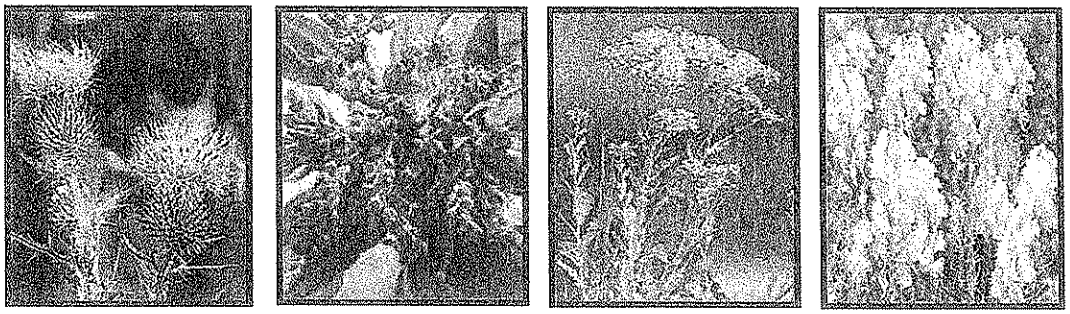
Twentymile Coal, LLC

Administrative Permit for Coal Exploration

Weed Management Plan



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Noxious Weed Management Program - Noxious weed infestations may occur on areas disturbed from site disturbance activities. In order to minimize potential adverse resource impacts that may result from noxious weed infestations; optimize revegetation success for the reclaimed areas; and fulfill sound land management objectives, Twentymile Coal, LLC (TC) will incorporate the following integrated noxious weed management program (weed program) from the approved CDRMS (Colorado Division of Reclamation, Mining, and Safety) permit.

TC's weed program is designed to effect full compliance with applicable provisions of CDRMS Rule 4.15.1(5), and was developed with reference to the Colorado Weed Management Act (CRS 35-5.5-115), the CDRMS's "Guideline for the Management of Noxious Weeds on Coal Mine Permit Areas", and in consultation with the local office of the Colorado State University Cooperative Extension Service (CSU-Extension Service, also the Routt County Weed Control agency). TC's weed program focuses on those noxious weed species listed by the Colorado Department of Agriculture, and will be modified, as appropriate to address any changes to this list. TC's integrated weed program consists of five interrelated components, as detailed in the following sections: Prevention, Identification and Mapping, Management Planning and Scheduling, Application of Selected Control Method(s), and Evaluation of Control Effectiveness.

Prevention - Prevention is the most important component of TC's weed program and includes the following items.

- Re-seed disturbed areas in a timely manner following site grading and soil material replacement using the methods outlined in Section 2.05.4, Reclamation Plan
- Develop and use seed mixtures which replicate native plant communities and encourage rapid vegetative reestablishment
- Plant only certified weed-free seed for the approved seed mixes
- Assess the need for any supplemental management measures. (ie: fertilization, reseeding, weed control, protection from wildlife, etc.) to assure effective vegetative reestablishment
- Wash off-road vehicles that are moving between different areas to minimize unintentional transport of noxious weed seed
- Minimize noxious weed propagation by treating any noxious weed infestations prior to seed-head maturation using mechanical, chemical, or biological controls, or a combination of these methods
- Monitor and evaluate weed control efforts on an annual basis as described in the following sections

Identification and Mapping - TC will utilize a range of resources to identify and map any noxious weed infestations within the TC Permit Area. Mine Environmental Staff is trained in noxious weed identification and, as a matter of practice, note any noxious weed occurrences observed any time they are in the field. In addition, Mine Environmental Staff, assisted by trained student and summer interns, will conduct spring and fall Environmental Management surveys of active areas, specifically to assess the condition of mine drainage structures, identify any new noxious weed occurrences, assess the effectiveness of weed management activities, and note any other environmental concerns that may require attention. TC maintains a working weed program map and records both observed noxious weed occurrences (from all sources, by weed species, location, and extent of infestation) and treatment activities.

Management Planning and Scheduling - Effective management and planning are key elements in assuring the effectiveness of TC's noxious weed control program. Any new information collected through the ongoing noxious weed identification and mapping efforts, along with treatment information from prior years is reviewed and evaluated. Based on this information, treatment strategies and schedules are developed during the early spring for the annual weed management program using the following steps:

- For mapped weed infestations, treatment methods are determined based on the weed species present using recommendations provided by the CSU Extension Service. Selection of treatment method(s) takes into consideration proximity to flowing water or water bodies, croplands, any livestock use, and historical response of identified weed species to prior treatment(s), based on review of control effectiveness. Treatment methods may include mechanical controls (tillage, mowing, burning, cutting/pulling), chemical controls (selective herbicides), biological controls (weed-specific insects or pathogens), or combinations of these methods. In general, treatment method(s) will be selected to achieve the most effective control with the resources available. As an example, where multiple weed species are present, the most effective overall control(s) will be applied, although the method(s) may not be optimal for each individual species.

- Scheduling of weed management treatments will also be based on the CSU Extension Service recommendations for specific weed species. For most species, control effectiveness can be significant enhanced by scheduling treatment at specific stages of vegetative growth (typically spring and/or fall). To the extent possible, based on staff and contractor availability, treatment will be scheduled to optimize effectiveness.

- Priority and responsibilities for weed control are determined based on weed species present and the location and extent of weed infestations. Certain weed species are extremely aggressive, and first priority will be given to their control to prevent establishment and spread. Previously treated areas are second in priority, in order to maximize control effectiveness. Third in priority are any new weed infestations and areas where the weed infestation covers a large area, to prevent further spread. Lowest priority is given to isolated weed infestations of non-aggressive species which have not been previously treated, since these may be addressed by natural vegetative succession and pose a reduced risk of spread. Generally, grazing lessees are responsible for weed control on their lease areas, with TC sharing control costs and providing oversight, under the terms of the lease agreements. TC is responsible for weed control on remaining areas. All weed management activities (both TC and grazing lessee) follow the general priorities, as outlined above.

Application of Selected Control Method(s) - The following summarizes the proposed treatment methods for listed noxious weed species known to occur within the TC permit area. If treatment extends over a longer time period, or if control effectiveness is determined to be lower than anticipated, treatment methods or chemicals may be adjusted to improve long-term effectiveness. Approved or more effective chemicals for targeted weeds may change over time and these modifications will be incorporated, as appropriate.

Routt County Noxious Weed list:

- Yellow toadflax/butter and eggs - Spring spot spraying with Tordon (Banvel is alternative chemical)
- Hounds-tongue - Spring spraying (full coverage and spot) with mix of Escort, 2,4-D amine, and Activator 90 (Plateau is alternative chemical)

Colorado State Noxious Weed A and B lists:

- Bull thistle - Cutting/pulling prior to formation of seed-heads and then fall spraying with mix of Tordon, 2,4-D amine, and Activator 90 (Banvel and Curtail are alternative chemicals)
- Musk thistle - Cutting/pulling prior to formation of seed-heads and then fall spraying with mix of Tordon, 2,4-D amine, and Activator 90 (Banvel and Curtail are alternative chemicals)
- Canada thistle - Cutting/pulling prior to formation of seed-heads and then fall spraying with mix of Tordon, 2,4-D amine, and Activator 90 (Banvel and Curtail are alternative chemicals)
- Hoary cress (white top) - Spring spraying (full coverage and spot) with mix of Escort, 2,4-D amine, and Activator 90 (Plateau is alternative chemical),

For large areas or significant weed infestations, TC may utilize a weed-control contractor to achieve overall control (typically over several years) and then utilize in-house resources (Environmental Staff, student interns, summer students, contract labor) for ongoing maintenance control activities. TC maintains both a pick-up and an ATV with spray-tanks, spray bar (ATV only), and hand-sprayers, as well as several backpack tank sprayers for weed control. Chemical control activities are overseen by a U.S.-EPA Certified Pesticide Applicator, and pesticide storage, handling, and use procedures and personal protective equipment are utilized to prevent potentially hazardous personal or environmental exposures. Where control of extensive weed infestations results in limited vegetative cover or bare-ground, the affected area will either be inter-seeded or ripped and seeded, dependent on site-specific conditions. Certain areas where there may be a flammability hazard or where specific Mine Safety and Health Administration (MSHA) regulations apply may be treated with a long-lasting broad-spectrum herbicide such as Arsenal, Roundup, Sahara, or Throttle.

Table 1 summarizes controls, rates, and timing for weeds identified in the TC Permit Area and adjacent areas under TC's control:

TABLE 1 – CHEMICAL CONTROL METHODS

SPECIES	HERBICIDE	RATE	TIMING
Black henbane	2,4-D Amine/ Low Vol Ester 6 Banvel	½ pt./ac ½ pt./ac	Spring Fall
Bull thistle	2,4-D, Tordon Banvel	½ pt/ac ½ pt./ac	Spring* Fall
Canada thistle	2,4-D, Tordon Banvel Escort	½ pt/ac ½ pt./ac 2 oz./ac	Spring Fall Spring *
Common cockleburr	Grazon P&D 2,4,D	2 pt./ac ½ pt./ac	Spring*
Common mullein	Grazon P&D Escort 2 oz/A	4 pt./ac + surfactant**	Spring
Curly cup gum weed	Grazon P&D 2,4D LV 6	2 pt./ac 1 lb. /ac	Spring
Curly dock	Grazon P&D Tordon	2 pt./ac + surfactant**	Spring
Dalmatian toadflax	Tordon 2,4-D Escort	2 qt./ac 1 lb./ac + surfactant**	Spring
Field bindweed	2,4, D	1 lb./ac	Spring
Kochia	2,4-D	½ pt./ac	Spring
Leafy spurge	Tordon	2 qt./ac	Spring
Perennial pepperweed	Escort	2 oz./ac	Spring
Russian olive	Garlon 4	5%	Stump treatment spring
Russian thistle	2,4 D	½ pt./ac	Spring
Scotch thistle	2,4-D Tordon Banvel	½ pt./ac ½ pt./ac	Spring Fall
Tamarisk, Salt Cedar	Garlon 4	5%	Stump treatment
Yellow toadflax	Tordon 2,4-D	2 qt./ac 1 lb./ac + surfactant**	Spring
Whitetop, Hoary Cress	Escort 2,4-D	2 oz/ac ½ pt./ac	Spring
Bare ground treatment substations and explosive storage	Arsenal	20 lb/ac Pellets	Spring for total vegetation control per safety regulations.

SPOT TREATMENT MIXING (see label instructions for specific species)

- 1% Solution in 100 Gallons = 1 gallon of Chemical
- 1% Solution if 3 Gallons = 3.8 oz = 11.5 Tbsp = 114 ml
- 1% Solution in 1 Gallon = 1.3 oz = 4 Tbsp = 39 ml
- 2% solution in 1 Gallon = 2.5 oz. 8 Tbsp = 75 ml
- Escort package contains a measuring funnel. Use a ¼% mixture for spot spraying.

Evaluation of Control Effectiveness - Generally, in conjunction with the spring Environmental Management surveys, areas of previously identified and treated noxious weed infestations are inspected and the effectiveness of control measures is evaluated based on reduction or elimination of weed infestations. TC's grazing lessees and any weed-control contractors also provide similar information, based on their field observations. This information is utilized in the management planning process to determine the need for continued treatment and to modify treatment method(s), if indicated, to improve their effectiveness.

TC will provide Routt County with documentation from the Annual Reclamation Report pertaining to weed control and submit any significant changes to specific weed control plans (chemicals, rates, and timing) to the Routt County Weed Supervisor for review prior to weed control activities.