herbicides are available for use which in some cases are more effective, more selective, and of less environmental concern than those presently approved for use. In 1992, a Risk Assessment covering all the herbicides now proposed for use in the Forest Service in the Intermountain Region was completed. There is a need to incorporate the findings of this document into the EA.

In addition, new and invading weeds have been discovered in the vicinity of the Uinta National Forest that should be considered for treatment and the number of acres needing treatment consideration has also increased. The latter situation is largely due to the acquisition and reservation of the Strawberry Valley lands which contained large infestations of noxious weeds due to their degraded condition.

Project Information

It is National policy that weed control programs be conducted under IPM. This EA documents the proposed Noxious Weed and Undesirable Plant Control Program for the Uinta National Forest as tiered to the FEIS for the Uinta National Forest Land and Resource Management Plan (Forest Plan) (pp 3-50, 3-51, and 4-49). The Forest Plan covered by the aforementioned FEIS directs the Forest Service towards the following objectives when involved in noxious weed control efforts:

1. Monitor pesticide applications in cooperation with other agencies where chemical pesticides are used.
2. Cooperate with County and Federal officers in enforcing provisions found in Regulations 36 CFR 222.8, Sections 1 and 2 of the Carlson Foley Act and Section 9 of the Federal Noxious Weed Control Act of 1974, P.L. 93629.

Further direction from the Forest Plan Standards and Guidelines, Range-15 pp 3-102 directs Forest officers to conduct noxious weed inventories and schedule control of noxious weeds found within range allotments and other areas in coordination with other individuals and agencies.

Noxious weed control has been an important part of the Uinta National Forest management program during recent years. Invasions of several noxious weeds, particularly Musk thistle (*Carduus nutans*), have become of increased concern during this period and funding to deal with this situation has increased accordingly. In the past, Integrated Pest Management Programs have been carried out at a District level under Addendums to the Multiple-Use Survey Report on Noxious Weed Control for the Uinta National Forest originally dated October 14, 1970; Noxious Weed Control Plan for the Heber Ranger District dated April 18, 1983; and a Noxious Weed Project Report for the Spanish Fork and Pleasant Grove Ranger Districts approved June 10, 1987. This EA covers the proposal to continue an IPM program on the Uinta National Forest during the next 5 years.

Description of Affected Environment

The Uinta National Forest lies within the Southern Rockies and Great Basin physiographic areas. A complete description of the area and resources covered by this EA is included in Chapter 3 of the FEIS for the Uinta National Forest Land and Resource Management Plan. More specific information is provided in the Project Information Section and other portions of this document.

The Uinta National Forest contains an estimated 160,000 acres that are occupied by noxious weeds. These occur over most of the Forest in dense stands, isolated patches, or as scattered individuals. Often, they are found along roadsides, or other areas disturbed by construction activities or by excessive livestock use. Heavy infestations of Musk thistle (*Cardus nutans*) are present in lower Diamond Fork, Spanish Fork Canyon, Hobbie Creek, Strawberry Valley, Daniels Canyon, and Racetrack Creek in the Currant Creek area. Heavy infestations of Canada Thistle (*Cirsium arvense*) occur in riparian and wetland areas in Strawberry Valley and below Currant Creek Dam. Dalmation Toadflax (*Linaria dalmatica*), is found in abundance in Provo Canyon and in openings on big game winter range scattered along the Wasatch Front.

Other species of concern are Squarrose Knapweed (*Centaurea virgata*), leafy spurge (*Euphorbia esula*), diffuse knapweed (*Centaurea diffusa*), Dyer's Woad (*Isatis tinctoria*), burdock (*Arctium*

minas), whitetop (*Cardaria draba*), Scotch thistle (*Onopordum acanthium*), salt cedar (*Tamarix* spp.), tarweed (*Madia glomerata*), bindweed (*Convolvulus* spp.), water hemlock (*Cicuta Douglasii*), perennial pepperweed (*Lepidium latifolium*), blue spurge (*Euphorbia Myrsinites*), poison hemlock (*Conium maculatum*), jointed goatgrass (*Aegilops cylindrica*), platte thistle (*Cirsium canescens*), mullein (*Verbascum thapsus*), mulesear dock (*Wyethia amplexicaulis*), bullthistle (*Cirsium vulgare*), duckweed (*Lemna* spp.), and houndstongue (*Cynoglossum officinale*). New and invading species not currently known to occur on the Uinta National Forest, but which exist at locations nearby and thus could spread to National Forest System lands include Russian knapweed (*Centaurea repens*), yellow starthistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea maculosa*), purple loosestrife (*Lythrum salicaria*), and black henbane (*Hyoscyamus Niger*). Others may be present but unidentified and others can possibly invade Forest lands from adjacent areas.

These plants reduce the resource values on National Forest System lands and offer a seed source to spread to private lands or other portions of the National Forest. If the spread of these weeds is not controlled, they will significantly reduce crop production, livestock production, wildlife forage, and impact recreational uses and natural plant communities. These weeds occur throughout much of the middle to lower elevations scattered among the 979,117 acres within the boundaries of the Uinta National Forest.

Presently, awareness of the noxious weed and undesirable plant problem is confined largely to the agricultural and ranching communities and associated interest groups. However, the nature and extent of the problem transcends land ownership and uses. Weed infestations impact non-agricultural sites such as reservoir shoreline areas, campgrounds, big game winter range, road rights-of-way, timber harvest areas, summer home areas, transmission corridors, sewage lagoons, and wilderness areas. There is some evidence that other interests are becoming more concerned about this situation.

The Uinta National Forest has treated an average of about 2,340 acres of weeds per year since 1988 utilizing an IPM strategy. This included about 2,040 acres of chemical treatment and 300 acres of hand control (pulling and grubbing). About 740 acres of this was accomplished under a cooperative agreement with Utah County.

Species treated included musk thistle, Canadian thistle, leafy spurge, diffuse knapweed, whitetop, Bull thistle, Scotch thistle, burdock, and Dyer's Woad. Previous introductions of the Musk thistle seed head weevil (*Rhinocyllus conicus*) for biological control of Musk thistle made in 1982 have been effective in reducing the amount of viable seed produced in Diamond Fork, Center Canyon, and Currant Creek. Several introductions of a stem mining weevil (*Ceutorhynchus litura*) have been made since 1990 to help control Canadian thistle, but the success of this effort has not yet been determined.

A native rust disease (*Puccinia thlaspeos*) has been found to effectively reduce seed production in Dyer's Woad. This rust has been introduced into Dyer's Woad populations along the powerline corridor in lower Spanish Fork Canyon, but the disease is a slow spreader and the effectiveness of this introduction has not yet been determined.

A statewide program to control the spread of noxious weeds by limiting the use and transport of non-certified weed free hay, straw, and other livestock feed on National Forest lands in Utah was instituted in 1991. Vigorous enforcement of the program will be implemented this coming field season. This program is a part of the IPM approach currently in use to control noxious weeds.

As funds permit, a continuing program at approximately the 1993 level (~2,400 acres) will be carried out annually through 1999. If successful, there should be a reduction in the number of acres and amount of treatment needed as the program progresses. The Forest Plan schedules noxious weed control activities for each management area on the Uinta National Forest, except for the Lone Peak Wilderness. Minor invasions of Musk thistle have been recently located adjacent to the National Forest boundary in the western portion of this area. Any control activities carried out in this area will be by selective hand spray or hand grubbing and pulling.

The 1994 program proposes to use herbicides on 2,470 acres in various locations selected on a priority basis. Musk thistle control will be a priority as will the treatment of new invaders. Many of the proposed treatment sites will include areas treated during previous years, as viable seed and some unkilld plants remain in and adjacent to these areas. Other sites will include those of recent discovery or where weeds have spread into new areas from adjacent infestations. No aerial application is planned. All application of herbicides will be via ground methods. Where areas are accessible via vehicle, application will be by hydraulic pump powered boom sprayer or bean sprayer.

Hand-held backpack sprayers and "Herbie Sprayers" will be used to treat individual plants and larger infestations not accessible by vehicle. On occasion, heavier concentrations of Tordon or Tordon beads will be applied to achieve long-term control of target species in areas of difficult access or under other special circumstances. Table I, which follows, displays the treatment priority by species and preferred treatments.

TABLE I

Treatment Priority	Target Weed Species	Form 7/	Growth	Priority 3/	Alt. 4/	IPM	Preferred Control
Treatment List 1/							Method 5/
1	Dyer's Woad (<i>Isatis tinctoria</i>)	B	2-3	2-3	2		III, II, I
2	Leafy spurge (<i>Euphorbia esula</i>)	P	2-3	2-3	2		II, III, I
3	Yellow Starthistle (<i>Centaurea solstitialis</i>) A		1	1	2		II, III
4	Spotted knapweed (<i>Centaurea maculosa</i>)	B-P	1	1	2		II, III
5	Russian knapweed (<i>Centaurea repens</i>)	P	1	1	2		III, II
6	Squarrose knapweed (<i>Centaurea virgata</i>)	P	1	1	2		III, II
7	Diffuse Knapweed (<i>Centaurea diffusa</i>)	B	1	1	2		III, II
8	Perennial pepperweed (<i>Lepidium latifolium</i>)	P	1	1	2		II
9	Musk thistle (<i>Carduus nutans</i>)	B	3-2	3-2	2		II, III, I
10	Poison Hemlock (<i>Conium maculatum</i>)	B	2-3	2-3	2		II, IV
11	Scotch thistle (<i>Onopordum acanthium</i>)	B	2-3	2-3	2		III, II
12	Canadian thistle (<i>Cirsium arvense</i>)	P	3-2	3-2	2		I, II, III
13	Duckweed (<i>Lemna</i> spp.)	P	2	2	2		II, III
14	Salt Cedar (<i>Tamarix</i> spp.)	P	2	2	2		II
15	Hoary cress or whitetop (<i>Cardaria draba</i>)	P	2	2	2		II, III
16	Dalmatian toadflax (<i>Linaria dalmatica</i>)	P	2	2	2		II, III
17	Blue spurge (<i>Euphorbia myrsinites</i>)	P	2	2	2		II, III
18	Purple loosestrife (<i>Lyrtrum salaccaria</i>)	P	1	1	2		II
19	Jointed goatgrass (<i>Aegilops cylindrica</i>)	A	2	2	2		IV, III
20	Bullthistle (<i>Cirsium vulgare</i>)	B	3	3	2		II, III, I
21	Black henbane (<i>Hycocymus niger</i>)	A-B	1	1	2		III, II
22	Burdock (<i>Arctium minas</i>)	B	3-2	3-2	2		II, III
23	Houndstongue (<i>Cynoglossum officinale</i>)	B	3	3	2		IV, III, II
24	Platte thistle (<i>Cirsium canescens</i>)	P	3	3	2		III, II
25	Water Hemlock (<i>Cicuta maculata</i>)	P	3	3	2		III, II
26	Tarweed (<i>Madia glomerata</i>)	A	3	3	2		IV, II
27	Mullesear dock (<i>Wethia amplexicaulis</i>)	P	3	3	2		II, IV
28	Bindweed (<i>Convolvulus arvensis</i>)	P	3	3	2		II
29	Mullein (<i>Verbascum thapsus</i>)	B	3	3	2		II, IV, III

1/ Treatment Priority List - Priority and order weeds will be treated within available funding.

2/ Growth Form - A = Winter/Summer annuals
B = Biennial
P = Perennial

3/ Integrated Weed Management Priority - 1 = Potential New Invaders
2 = New Invaders
3 = Established Infestations

4/ Control Alternative - 1 = No Action
2 = Integrated Weed Management

5/ Preferred Treatment Method - I = Biological
II = Herbicide
III = Manual
IV = Mechanical
V = Prescribed Fire
VI = No Treatment

In addition to noxious weed control, some use of herbicides is also anticipated for use in the control of other unwanted, weedy species such as tarweed, salt cedar, and mulesear dock. On occasion, chemicals will be used to control unwanted vegetation in sewage treatment systems.

The Utah Department of Transportation (UDOT) uses herbicides for control of plants within their highway rights-of-way. Their District 6 Office located in Orem, Utah, has responsibility for this program on State and Federal highways within the Uinta National Forest. Currently, they carry out vegetation control programs on 3 Federal Aid Highways which encounter Uinta National Forest lands. These highways are U.S. 189 through Provo Canyon, U.S. 6 and 89 in Spanish Fork Canyon, and U.S. 40 through Daniels Canyon and Strawberry Valley. In addition, Utah Highway 35 is under reconstruction at the present time and could be considered for some herbicide use programs within the next few years.

UDOT uses several of the same chemicals used by the Forest Service as listed in the following paragraph for their plant control program, including 2,4-D, Glyphosate (Roundup), Dicamba (Banvel), and Picloram liquid solution. In addition, they also utilize a soil sterilant, Bromacil + Diuron (Krovar); the growth regulators, Sulfometuron (Oust); and a sodium-sesqui salt of Glyphosate (Manage).

The State's spray program for these highways, which is not expected to change within the next several years, is to completely sterilize the soil adjacent to all delineators and signs. An 8-foot swath immediately adjacent to the edge of the pavement is treated with a retardant early in the spring once each year. This strip is subsequently mowed twice during each field season. On occasion, special treatments are undertaken to control noxious weeds or other problems.

UDOT will be required to coordinate with the Uinta National Forest prior to undertaking any of these special treatment programs on highway rights-of-way located across National Forest System lands within the Uinta National Forest. As long as their program is in accordance with this EA, the State's activities will be covered by this document.

Chemicals that have been used in the Forest's program include 2,4-D Amine, Dicamba, Glyphosate, Picloram (Tordon 22K solution and 10K beads), Tebuthiuron (Spike), and Hexazinone (Velpar). Chemicals proposed for use under the revised program include those used heretofore, plus the following: Chlorsulfuron, Metsulfuron Methyl, Sulfometuron Methyl, Triclopyr, Fluridone, and Clopyralid.

The introduction of biological control agents are planned but the specifics of this program will depend on the development of more knowledge about such opportunities. The introduction of 2 USDA approved insects into Strawberry Valley, for the control of Canadian thistle is planned for this field season. These include a stem and shoot gall fly, *Urophora cardui* and a seed head weevil, *Larinus planus*. The possibility of introducing 2 other seed head fly species, *Urophora affinis* and *Urophora quadrafaciata* in the Vernon area to combat knapweed species has been discussed.

The largest concentration of target weeds is in the Diamond Fork, Spanish Fork River, and Hobble Creek drainages of the Spanish Fork Ranger District, and in the Strawberry Valley and Daniels Canyon areas of the Heber Ranger District.

Diamond Fork is the area where Musk thistle was first noticed on the Uinta National Forest about 27 years ago. Other areas where treatment will be concentrated are along stream bottoms, roadside zones, and areas disturbed by construction, livestock grazing use, or other land-disturbing activities. These are scattered in many areas throughout the Uinta National Forest. The areas most susceptible to adverse impacts from herbicide application are those areas adjacent to live stream courses or other water sources.

Diamond Fork was monitored prior to and following heavy application of herbicides between 1987 and 1990. The program was discontinued in 1991 because no problems were evident. Samples were taken at 4 locations in the Diamond Fork drainage, including at the National Forest boundary, just above Three Forks, on Sixth Water Creek above Three Forks, and at the upper tap of the Diamond Campground culinary water system. The results of this sampling indicated no detectable levels of either 2,4-D or Dicamba in any of the samples either before or after treatment at any of the sampling stations.

All herbicide applications will be completed in cooperation with local County Weed Control Districts, the Utah State Extension Service, and the Utah Weed Control Association, and all applicators will be under the direct supervision of a certified pesticide applicator. Forest Service crews will handle most of the hand application. It is anticipated that the Utah County Weed Control Department will complete between 40 and 50 percent of the control work on the Spanish Fork Ranger District, via vehicle-mounted sprayer under a cooperative agreement. Noxious weeds in campgrounds or other areas close to human habitation or activity will be controlled by hand grubbing or by chemical application procedures specially approved by the District Ranger involved. Where control is needed in the vicinity of sources of Municipal or other public water supplies, special precautions will be taken to coordinate with the agency responsible for the water supply.

Two endangered species inhabit areas on or near the Uinta National Forest where noxious weeds are a problem. They are the Bald Eagle (*Haliaeetus leucocephalus*) and the plant, Clay Phacelia (*Phacelia argillacea*). The Bald Eagle is present only in winter when they inhabit some of the main canyon bottoms including Diamond Fork, Salt Creek, Bennie Creek, Nebo Creek and the Vernon area. The Clay Phacelia is located just outside the Uinta National Forest boundary along the railroad tracks near the mouth of Clear Creek, in the mouth of Starvation Canyon in Spanish Fork Canyon, and in 2 locations on the north side of Highway 6 and 89 about 6 miles downstream from Tucker. These are the only known populations of this species.

A threatened plant species, the Ute Ladies Tresses (*Spiranthes diluvialis*), was discovered to occur in the riparian area on lower Diamond Fork in 1992. This was adjacent to areas which had been sprayed for many years to control Musk thistle. In 1993, subsequent inventory identified numerous individuals of this species in the same vicinity. In addition, 5 sensitive plant species 8 sensitive wildlife species are known to exist on or near the Uinta National Forest. They are the Garrett Bladderpod (*Lesquerella garrettii*), King woody aster (*Aster kingii* var. *barnebyana*), Dainty moonwort, (*Bostrychium crenulatum*), Rockcress (*Draba densifolia* var. *apiculata*), and Wasatch Jamesia (*Jamesia americana* var. *macrocalyx*).

Eight R-4 sensitive animal species have been listed as occurring in various habitats of the Uinta National Forest. They include the Spotted bat, the spotted frog, the Northern goshawk, the Western Big-Eared bat, the Flammulated owl, the three-toed woodpecker, and the Colorado and Bonneville cutthroat trout.

The Uinta Weed Control Program will follow the priorities listed on Page 6, Table I of this document. More effort will need to be placed on those items listed under Priority 1.- Potential New Invaders, than has been done in the past, to bring the Uinta program in line with these priorities. In the past, much of the Forest's effort has been spent on Priority 3 items. The transition to a fully IPM Program on the Uinta National Forest is expected to take at least 2 years because more people need to be educated and made fully aware of the program. This includes Forest Service employees as well as people in the public sector. The Uinta program includes a recently introduced effort to prevent the spread of noxious weeds on National Forest System lands by prohibiting the transport of hay and straw onto the Forest unless it has been certified as "weed free" by the State of Utah. The program is meeting with some resistance from the general public.

Issues and Concerns

Noxious weed control was neither an issue brought forth by the public during formulation of the Forest Plan, nor a concern listed by Forest Service personnel at that time. Control of noxious weeds was mentioned as an objective as a part of the range management goal to achieve satisfactory ecological conditions on all Uinta National Forest rangelands.

Public meetings on the proposed Regional FEIS and the Uinta National Forest Noxious Weed Control Program were advertised in the Provo Daily Herald during November 1985, and open meetings were held on November 25, 1985 at the Forest Supervisor's Office in Provo, Utah, and at Ranger District Offices in Spanish Fork, Heber City, and Pleasant Grove, Utah. Written requests for comments were also mailed to 76 local individuals, agencies, and communities. A total of 5 individuals attended the meetings, all expressing support for the Forest Service's Noxious Weed Control Program. In addition, 1 individual representing the Northern Utah County Soil Conservation District phoned expressing support for the program. No adverse comments on the FEIS or Uinta control programs were received. Additional support for the program has been received from County and State officials in the course of doing business with local weed control authorities.

Public reaction was sought by the Uinta National Forest concerning this revision effort to determine the main issues and concerns that control the scope of the proposed action. Public comments were requested by advertisement of a legal notice in the Provo Daily Herald on March 11, 1994 and by 153 letters sent to potentially interested public mailed on March 10, 1994. Only 3 letters and 2 telephone communications were received concerning the proposal. Of the letters received, the Sanpete County Commissioners and the Salt Lake District of the Bureau of Land Management (BLM) fully supported the proposal. Congressman Bill Orton's Office requested a copy of the final EA. The Mayor of Mapleton, Utah indicated a need to do more weed control along Forest Service trails and on private lands inside the National Forest boundary in the Left Fork of Hobble Creek. Provo City was concerned about the possible impacts of herbicides on their municipal water supplies.

Issues addressed in the Regional FEIS are considered pertinent to this proposal and will be addressed in this EA along with those brought forward by scoping for this specific proposal. They can be grouped as follows:

1. Noxious weed and poisonous plant impacts on downstream agricultural economics caused by spread from National Forest System lands (Impacts to other lands).

2. Noxious weed and poisonous plant effects on native vegetation, livestock, wildlife (particularly winter range), and watershed conditions (effects on other resources).
3. Effectiveness of the various control methods and need for integrated control and control method research (effectiveness of various control methods).
4. Human health risks including the risks to both project workers and the general public.
5. Possible impacts to Threatened & Endangered & Sensitive (T&E&S) species.
6. Control of weeds in wilderness areas.
7. Need to control weedy species in sewage treatment facilities (lagoons).
8. Control of undesirable weeds in reservoir drawdown areas.
9. Recent increases in acreage and number of undesirable weed species.
10. Potential impacts on water quality including the need to protect public drinking water supplies.
11. Effects of herbicide use on desirable vegetation.
12. Handling and storage of hazardous materials.

Alternatives

The National policy for the control of noxious and other weeds is to utilize some form of IPM for achieving weed control objectives. The Forest Service must adhere to this policy. Therefore, only alternatives that meet this policy are considered for controlling noxious, invading and undesirable weeds on the Uinta National Forest. Four alternatives are considered in detail. They are: (1) No Weed Control Program, (2) No Action - Continue Current Program, (3) Integrated Pest Management, and (4) Integrated Pest Management Without Herbicides. Other alternatives considered but dismissed include Mechanical Control, Prescribed Fire Control, and Integrated Pest Management With Aerial Application of Herbicides. The preferred alternative is IPM.

The alternatives are described as follows:

- (1) No Weed Control Program: Weed Control Program would be discontinued. Weed control funds would be turned back to the treasury or diverted to other purposes where they have been allocated from other sources.
- (2) No Action - Continue Current Program: The program would continue at about current levels but new herbicides now available for use could not be used and some plants not, heretofore, mentioned would likely go untreated or could not be effectively treated. The following would be included as program elements.

Target plants would be treated with 1 or more of the following management techniques: biological agents, herbicide applications, and manual techniques. The method or combination of methods selected would be determined using knowledge of target plant physiology and site specific consideration. Eradication or control of established noxious weeds is the objective of treatment. Prevention of new introductions is a priority element of this alternative.

(3) Integrated Pest Management: This alternative would expand the latitude of program managers to utilize more effective and environmentally compatible herbicides than are now approved for use and provide for treatment of additional species of concern which were not listed in the currently approved EA. The number of acres treated would remain about the same, but some acreage increases could take place dependent on specific needs. Otherwise, the alternative is very similar to Alternative (2).

(4) Integrated Pest Management Without Herbicides: Weed control program would be limited to mechanical, manual, and biological control measures. No herbicide use would be allowed and considerably fewer acres could be treated with existing funds.

Environmental Consequences

This section describes the environmental effects of the 4 alternatives to be evaluated in detail.

The purposes of implementing an IPM Program for control of undesirable weeds is that such a program can provide more effective, economic, and environmentally safe accomplishment of program objectives. Most of the concerns about implementation of such a program relate to the use of herbicides as a part of the program, or with the effects of failure to implement an adequate program to effectively control the undesirable plant species. Little concern was expressed about the proposal to control the targeted species or to utilize manual, mechanical, or biological means of control. Therefore, this analysis of impacts will deal largely with the proposal to use herbicides to achieve the desired results.

All of the herbicides proposed for use under this assessment have been approved by the U.S. Environmental Protection Agency. However, it is only lawful to use these chemicals in strict conformance with the label instructions listed on each individual product. It is the intention of the Uinta National Forest that strict conformance with such instructions, as well as adherence to other specific mitigating measures, developed as additional precautionary requirements will take place as individual project components are implemented.

The effects of the various alternatives can be adequately summarized with current knowledge. The recently developed "Risk Assessment for Herbicide Use In Forest Service Regions 1, 2, 3, 4, and 10, and On Bonneville Power Administration Sites" assesses the risks of utilizing the herbicides proposed for use and information from this document is incorporated by reference into this EA.

Additionally, although not raised as issues, the following items are documented with regard to their relationship to the 2 alternatives that include the use of herbicides. The situation will not be significantly different between either of those 2 alternatives.

1. Significant impacts on air quality are not anticipated. A residual odor from spray application will be present on a short-term basis.

2. Impacts to soil will be minor and short-lived because of the small magnitude of chemical use and the minor soil-disturbance nature of treatments.
3. Impacts on fish will be short-lived and slight because location, design, and geographic distribution of treatment sites.
4. Recreation and visual impacts will be short-lived. The major impact will be in the color contrast between treated and untreated vegetation. Design criteria will minimize exposure of Forest visitors to residual herbicides.

A comparative summary of the estimated effects of the various alternatives as they relate to the issues are listed in Table II as follows:

TABLE II

ISSUES	ALTERNATIVES			
	Alternative 1 No Weed Control	Alternative 2 Current Program	Alternative 3 Integrated Pest Mgt.	Alternative 4 IPM W/O Herbicide
1. Impacts to other lands	--	+	++	-
2. Effects on other resources	-	+	+	-
3. Effectiveness of various control methods	--	+	+	-
4. Human health risks	++	-	-	0
5. Impacts to T & E & S Species	0	-	-	0
6. Control of weeds in wilderness areas	-	+	+	0
7. Control of weeds in sewage lagoons	-	-	+	-
8. Weed control in reservoir drawdown areas	-	+	+	-
9. Increases in acreage & number of weed species	--	+	++	-
10. Potential impacts on water quality	-	0	0	0
11. Effects on desirable vegetation	-	+	++	0
12. Handling & storage of hazardous materials	++	-	-	++

Key to Symbols

- significant negative effect
- slight negative effect
- 0 no anticipated effect or compensating negative and positive effects
- + slight beneficial effects
- ++ significant beneficial effects

Alternative I No Weed Control Program

1. (Impacts to other lands)

If the Uinta National Forest's weed control program is discontinued there would be a much greater opportunity for target weeds to spread to adjacent private and other agency lands. Also, weed infestations would increase on National Forest System lands. This was a major public issue and would likely result in a great deal of dissatisfaction on the part of adjacent landowners. Local agricultural economies would suffer increases in weed control costs.

2. (Effects on other Resources)

With no weed control program an expanding population of target weeds would negatively impact various Forest resources. Less competitive species of desirable vegetation would be crowded out on some sites at an increasing rate. This would reduce the amount of forage available for livestock and wildlife. This is of particular concern on big game winter ranges where there is already a scarcity of desirable forage and where there are a number of undesirable weeds that compete with more desirable species. In some cases, this would also result in less satisfactory watershed conditions.

3. (Effectiveness of various control methods)

Under this alternative, there would be no difference in the effectiveness of any of the various treatment options or methods, as no treatment would be implemented.

4. (Human health risks)

Because there would be no program, there would be no human health risks resulting therefrom, except that there would be no opportunity to reduce the number of target plants that are poisonous and; thus, some increased opportunity for humans to come in contact with those plants such as water hemlock and poison hemlock would occur.

5. (Impacts to T&E&S Species)

With no control program there would be no opportunity for possible damage to T&E&S species by any treatment method. It is unlikely that lack of a treatment program would jeopardize any of the T&E or sensitive species of concern to the Uinta National Forest.

6. (Control of weeds in wilderness areas)

Without a weed control program there will be some continued spread of noxious weeds within wilderness areas. Inasmuch as, nearly all of these weeds are exotic species, not native to North America, this will result in a degradation of the natural ecosystem. Even with a treatment program, it is not expected that these undesired plants could be totally eradicated from wilderness areas.

7. (Need to control weed species in sewage treatment facilities)

Only a small amount of herbicide is used to treat undesirable plants in 4 sewage lagoon systems on the Uinta National Forest. If herbicide use is eliminated, then the systems cannot be operated properly or other methods of control will have to be devised.

8. (Control of weeds in reservoir drawdown areas)

Drawdown areas around reservoirs often provide sites that are often invaded by undesirable plant species. If no control program is available, this condition will worsen as undesirable species will have a competitive advantage in many instances.

9. (Recent increases in the acreage and number of undesirable weed species)

Without a weed control program there would be no opportunity to influence the number of acres and new starts of invading species in the area of concern. Natural processes would determine the floral composition of forest and rangelands in and surrounding the Uinta National Forest.

10. (Potential impacts on water quality)

If the weed control program is discontinued it will have no impact on water quality except that in some instances watershed conditions could deteriorate where target plants fail to provide adequate ground cover. This could provide some increase in erosion and resultant reduction in water quality. Public water supplies would not be adversely affected.

11. (Effects of herbicide on desirable vegetation)

There would be no effects because no herbicides would be utilized.

12. (Handling and storage of hazardous materials)

With no weed control program, there would be no need to handle and store these materials. Thus, there would be no adverse effects.

Action Alternatives

There are 3 levels of weed control that are considered for evaluation. They include:

(2) No Action -Continue Current Program; (3) Integrated Pest Management;

(4) Integrated Pest Management Without Herbicides. The consequences of these action alternatives are compared to each other as well as against the No Treatment Program Alternative 1 discussed previously.

The Uinta National Forest control proposals all give emphasis to controlling those infestations that could spread downstream from National Forest System lands. This is a major reason for the size of the program on the Uinta National Forest.

The herbicide application rates proposed for use in weed control will often be similar to those listed as maximum rates in Table III-B-2 of the Risk Assessment. For evaluation purposes maximum application rates will be evaluated. It is expected that our projects will be operated so that they fit within a typical scenario. No aerial application will be done, so drift distances can be expected to be 20' for backpack sprayers and 50' for mechanical ground application. Therefore, to protect water sources or selected vegetation, spray activities should stay a minimum of these distances away from these resources. To protect humans, spray activities should not occur within 50', using backpack sprayers, or 100', using ground sprayers, of unprotected individuals. Based on Table III-D-8 of the Risk Assessment, workers involved in the Uinta National Forest's weed control program could treat as high as 100 acres per day. All workers will be required to wear protective clothing when applying herbicides, as described on Table III-D-21 of the Risk Assessment. Application will cease when wind speeds reach 6 miles per hour. To date water has always been used as a carrier or diluent for herbicide application in the Uinta National Forest's weed control program and that situation is expected to continue.

1. (Impacts to other lands)

The current program has successfully reduced the number of weeds; thus, the source of additional seed supplies to infest other lands. If the current program is continued, local economies will improve slightly from increased resource production (both Forest and private) and from expenditures for control actions. Increased resource production includes agricultural businesses, recreation, road rights-of-way, real estate values, and wildlife habitat. Public concerns about the need to improve and expand the program will remain at about the same level or will increase slightly.

2. (Effects on other Resources)

Terrestrial vegetation will be the most affected environmental component. Design criteria will keep the amount of non-target plant damage to a small level. The only non-selective herbicide used on the Forest will be glyphosate; its use will be minor. All other herbicides do not affect grasses.

Livestock impacts will be minor. Design criteria and label directions will require some additional management; however, herbicide rates will be so low that there should be no significant effect on animals. Improvement of range condition and forage production can be expected in most treatment areas as a result of reduced competition with target weeds and from reseeding of some areas which are heavily infested.

Wildlife habitat will be improved through replacement of weeds on critical winter range. Under the existing program, no wildlife species are likely to receive toxic or fatal doses of herbicides. Selected herbicides show low or no tendency to bio-accumulate. Table III-H-2 indicates that the risk to all species of animals listed is low from the chemicals proposed for use. The risks involved are actually lower than those listed because the predicted risks are based on aerial application of herbicides and no aerial application is proposed.

Impacts to water resources will be minor and short-lived because of the small size and geographic distribution of treatment areas and the precautions taken in completing the work.

3. (Effectiveness of various control methods)

The existing program has been quite effective, however, experience gained in implementation of the program indicates that there is room for improvement. There are some weeds that need more attention and new and better herbicides are now available for use that could make the program more effective and safer to some degree.

4. (Human Health Risks)

A Human Health Risk Analysis was developed and is included in Section III-E of the new Risk Assessment. This reveals that herbicide applicators have the greatest potential for exposure to chemicals. The general public is not likely to be exposed because of the remote characteristics of most treatment sites and because of the nature of the herbicides used. Project design criteria will reduce exposure of both groups to acceptable levels.

It is considered that of the public scenarios listed in Table III-D-9 only immediate reentry into a treated area by a hiker is likely to occur in the Uinta National Forest. For weed crew workers, however, it is quite possible that they could receive dermal exposure from a spill of concentrated or mixed herbicide. Based on Table III-E-3, the public is not at risk from any herbicide used in the existing or proposed program.

There is some risk to workers. Based on Table III-E-4, there is a moderate risk to backpack applicators for systemic effects if 2,4-D or hexazinone are used, or if diesel oil is used as a carrier. There is also a moderate risk to backpack applicators for reproductive effects if dicamba is used, or if diesel oil is used for a carrier. For ground mechanical operations there is a moderate risk for systemic effects to mixer/loaders who work with 2,4-D or diesel oil and for reproductive effects when diesel oil is used as a carrier. For those who use hand application methods, 2,4-D, Hexazinone, and either diesel oil or kerosene can cause moderate systemic effects. These same applicators run the risk of moderate reproductive effects when they utilize 2,4-D, dicamba, diesel oil or kerosene.

Although not likely, there is the possibility an accident could occur. Several such scenarios are listed in Table III-E-5 of the Risk Assessment. The most likely of these from a public exposure standpoint include "Dermal Exposure From Hiker Contact with Just Sprayed Vegetation" and "Dietary Exposure From Fish From Directly Sprayed Water". Workers could be exposed by spills of concentrated herbicide or mixed herbicide, or by being sprayed directly with the chemical. If an accident should occur, several of the chemicals proposed for use could cause either moderate or high risks for either systemic or reproductive effects, as displayed in the aforementioned table on Page III-E-9 of the Risk Assessment.

The risk to the public and herbicide crew workers involved in the Utah Department of Transportation's Highway Rights-of-way Herbicide Application Program is listed in Tables III-E-12 to III-E-14 of the Risk Assessment. No effects to the public are anticipated from this program. However, the use of diuron could cause moderate to high risk to project workers.

Tables III-E-15 thru III-E-17 display the possible effects on human health for herbicide use at recreation/administrative sites. Once again, the Uinta National Forest's program is not expected to produce any effects on the general public. Hand application of 2,4-D,

hexazinone, or tebuthiuron could cause moderate systemic effects to backpack operators and 2,4-D could have the same effects on those using hand application methods.

Tables III-E-18 thru III-E-20 display the anticipated effects on human health when herbicides are applied in riparian areas. Again, no effects are expected to the general public from the Uinta National Forest's program. As in recreation areas and administrative sites, the use of 2,4-D and hexazinone could cause moderate systemic effects to backpack applicators and 2,4-D could effect hand applicators in a similar manner. The use of dicamba could have moderate reproductive effects to both backpack applicators and those who do hand application. As with all the situations previously discussed, an accident could produce moderate to high risk systemic and reproductive effects from several of the chemicals proposed for use.

Tables III-E-3 thru III-E-20 should be consulted if questions arise concerning the specifics of the risks to human health of using any herbicide or carrier for the project proposal. It is virtually impossible to summarize all of the material presented in the risk assessment in a meaningful way. Also, the narrative in Section III-E displays the risk of using herbicides, but that will not be repeated here.

Alternative 2 is expected to be of slightly more risk to humans than Alternative 3 would be, because under Alternative 3, some herbicides of less risk to the human environment would sometimes replace those of higher risk as treatment options are selected. Alternative 4 would result in no risk because herbicides would not be used, but some increased risk from the use of haul tools and mechanized equipment would result.

5. (Impacts to T&E&S Species)

Three threatened and endangered species are known to exist within or near the Uinta National Forest in areas where control of noxious weeds is likely to take place. The Bald Eagle is a winter resident only in the areas where project work is likely to occur. Noxious weed control activities will take place during the spring through fall period when the eagle does not inhabit the area. Disturbance will not occur as a result of such control activities. None of the control activities are expected to adversely affect the Bald Eagle's habitat or present any hazard for this species.

The Clay Phacelia is not known to inhabit the Uinta National Forest; however, the only known populations of this species occur within 1/2 to 3/4 mile of the Forest boundary on sites which are similar to some found on the Forest. It is possible that unknown populations could exist either on or near the Uinta National Forest. A recovery plan for this species has been prepared. Basically, the recovery plan calls for protecting existing populations, determining if other populations are present, and investigating the possibility of supplementing existing populations so that the plant can be delisted.

Inventories conducted during the past 2 field seasons, discovered the presence of the threatened, Ute ladies tresses in lower Diamond Fork on the Uinta National Forest. This species is located in an area adjacent to where considerable Musk Thistle control activities have taken place during recent years. Management plans for this species have not yet been prepared.

The following measures are considered adequate to assure that control activities do not further threaten the existence of these plants and other sensitive species discussed hereafter.

Five species of sensitive plants listed by the Intermountain Region exist within or adjacent to the Uinta National Forest. They are *Aster kingii* var. *barnabyana*, *Botrychium crenulatum*, *Draba densifolia* var. *apiculata*, *Jamesia americana* var. *macrocalyx*, and *Lesquerella garrettii*. Eight R-4 sensitive animal species have been listed as occurring in various habitats of the Uinta National Forest. They include the Spotted bat, the spotted frog, the Northern goshawk, the Western Big-Eared bat, the Flammulated owl, the three-toed woodpecker, and the Colorado and Bonneville cutthroat trout. The steps mentioned in the following paragraphs should adequately protect these species from impacts. These mitigation steps are:

1. Before any herbicidal weed control efforts are undertaken, qualified personnel will delineate areas where those threatened, endangered and sensitive species are found or are likely to be found. No herbicides will be used in areas where an impact is likely to occur on federally designated threatened or endangered or Forest Service sensitive species.
 2. In cases where control must be undertaken in known or suspected threatened or endangered or sensitive species habitat, qualified personnel will conduct a site-specific assessment of the presence and distribution of the species and recommend the use of a control technique that would not adversely affect the species.
 3. In no instance will a noxious weed or poisonous plant control operation be undertaken where there is a reasonable likelihood of a threatened, endangered, or sensitive species being adversely affected. Impacts are not anticipated on threatened, endangered or sensitive species under any of the alternatives listed for consideration. A biological assessment and evaluation addressing this situation is found in the Appendix.
6. (Control of weeds in wilderness areas)
- Since the Forest Plan was prepared, 2 additional wilderness areas have been designated on the Uinta National Forest; the Mt. Nebo and the Mt. Timpanogos Wildernesses. Noxious weed control is allowed under the Forest Plan for the 2 management areas in which these wilderness areas are included. The other wilderness area on the Forest is the Lone Peak Wilderness. Musk thistle has invaded inside the western boundary of the latter wilderness and may be present in the other areas. Control of noxious weeds within the wilderness areas will be allowed by grubbing and by hand or backpack application of chemicals as approved for specific situations by the Forest Supervisor. There should be little difference between Alternative 2 and 3, as far as control of weeds in wilderness areas are concerned, as no large control efforts are anticipated. However, Alternative 3 would be expected to be slightly more effective than Alternative 2, and both of these alternatives which provide for herbicide use would be expected to be more effective than the other 2 alternatives that allow for no such use. Alternative 4 would be somewhat less effective and more expensive than the other 2 action alternatives.
7. (Need to control weeds in sewage treatment facilities)

The concern for the need to control aquatic weeds in sewage treatment facilities was brought to light during the Interdisciplinary Team's discussion of issues relevant to the project. The herbicide, fluridone, is proposed for this purpose. This is the only aquatic herbicide proposed for use under the Uinta National Forest's proposed weed control program. No known risk assessment has been completed for this herbicide. Because this product will only be used in closed systems where the water treated is contained on site no significant impacts to the environment are expected. Only a small amount of herbicide is used to treat undesirable plants in 4 sewage lagoon systems on the Uinta National Forest. If herbicide use is eliminated, the systems cannot be operated properly or other methods of control will have to be devised. Under Alternative 2, fluridone is not approved for use so other modes of aquatic weed control would need to be found. Only Alternative 3 would provide for effective control of these target species.

8. (Control of weeds in reservoir drawdown areas)

The large amount of shoreline at Strawberry Reservoir and the relatively large fluctuation of the water level at Strawberry and some other reservoirs on the Forest, leaves considerable drawdown areas susceptible to invasion of undesirable, weedy plant species. The current action would allow some treatment of these weeds, but not as effectively as would Alternative 3 because the use of some more selective, environmentally safe herbicides would not be approved for use. Thus, there could be some additional impacts in these areas due to their proximity to water. These would not be as serious, as the herbicides used are not persistent in the soil; thus, would be unavailable to contaminate reservoir waters as the levels rise. Alternative 1 would provide no effective control while Alternative 4 would provide some control, but would not be as effective as Alternatives 2 or 3.

9. (Recent increases in acreage and number of species of undesirable weeds)

The acreage of undesirable weeds has increased during the period that the current control program has been in effect. The main reason this has occurred is because of the acquisition of the Strawberry Valley lands by the Forest Service. In addition, there are more species of new and invading weeds that have become a concern since the original EA was approved in 1988. Many of these do not presently exist on the Uinta National Forest, but are found in close enough proximity that they are now of concern. If they are discovered within or directly adjacent to the Forest, they will be treated with the intent of eradication of such populations. The opportunity for such action to be successful would be much greater under this alternative than under Alternatives 1 or 4, but the opportunity for success would be better if Alternative 3 is initiated.

10. (Potential impacts on water quality)

Concerns were expressed by Provo City about the possible use of herbicides on recharge areas in the vicinity of their municipal water sources. The Forest Service assumes that other municipalities might have similar concerns. There may also be others who are concerned with the effects the proposal may have on water quality of surface waters. Internal concerns about this issue have also surfaced. The distances required to protect the human health risk to water sources and berries from drift from spraying activities associated with backpack and ground methods should be sufficient to protect surface waters from unacceptable pollution levels. As described in Table III-D-2, this buffer will be a minimum of 20' when herbicides

are applied using backpack sprayer or 50' when applied by ground mechanical sprayers. In addition, whenever herbicide use is proposed for weed control in the vicinity of any public drinking water supplies, city or other responsible officials will be contacted to evaluate the proposed treatments. Any of the alternatives should adequately protect water quality, however Alternative 3 should be slightly more effective than Alternative 2.

11. (Effects of herbicide use on desirable vegetation)

No aerial application of herbicides is proposed. This should greatly diminish the possibility that desirable vegetation will be damaged. Special precautions will be required whenever threatened and endangered plant species are involved. Selection of the proper pesticide and control strategy should assure that unacceptable damage to vegetation will not occur. Alternative 2 would likely be less effective than Alternative 3, in that the array of herbicides available for use under the existing program do not give the degree of selectivity that it offers. If herbicides are not available for use as under Alternatives 1 and 4, there is no possible effect from that use. However, desirable vegetation could be lost as it is replaced by invading weed species, that are more competitive.

12. (Handling and storage of Hazardous Materials)

There is some hazard in handling herbicides even though they are approved for use by the EPA. Care must be taken to handle and store these materials in accordance with label instructions and other government rules and regulations. Because some new and safer herbicides would not be available for use under Alternative 2, that alternative would result in a slightly greater risk from a safety standpoint than would Alternative 3. Either Alternative 1 or 4 would result in no risk from hazardous materials because they would not be utilized. However, Alternative 4 would result in a greater risk to workers from the use of handtools because that would be the main method of control and many more worker hours would be required to achieve the desired control.

Implementation, Project Administration, and Mitigation Measures

Certain measures and constraints will be met in carrying out the noxious weed program outlined herein. More specific information concerning preconditions related to project work will be included in specific project plans, Pesticide Use Proposals (Forms FS-2100-2), which will be prepared and submitted for approval on an annual basis.

Priorities for the Noxious Weed Treatment Program are in accordance with national direction. They are as follows: (1) education to identify potential new invaders, (2) eradication of new invaders, (3) treatment of established invaders. Special consideration will be given to treatment of areas adjacent to private lands, along routes of spread, and to isolated outlying populations having the potential to spread rapidly into adjacent areas. Poisonous plants will be treated only where significant livestock losses have occurred or where there is a high risk to human health and will be covered by a separate site-specific EA or Categorical Exclusion. Of necessity, all of the above priorities will be implemented concurrently, but if one priority must give to assure the successful accomplishment of another, then the higher priority will take precedence.

A. The Uinta National Forest will provide training for all fieldgoing personnel to acquaint them with identification of noxious weeds which exist on the Uinta National Forest. Such personnel will be requested to notify either the Forest Range Staff Officer or the District Resource Staff Assistant should they encounter suspected populations of a weed which they believe may be uninventoried. This training will also cover identification of the endangered and sensitive plant species listed for the Uinta National Forest and the same reporting requirements will be instituted for these as for noxious weeds. The Forest will also explore the implementation of a bounty system on new invasions of Priority 1 and selected species of Priority 2 weeds.

- B. An attempt will be made to develop an ethic within the Forest employees and the public similar to that exemplified by "can collection" to take action on noxious weed control along roads in small isolated areas; i.e., if just a few weeds are encountered in an area, get rid of them while you are there.
- C. An inventory update will take place each year to provide current information on weed infestations.
- D. Biological agents will be introduced as feasible. The success of introducing the Canadian thistle stem mining weevil will be evaluated. Musk thistle head weevil introductions may be continued as a control agent for Musk thistle. Because Musk thistle has continued to spread despite the introduction of weevils in the early 1980's, biological control will be supplemented with the use of herbicides.
- E. Completed surveys will be reviewed for threatened and endangered species prior to treatment. Where areas have no documented survey, one will be initiated. If a threatened and endangered species is present, a biological assessment will be made to identify how the species will be affected. If an impact is likely, no herbicides will be used. Clay Phacelia and Ute ladies tresses have been identified on or near the Uinta National Forest. Before applying herbicides in areas where these species or Forest Sensitive plants may exist, the steps listed under the "Issues and Concerns, Threatened, Endangered, and Sensitive Species" Section and in the biological evaluation and assessment in the Appendix of this document will be completed.
- F. A review of the literature and interviews with weed scientists show that a major cause of noxious weed invasion and establishment is human-caused soil disturbance. Also, many of the weeds of concern are sensitive to shading and competition from other plants. The results of field reviews and analysis of noxious weeds on National Forest System lands in Montana found a direct correlation between soil disturbance and noxious weed invasion (Losensky, 1987). This finding is reinforced by field observation on the Uinta National Forest. Most of the noxious weed problems occur along roadside zones, recently disturbed construction areas, areas of heavy grazing disturbance, barren areas, or areas of less than satisfactory ground cover where the seedlings of these invaders can gain a foothold and compete with existing vegetation.

All Forest management programs should consider the need to provide immediate restoration of plant cover consisting of desired plant species a high priority. Proper management of the Forest's grazing program provides the greatest potential to achieve control and containment of noxious weeds. Grazing prescriptions in revised Allotment Management Plans will give

consideration to these needs. Vigorous enforcement of the Forest Travel Management Plan will also reduce the amount of unnecessary land disturbance and thus, the opportunity for spread of noxious weed. Revegetation programs will utilize seed tested to be free of noxious weed seeds.

G. Cooperative agreements between the Forest Service and the Counties and other landowners will be reviewed annually and updated as needed with annual work plans to facilitate control of weeds on lands with mixed ownership.

H. The following are required for monitoring:

1. Each year, the Forest Hydrologist will review the proposed pesticide program and recommend what water monitoring should occur, and the Forest Water Quality Monitoring effort will be revised in accordance with these recommendations.
2. Photo points will be established in representative areas to assess effectiveness of treatment.
3. Weekly field evaluations will be made of each crew's work to determine effectiveness of treatment.
4. Post-project evaluations will be completed annually to review the effectiveness of the past year's program.

Safety and Herbicide Use Controls

1. A work plan which includes a safety plan will be developed by each Ranger District for use by treatment crews each year. This plan will include an evaluation of that year's site specific pesticide use proposals indicating that the planned work is within the constraints of the Moderate and High Risk from Accidents Tables in the Risk Assessment. The following requirements, in addition to any other requirements specific to the annual project proposals, will also be included in the safety plan.
2. Applicators of herbicides will be licensed by the State of Utah. Training will be provided for proper plant identification, safety, and proper application.
3. Daily records will be kept identifying treatment area, species, applicators, and herbicide.
4. Amitrole, atrazine, and simazine will not be used for treatment. Other herbicides not listed for use in this EA may be used only if a supplement to this document justifying their use is prepared.
5. For chemicals used, the EPA label requirements will always be followed.
6. Livestock permittee grazing areas scheduled for treatment will be notified in writing that animals consuming forage treated with 2,4-D or Picloram will not be slaughtered for food within the time period specified on the label. Dairy animals will not be allowed to graze on areas treated with 2,4-D, Dicamba or Picloram.

7. Require the use of rubber gloves, liquid repellent footwear, full-length pants, and long sleeve shirts for all hand applications of 2,4-D.
8. Require mixers/loaders to wear full length pants, long sleeved shirts, full length aprons, face shields, rubber gloves, and liquid repellent footwear during mixing and loading operations.
9. Provide sufficient available water at mixing, loading, and storage sites to assure an opportunity for workers to wash off any herbicide splashed inadvertently onto the skin. Workers shall wash their hands before eating or smoking and at the end of the day's work.
10. All herbicides will be stored in the temporary storage facility at the Heber and Spanish Fork Administrative sites, in the permanent storage facility at Utah County's Public Works Facility, or other approved storage sites.
11. Herbicides will be transported to the field in small quantities—just enough for the day's work. A sign signifying the presence of herbicides will be posted on the vehicle used for transport.
12. Spray tanks will not be washed out in or near streams and chemical containers will not be disposed of on the treatment area. Chemical containers will be disposed of according to label directions and State Department of Environmental Quality regulations.
13. Herbicides will be mixed and loaded in an area where an accidental spill cannot flow into a stream or water body. Any herbicide use adjacent to streams will be carefully controlled to avoid introduction of herbicides to water bodies.
14. Herbicide containers will be rinsed 3 times and the rinse water dumped into the mixing tank. The empty containers will be taken to a landfill for disposal. Each empty container will be punched with a hole in the bottom.
15. Noxious weeds within campgrounds will be grubbed unless the District Ranger approves the use of an herbicide.
16. Application will be timed to coincide with early bolting and formation of flower structures. Of necessity, the Uinta National Forest's program will also include spraying early in the spring when plants are in the rosette stage and in the fall when new seedlings have sprouted.
17. Applications will be well-controlled to prevent treatment of nontarget plants.
18. Applications will be halted if wind speeds reach 6 mph at eye level.
19. Pump pressure will not exceed 30 psi, and nozzles will be adjusted for course spray to avoid drift.
20. No spraying will be done when temperatures exceed 80°F to avoid volatilization of herbicides into the air.
21. Spraying will not be done if significant precipitation is expected within 2 hours of treatment.

22. Unless label requirements or other mitigation needs are more strict minimum spray distances from live water application will be 20' with backpack sprayers and 50' when mechanical ground application is involved, except that fluridone may be applied directly to water surfaces in sewage lagoons. No spraying with backpacks should be done within 50' or within 100' with mechanical ground equipment of unprotected humans or animals.

23. If herbicide treatment is proposed in the vicinity of municipal or other public drinking water supplies, officials responsible for those supplies will be contacted to provide input regarding the need to protect those water sources.
24. In line with concerns for reproductive health in Table III-E-4 of the Risk Assessment, female workers will not be allowed to apply more than the maximum exposure amounts of 2,4-D, dicamba, or diesel oil per day listed in Table III-E-21 of the Risk Assessment.
25. For other health reasons, no workers will be allowed to apply more than the maximum exposure amounts of 2,4-D, hexazinone, or diesel oil per day listed in Table III-E-21 of the Risk Assessment.

Cummulative Effects

The cumulative effects of this proposal are expected to be insignificant even though the program is long term.

Irreversible or Irretrievable Commitment of Resources

The proposal will not result in any irreversible impacts nor any irretrievable commitment of resources.

List of Agencies, Organizations, and Persons to Whom Requests for Comments Were Sent

Utah Wilderness Association
 Juab County Commission
 Wasatch Mountain State Park
 Spanish Fork Livestock Association
 Granite School District
 Jay F. Harmer
 Henry Jolley
 Pete and Judy Castagno
 Utah Division of Wildlife Resources
 Roger Wilson
 Bureau of Land Management
 State Office
 Bureau of Land Management
 Salt Lake District Office
 Audubon Society, Utah County Chapter
 Lillian Hayes
 Senator Robert F. Bennett
 J. Collin Allen
 Mayor, Payson City
 Mona Irrigation Company
 Utah Association of Soil Conservation
 Districts
 Utah Wildlife Leadership Coalition
 Mayor, Alpine City
 American Fork Irrigation Company
 Randy Allinson
 Tooele Wildlife Federation
 Forest Supervisor
 Ashley National Forest
 John M. Childs
 Vernon Irrigation Company
 Utah Division of Water Resources
 Utah Farm Bureau Federation
 Wayne Urie
 Daniels Irrigation Company
 Eco-Response Club,
 Brigham Young University
 Mayor, Spanish Fork City
 Roy Anderson
 Utah Department of Agriculture
 Wasatch County Commissioners
 Gardner Canyon Irrigation Company
 Lake Fork Ranch & Cattle Company
 Utah Division of Wildlife Resources
 Jordan Pedersen
 Vernon Irrigation Company

Soil Conservation Service
 Forest Supervisor
 Manti-LaSal National Forest
 Mayor, Heber City
 Juab County
 Mayor, American Fork City
 Utah Farm Bureau Federation
 Tom Bingham
 Payson Livestock Association
 Mayor, Mapleton City
 Center Street Irrigation Company
 Jordan Tanner
 Cosetta Castagno
 Sunny Slope Ditch Irrigation
 Mayor, City of Provo
 Hamilton Farms Limited L.W.
 Salt Lake Cottonwood Stake
 Strawberry Reservoir Marina
 Koholowo Organization Camp
 Utah County Health Department
 Mayor, Highland City
 U.S. Fish & Wildlife Service
 Wayne Butterfield
 Butler Stake
 Juab Cattle Association
 Eldon Butterfield
 Utah Wildlife Resources
 Steve Kearn
 Big Springs Riding Stable
 Utah Wildlife Federation
 Gerald E. Gordon
 Vance Aagard & Son, Inc.
 Utah County Planning Commission
 Mapleton City Corporation
 Soil Conservation Service
 Silver Lake Flat Summer Home
 Summit County Planning Commission
 J. Reed Rowley
 Howard C. Sumsion
 W. S. Brimhall
 Juab County
 Board of County Commissioners
 Sundance
 Sergene Bennion
 Piute Organization Camp
 Utah Association of Counties

Albany City Mayor, Springville City
Tanner, Darrell of Farms
Timpanogos Archery Association
Mayor, Santaquin City
David O. Allred Trust
Mayor, Pleasant Grove
Daniel Wright & Earl & Geneva Morgan
Utah State Planning Commission
American Fork Irrigation Company
Utah Wild Turkey Federation
Utah Woolgrower's Association
Cooperative Security Corporation
Tooele Stake
Springville Livestock Association
Aspen Grove Recreation Area
Mayor, Lehi City
Strawberry Water Users
American Fork, Pleasant Grove,
Lehi Irrigation Companies
Congressman Bill Orton
Jess R. Bushman
Rock Canyon Preservation Alliance
Sanpete County Commissioners
Alpine Irrigation Company
Tooele County Development Services
Triangle Ranch, Inc.
Timpanogos Archery Association
Dallas Smith
Animal & Plant Health Inspection
Stonefly Society
Sierra Club
Christine Osbourne
Sierra Club
Mark A. Clemens
Utah Department of Natural Resources
& Energy
Bryants Fork Summer Homes Inc.
North Fork Special Service District
Mapleton Irrigation Company
Strawberry Water Users Association
Gary Aitken
Calvin E. Olsen Ranch, Inc.
Forest Supervisor
Wasatch-Cache National Forest

Utah Association of Counties
Brent Gardner
W. R. Liechty
Marvis Clyde
Merrill Beckstrom
Tooele County Commission
Mayor, City of Draper
Wilson Brother Livestock
West Daniels Cattle
Harker Creek Irrigation Company
Society of American Foresters
Juab County Livestock Association
Mayor, Lindon City
Utah Department of Environmental Quality
Strawberry Reservoir Marina
Lamar Christensen
State of Utah
Division of State Lands & Forestry
Mayor, Sandy City
Tibble Fork Summer Home Association
Mayor, City of Orem
Nephi Irrigation Company
Ronald L. & Ann Alloway
H.R. Livestock
Pleasant Grove Irrigation
Mayor, City of Nephi
Childs Ranches
Gardner Canyon Irrigation Company
Utah County Commissioners
Granite School District
Claudia Thorum
Harker Creek Irrigation Company
Mayor, City of Midway
Utah Cattlemen's Association
Pleasant Grove Sportsman Club
Jay L. Diamond
Uintah County Commissioners
Audubon Society, Utah Chapter
Wayne Martinson
Utah Water Users Association
Dr. George S. Burbridge
Congressman James V. Hansen
Senator Orrin Hatch

List of Preparers

Paul H. Skabelund	Watershed Specialist & Pesticide Coordinator	Team Leader & Soil & Water Evaluation
Ron Torgerson	Range Conservationist	Vegetation & Livestock Impacts
Lee Mabey	Fisheries Biologist	Fish & Wildlife and T&E Species Effects
Brent Spencer	Forester	Recreation Effects