

Component 1: Coordination of Weed Control

2011 Annual Report

Prepared for:
Trustee Council for Natural Resources at Rocky Flats

Submitted to:
**Colorado Department of Public Health and Environment
Under PO FEA HAZ 104960**

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A. INTRODUCTION

This is the 2011 year end weed control report for the 16 land owners/managers of the properties surrounding Rocky Flats National Wildlife Refuge with lands most likely to provide unwanted noxious weed seeds to the property. These sixteen are listed in Appendix 1 which also provides of map of their properties. In this report we discuss contact and activity with each of these owners/managers, focusing on visitation, discussion and assessment of each weed control program.

Nearly all of the 16 owners/managers were highly cooperative with JCNA, and most have had a noxious weed control program going on for some time. An analysis of each of the 16 follows. A summary table on individual properties is provided following the reports.

B. OWNER/MANAGER REPORTS

The reports on individual properties surrounding the Refuge are organized below by the numbering system used on the map in Appendix 1.

I. CDOT. The Colorado Department of Transportation performs weed control on three highways around Rocky Flats: 72, 93 and 128. It has maintained its spray program for about 10 years and expends considerable funds on weed control throughout the state as it is highly important to CDOT.

CDOT uses various chemicals depending on plants and circumstances. They use Milestone and Tordon, often mixing in 2,4-D and Dicamba, the mix depending on the timing and condition of the vegetation. Their goal is to promote denser grassland that will keep out the weeds. Much of the right-of-way has good prairie with native grasses and forbs, and these areas are not sprayed. The ROW is narrow along the east side of Highway 93 (about 30'), but 100' along the western side. The ROW is of variable width, and often greater than 100' along Highway 128.

This year JCNA toured the area on 28 June with the person who does the spraying, Mark Slayton, who is under the direction of Myron Cunningham. This is his second year doing the spraying here. He can do the 30' wide ROW's with a single pass of his boom truck. Wider areas may take three or more passes. In some of the areas along Highway 128 there is no truck access, and here he uses a portable sprayer that can be carried 100' from the chemicals on the truck. All ROW areas may take a total of three days to spray, primarily because he must go past Arvada to fill his tank with water for each run, thus consuming a lot of extra time. Mark is familiar with areas that contain native grasses and forbs and avoids spraying in such areas. His major problem is a thistle patch south of Highway 128 where the thistles keep invading the ROW from the Refuge to the south, which is highly infested and has very little weed control.

JCNA rates their weed control program in the Rocky Flats area this year as GOOD.

2. BCOS. Boulder City Open Space has lands west of Highway 93 and an area north of Highway 128. The southern portion of the land west of Highway 93 is Section 17, adjacent to Section 16, and any weed seeds would blow directly from that site to Section 16. Their lands north of the Refuge are separated from the Refuge by the NREL wind farm. BCOS has two weed coordinators. Laurie Deiter is the weed coordinator on lands west of Highway 93 while Eric Fairlee directs activities north of the Refuge along Highway 128.

The land west of Highway 93 has some of the best xeric tallgrass prairie in the Rocky Flats area. Their major noxious weeds in this area are diffuse knapweed, Dalmation toadflax and sulfur cinquefoil. They intend to update their weed location map of this area next year and plan to pull up these weeds with their crew. JCNA was able to visit this area with Laurie on 18 November. The 30' UP power line ROW along the north side of Highway 72, which crosses this area, was disturbed in 2010 and then reseeded with native species. The area shows excellent cover due to the timely and abundant rainfall in late spring and early summer this year and minimal disturbance (only a 6' wide strip) by the power line crew. They also replaced the top strand of the barbed wire fence with a non-barbed and white plastic strand to make the fence more wildlife friendly. The new power line easement now goes along the north side of Highway 72, instead of directly through the Jewel Mountain Open Space.

Laurie has some concern about a minor invasion of annual goat grass, and invading knapweed resulting from prairie dog activity in the SW corner of the Jewel Mountain Open Space. These weedy areas will be closely monitored and if necessary, spot sprayed with Milestone. Weed control for next year will be done with contract services as well as staff.

The BCOS land on both sides of Highway 128 (and east of Highway 93) is under the direction of Eric Fairlee. This year no treatments were applied owing primarily to the unexpected shortening of the season by snow and cold, and was consequently not visited by JCNA. They had intended to spot spray for both knapweed and toadflax.

JCNA rates their weed control program this year as MEDIUM.

3. Boulder County Open Space. The Boulder County open space lands are immediately north of Highway 128 and east of the lands administered by the City of Boulder. They thus border the north boundary of the Refuge for over two miles. Steve Sauer, weed coordinator for Boulder County Open Space, led JCNA on a trip through the County open space area on 21 July. We visited the Tordon sprayed 100 acre Meyerhoffer field just west of McCaslin Boulevard and about a mile north of Highway 128. Spray application last year killed virtually all noxious weeds and a great deal of Japanese brome and the field is essentially weed-free now. Our inspection revealed a heavy perennial grass cover. The adjacent field to the west was again used as a "Cows Eat Weeds" active area grazed by Hogan cattle and the results from these two approaches will be interesting to compare next year. The Tordon-sprayed area should provide a weed-free grassland highly resistant to weed invasion.

One of the County's major problems is the blowing of dead knapweed plants containing viable seed from the "Cows eat weeds" field and the Boulder City lands to the west. Windrows of dead knapweed occur along their north-south fences providing an invasion source for County lands.

We also toured the area south of the Meyerhoffer field, and noted only a few knapweed areas. The County spot sprays this area regularly and carries out a cattle grazing program in addition. Sauer also continued controlled grazing adjacent to Highway 128 and sprayed some areas north of the highway for knapweed using Milestone. The County weed program continues to be a good control on the north edge of the Refuge.

JCNA rates their weed control program as GOOD.

4. NREL. National Renewable Energy lands occupy 302 acres on the northwest corner of the Refuge. This area was established by DOE as a wind farm many years ago. Nearly all of the undisturbed portions of their site are covered with good to high quality xeric tallgrass prairie of mixed grasses and forbs and pose a negligible weed threat to the Refuge. However, the many disturbed areas host many noxious weeds. Weedy areas have been mapped this year and show locations of chicory, Canada thistle (and also musk, bull and scotch), Dalmation toadflax, diffuse knapweed, leafy spurge, sulfur cinquefoil, teasel and mullein. In addition to these mapped locations, new construction sites for wind towers and a solar panel are being invaded by some of these weeds. Construction of the new wind towers has created a disturbance around each tower as well as along the access road to each tower. These areas are particularly vulnerable to noxious weed invasion, and will be reseeded with native seeds. They will be examined next year.

The major weedy areas were sprayed this year by Vegetation Services who used a mixture of Milestone, Escort and Tordon to kill the various weed species. Much of the area, especially along the roads, was sprayed for knapweed. A limited budget this year did not allow for a complete spray effort, but according to Tom Ryon, senior environmental specialist, they are hoping to continue the program in 2012. JCNA visited the site with Tom, Mike McGrady of NREL and Wayne Wood of Vegetation Management on 20 July to scope out this fall's spray effort.

JCNA rates their weed control program this year as FAIR, but far better than last year when very little was done.

5. LaFarge. Lafarge Corporation has mining permits for the area west of the Refuge in Sections 4 and 9. Much of this area has been mined in the past. No mining in the area has taken place since 2001 and future mining in the area is uncertain. All structures and equipment have been removed and much of the area is bare and awaits reseeded. Casey Felmlee is in charge of weed control. JCNA visited the site with Wayne Wood of Vegetation Management on 20 July.

William Wood of Vegetation Services has had the noxious weed contract for seven years. This year he followed the same spray pattern as last year. In the northern part of the property he mostly sprays the entire area with Milestone for killing knapweed and thistle, the major noxious weeds in the north. On the southern part of the property he is more selective in spraying where it is needed. He also sprays for Russian olive by the lakes with Foliar and Triclopyr. His program this year began in April with Milestone spraying for knapweed. In June he sprays thistle, as these plants are now up and most sensitive. In the summer he sprays the Russian olive and tamarisk, with the chemicals noted above. This spraying is 70%-90% effective in killing the plants. In the fall he does another thistle spray. His objective is to create dense grassland prairie as that is the best deterrent to weed invasion.

In summary, the several hundred acres of the LaFarge property have some weedy areas but they have an effective weed control program.

JCNA rates their weed control program as GOOD.

6. Bestway. Bestway Concrete operates the large clay and gravel mining area just west of the Refuge and north of the west entry road into the Refuge under the direction of mineral rights owner Charlie McKay. This area has in the past been a major source of knapweed seed blowing into the Refuge, but the present operation has greatly improved weed control on the property through use of a contractor on the outer berms and an active spot spray program in places where weeds are extensive.

Bestway uses the firm Foothills Vegetation, Mike Wilkinson owner, to spray weedy areas, especially the east-west berm along the southern edge of property. The Foothills crew applied Milestone in late May over the entire berm again this year to eliminate any newly emerged knapweed. Many other formerly mined and disturbed areas were also sprayed by Foothills. Manager Vince Eisenhand did additional spot spray work on the north berm, in weedy areas along the western boundary, and in many of the active disturbance areas.

The Bestway mining area will have a constant weed problem as long as they are actively mining and processing, but their program this year has been as effective as it was last year as we noted on our site visit with Dennis Wood on 8 August.

Despite the inherent difficulty in maintaining a weed-free area in such a continuous mining operation, JCNA rates their weed control program as GOOD.

7. Candelas. Candelas occupies several thousand acres between the Refuge and Section 16 on the north and Highway 72 on the south and. The western portion of land adjacent to the Refuge is undisturbed native prairie with very few weeds. This vegetation provides a buffer and, along with the prevailing wind direction from the west and north, prevents most weed seed from the Candelas project from entering the Refuge.

However, Candelas is actively beginning development in the northeast corner of their property, adjacent to the eastern portion of the Refuge. Essentially all vegetation in this area has been removed and a large amount of the existing soil moved to prepare the site for a large housing development. They have left no native vegetation buffer between their development and the Refuge. Though most of the prevailing winds will be from the west and north, the area's close proximity to the southern border of the refuge makes it imperative to examine the site next summer as well as during the coming years to ensure minimal weed seed invasion into the Refuge.

The berms along the new Candelas road that connects Highway 72 with Indiana Street were disturbed during construction in 2010 and became heavily infested with knapweed. The spray program last winter has killed nearly all this knapweed and very few knapweed plants still occur there, and the area is dominated by planted grass, as we observed on our visit of 9 August. These areas are well removed from the Refuge and should have minimal weed impact on it.

JCNA rates this weed control program as GOOD.

8. State Land Board. The Colorado State Land Board (SLB) owns Section 16, an area immediately west of the Refuge. Several entities have leases on portions of the property with responsibility for weed control on these areas: United Power, a substation; Xcel Energy, a gas pump area; Denver Water, a mile long water ditch; UP Railroad, a mile long railroad line; the USFWS, area along Woman Creek; C. McKay, short period grazing lease; Red Mountain Resources LLC and Colorado Division of Reclamation (CDOR), the mined area; and others. All of Section 16 is under the control of the SLB, but there is an active plan to obtain most of this section for the Refuge during the coming year, thus elevating the importance of good weed control on BCOS lands to the west. United Power, Xcel Energy, Denver Water, the UP Railroad, and Red Mountain Resources have been contacted separately and their weed control efforts are described below.

The area west of the UPRR spur and south of the Provide oil lease has seen little disturbance, supports high quality xeric grassland, and is generally weed free. The area east and downwind of the abandoned mining area in the center of the section is heavily infested with diffuse knapweed, and some toadflax, and has in the past provided a constant stream of wind-blown noxious weed seed to the Refuge immediately to the east. Two weed control programs took place this year. The first was done by Deb Zack of Colorado Division of Reclamation who used the firm Tres Mesas to cut and paint with poison the stumps of some of the Russian olive just west of the mined area. This work was done in the fall of 2010. Then in the spring of this year they sprayed 44 acres west of the mined area, and north of the gravel road from the west gate on Highway 93 with Milestone. In addition, some knapweed patches east of the lake were sprayed. As of now the knapweed kill appears highly successful. JCNA visited the site with Ms. Zack on 20 June.

A second spray project was done by Charlie McKay using Weed Wranglers and observed by JCNA on 20 July. The work was partially funded by a grant from the SLB. The chemical Milestone was sprayed on both sides of the gravel road from Highway 93 to and throughout the disturbed area on formerly mined lands.

JCNA rates the weed control program of the portions of the section under the management of the SLB as only FAIR, but far better than during previous years when they had no program at all.

9. Denver Water. Tony Stengle, Assistant District Foreman of Denver Water, guided JCNA along the Denver Water canal through Sections 16 and 9. Denver Water is converting the ditch into an underground concrete tunnel topped with soil and grass, has completed construction on the south half of Sec 16, and has seeded atop the conduit at ground level. Some severe patches of knapweed are present in this area. They were not sprayed this year but were mowed to prevent seeding.

On the trip with Stengle on June 20 we first looked at the Section 9 portion. On the west side of the ditch some clumps of knapweed and Dalmatian toadflax were present and noted. Stengle states that these will be mowed and not sprayed. The ditch in both sections 9 and 16 has been sprayed with Tremic, which is a chemical allowed adjacent to sources of drinking water, the ultimate use of the water in the ditch. The ditch is drained for several days before application of Tremic.

The uncovered portion of the ditch passing through Section 16 is relatively clear of knapweed and toadflax.

Their program this year was not as effective as last and JCNA rates their weed control program this year as MEDIUM.

10. UPRR. The Union Pacific railroad spur line goes about three miles north from its junction with their main line south of Highway 72. The spur passes through Sections 21, 16 and 9. DeAngelo Brothers have the weed control for this portion of the Denver area railroad network. They generally do a single late spring or early summer herbicide spray from a locomotive, but on this short spur they do hyrailing with a spray truck.

Their weed control program along the tracks was in two parts. First on both sides within 14' of the center line, total weed kill was done using a mixture of chemical weed killers. Spray was applied from booms a foot off the track, presumably the same as last year, with a mixture of the following chemicals: DMA4IUM, Glycophosphate 4 and Prodiamine 65WDG. Total vegetation kill is important in this narrow swathe.

The remainder of the ROW, 50' on either side of the track, where grassland predominates, was simultaneously sprayed this year with booms from the hyrailing truck that spot sprayed Picloram and 2,4-D. Spray on any weedy areas noted. JCNA was not able this year to accompany the DeAngelo weed person, Carla Hiller, in the boom truck

and assist in locating areas needing to be sprayed. Much of the ROW area has good grass cover and no spray was applied to these areas.

JCNA rates their weed control program as MEDIUM and hopes that next year we can accompany DeAngelo on their spray activity, convert their ROW spray to Milestone and be able to see the complete operation.

11. Red Mountain Resources LLC. RMR is the new manager of this four acre petroleum drill site in the north part of Section 16. To date the area has been badly abused and most of the area is barren or used for roads and storage and is badly in need of reseeding to reestablish native vegetation. Weeds, mainly non-noxious, cover disturbed areas that are not used. We were never able to meet with Provide personnel, the former managers, on site, nor discuss their weed control program via telephone for the last two years. These former owners never had a weed management program. JCNA met with lease owner Phil Barber at the site on 5 Jan 2012 to examine the weeds in their lease area.

JCNA rates the weed control at this time as POOR but endeavors by the new owners should result in vast improvement in the weed control program in the coming years.

12. United Power. United Power manages a sub-station and surrounding four acres of native grassland at the northwest portion of Section 16. The United Power manager is Bryant Robbins and JCNA was able to tour the site on 25 May both with him and the spray contractor, Josh of Prime Vegetation. They are in the second year of noxious weed management of this area. The central one acre fenced substation area has always been sprayed to remain devoid of any vegetation. This year it was sprayed with Provar, a complete plant killer.

The other four acres (the northwest 300' of Section 16) were first treated in 2010 as UP was unaware before that this area was their responsibility. When we visited this year JCNA found very few knapweed plants. The Milestone spraying last year was very effective. Most of the vegetation cover is high quality native prairie which will not be sprayed. The United Power goal will be to eliminate the noxious weeds and convert those areas to good prairie.

JCNA rates their weed control program as GOOD.

13. TXI-Boulder. JCNA visited the site with manager Randy Moulton on 16 December to assess their weed program. This is the first year of their weed control program and for this work they did their spray program internally. They have purchased a small tractor that has both a mover and a boom in the rear for spray work. This year their efforts were devoted to the field south of their offices, which was sprayed with a 50-50 mix of Milestone and Curtail. East of the plant they have a great deal of knapweed in a large area of old machinery storage. Next year they plan to move the machinery to the north so that the weedy area can be sprayed and then covered with chips. This should greatly

reduce weed infestation there. They also have abundant knapweed and sunflower along the road on the eastern boundary which they plan to spray next year.

JCNA rates their weed control program as MEDIUM and a start to better weed control of the area.

14. XCEL Energy. Xcel has a very small natural gas pump station in a 30' x 30' fenced portion of the northwest corner of Section 16 which JCNA checked on 25 July. They sprayed heavily this summer to kill all the vegetation in this small area. They will continue to put it on their observation and control list until the noxious weeds are totally gone. JCNA will suggest that next year they switch to Milestone and encourage grass invasion.

JCNA rates their weed control program as GOOD.

15. Mountain Plains Industrial Center. This proposed industrial center occupies about 160 acres of the western portion of Section 9 adjacent to Highway 93. The acreage includes two buildings in the SW corner and storage/construction areas in the SE corner. The undisturbed land to the north is covered with good native prairie that is grazed periodically by the owner, C. McKay. Knapweed and Dalmatian toadflax are confined primarily to disturbed areas along roads and railroad tracks, but McKay has a spray program in operation on part of these weedy areas. JCNA observed the site from the north-south road on the east side of the property on 9 August.

JCNA rates this weed control program as FAIR.

16. Hogan Ranch. Bill Hogan, whose ranch occurs west from Highway 93, also owns about 70 acres in Section 4, east and alongside of the highway. He sold the southeast corner of this land to Old Tyme Lumber some time ago, and their area is totally covered with logs, slabs, boards and equipment. There is no vegetation on this site.

Hogan's 70 acre field is primarily covered with good native grassland but has no available water for grazing animals. He only uses it for grazing horses, as there is a tunnel under the highway and horses will return to his ranch for water after grazing in the field. There are some scattered knapweed plants present on the acreage, and a heavy infestation along the access road on the south. Hogan relies entirely on natural insect control for knapweed control on the grazing acreage. JCNA visited the site with Hogan on 29 July.

JCNA rates his weed control program as POOR, particularly along the road and field entrance which are badly in need of weed control.

Summary Table

Owner/ Lessee	Danger to Refuge	Cooperativeness	Noxious Weed Presence	Weed Control Program
1. CDOT	HIGH	HIGH	FEW	GOOD
2. BCOS	HIGH	HIGH	FEW	MEDIUM
3. BCntyOS	HIGH	HIGH	FEW	GOOD
4. NREL	HIGH	HIGH	FEW	FAIR
5. LAFARGE	HIGH	HIGH	FEW	GOOD
6. BESTWAY	VERY HIGH	HIGH	MEDIUM	GOOD
7. CANDELAS	LOW	HIGH	FEW	GOOD
8. SLB	HIGH	NONE	HIGH	FAIR
9. DWATER	MEDIUM	HIGH	FEW	MEDIUM
10. UPRR	MEDIUM	HIGH	FEW	MEDIUM
11. RED MTN	LOW	NONE	MEDIUM	POOR
12. UPOWER	MEDIUM	HIGH	FEW	GOOD
13. TXI	MEDIUM	HIGH	HIGH	MEDIUM
14. Xcel	LOW	HIGH	FEW	GOOD
15. MOUNTAIN	MEDIUM	HIGH	MEDIUM	FAIR
16. HOGAN	MEDIUM	HIGH	MEDIUM	POOR

Explanation:

1. Danger to Refuge. Rated on basis of wind direction, proximity and size of area relative to Refuge—HIGH, MEDIUM, LOW.
2. Cooperativeness: Responsiveness and allowing or providing a tour of property—HIGH or NONE.
3. Noxious Weed Presence: Rated HIGH if many scattered patches, MEDIUM if less; and FEW if only a few scattered patches.
4. Weed Control Program: Rated GOOD, if weed control is effective with an active program; MEDIUM if an active program but not as effective as it could be; FAIR if an active program but not effective in certain areas; POOR if no program.

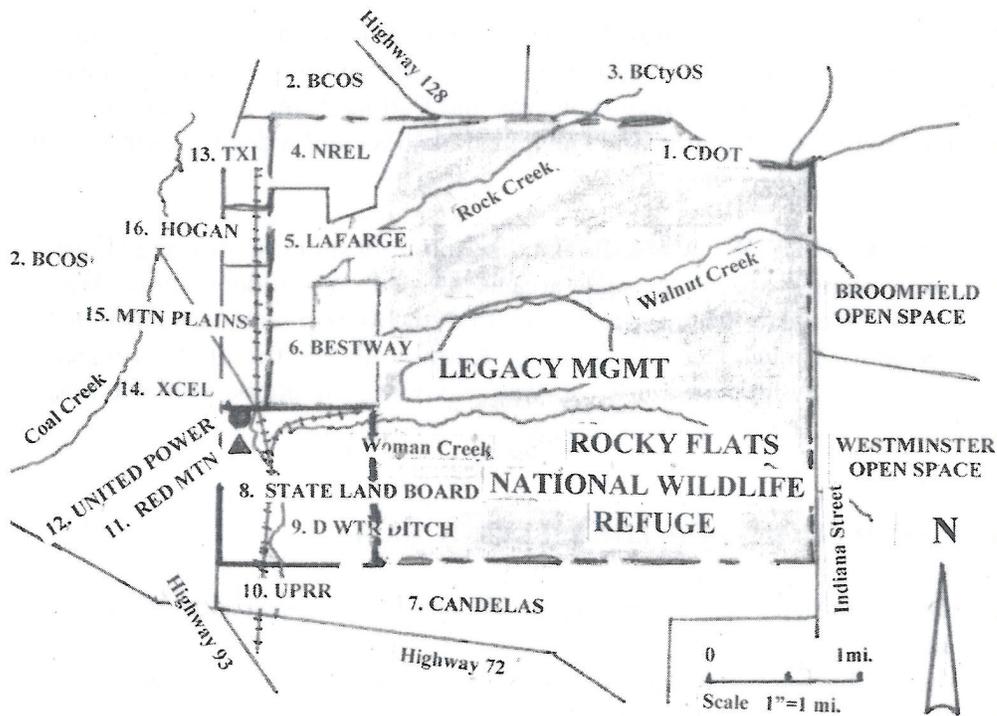
D. BIOLOGICAL CONTRAL OPERATIONS

1. **INSECTS.** No new insect introductions were made by owners/managers this year. There remains, however, abundant insect infestation of *Larinus* beetles on knapweed flowers which reduce flowering and fruiting of the plant. Some *Mecinus* beetles are also infecting Dalmatian toadflax and reducing their growth and seed production.
2. **COWS EAT WEEDS.** JCNA did not visit the Voth study field where Hogan cattle were being grazed in the same area as last year on Boulder County Open Space land. We observed the grazed area from the eastern boundary fence on 21 July that showed much weed devastation. Kathy Voth said the site was grazed more intensively with more cattle this year and results should be available next year.

E. RECOMMENDATIONS FOR THE 2012 PROGRAM

- Discuss proposed weed control programs for the coming year with each of the owner/managers.
- Visit all sites with owners/managers to better assess noxious weed location and abundance, as well as assess effectiveness of work the previous year.
- Observe sites when actual weed control is taking place whether spraying, mowing or insect release to assess effectiveness of these various treatments.
- Observe spray application by contractors whenever possible and discuss chemicals used and spray program.
- Continue to encourage those landowners/managers that have no programs to get started on one.
- Prepare an end-of-year report summarizing JCNA analysis of the programs.

Appendix 1



OWNERS/MANAGERS AT ROCKY FLATS

1. CDOT. Jim Walker, State Weed Coordinator. CDOT owns ROW on 93 and 128.
2. BCOS. Laurie Dieter and Eric Fairlee, Weed Control. OS west and north of Refuge.
3. BCTyOS. Steve Sauer, Bldr County Open Space. North of Hiway 128.
4. NREL. Mike McGrady, Maint Spvr, Wind Farm, NW corner of Refuge.
5. LAFARGE. Casey Felmlee, former gravel mines south of NREL, w of Refuge.
6. BESTWAY CONCRETE. Myron Moorhead, Mgr. Mine just west of Refuge.
7. CANDELAS. Charlie McKay, owner. Development on south border.
8. STATE LAND BOARD. David Rodenberg, Mgr. Section on SW corner.
9. DENVER WATER. Kevin Keefe, Land Mgr. 150' water ditch through Secs 9/16.
10. UPRR. Union Pacific RR. Dan Thompson, Track Maint, 100' spur thru Secs 9/16.
11. RED MOUNTAIN. Phillip Barber. 4 acre oil drill site in Sec 16.
12. UNITED POWER. Bryant Robbins, Mgr. Power Station in NE part of Sec 16.
13. TXI AGGREGATE. Randy Moulton, Mgr. 36 acre site west of NREL.
14. XCEL ENERGY. Adam Pena. Small gas pump station in NW corner of Sec 16.
15. MTN PLAINSIndustr. CTR. C. McKay, owner. W 160 acres of Sec 9.
16. HOGAN RANCH. Bill Hogan, owner. Ranch W of 93; 70 acres E in Sec 4.