Currier BCU 0993-16-07 Well Pad

Interim Reclamation Plan
ECMC Rule 304.c.(16) and 1003

Laramie Energy, LLC
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1. INTRODUCTION – ECMC RULE 304.C.(16)

The Currier BCU 0993-16-07 Interim Reclamation Plan (IRP) was prepared in accordance with the Colorado Energy and Carbon Management Commission's (referred to hereinafter as ECMC or the Commission) Rule 304.c.(16) *Interim Reclamation Plan* and with applicable requirements of ECMC Rule 1003: *Interim Reclamation*.

2. SITE DESCRIPTION – CURRIER BCU 0993-16-07 WELL PAD

Laramie Energy, LLC (Laramie) (Operator # 10433) is pursuing a Form 2A for an Oil and Gas Location Assessment permit in Mesa County, Colorado. The Currier BCU 0993-16-07 well pad (Currier 16-07) is a proposed, new location. Laramie is proposing to drill twenty-three (23) new directional wells at the Currier 16-07 in Section 16 of Township 9 South, Range 93 West, 6th P.M. The Currier 16-07 will develop fee and federal minerals. The Currier 16-07 is adjacent to existing infrastructure, reducing surface disturbance proposed in the 2023 Currier BCU 0993-16-07 Oil and Gas Development Plan (OGDP).

OGDP Title: 2023 Currier BCU 0993-16-07 OGDP
Location Name: Currier BCU 0993-16-07
Location ID: New Location
Legal Description: SWNE of Section 16, Township 9 South, Range 93 West, 6th P.M.
Location Coordinates: Latitude: 39.277789°; Longitude: -107.773701°
Elevation: 7456 feet
County: Mesa
Zone District: Agricultural, Forestry, Transitional District (AFT)
Surface Owner: Carlyle W. Currier & Dawn M. Currier

Operations will be conducted in the following phases at the Currier 16-07: construction, drill rig mobilization, drilling, production installation, completions and flowback (including equipment mobilization, staging, and demobilization), production, interim reclamation, inspections, and final grading/reclamation of the site. Phases may occur simultaneously at the site. Inspection activities will occur during the lifespan of the site. Laramie anticipates that the well pad will remain in production for approximately 30 years, based on the average lifespan of a well site within the North Vega operations area.

The parcel is located 9.5 mapped miles east of Collbran, Colorado. The Currier 16-07 is located approximately 2,960 feet south (mapped distance) from the nearest public road, Highway 330E.

If approved, the proposed well pad will be constructed to create an approximate 4.1 acre Working Pad Surface (WPS) to accommodate drilling equipment, piping, a truck & equipment turn-around location, and facilities for twenty-three (23) directional gas wells developing fee and federal minerals. The Area of Disturbance for the Currier 16-07 well pad, including cut and fill slopes and soil stockpiles, will be approximately 9.0 acres. Acreage disturbance for the project is detailed in **Table 1**.

Construction of the Currier 16-07 site-specific access road will result in 1.0 acres of new disturbance to construct a new segment of road. Approximately 883 feet of new access road would be constructed to access the subject well pad.

Approximately 781 feet of 8-inch welded steel gas gathering line and approximately 781 feet of 4-inch Flexpipe water gathering line will be required to tie into Laramie's existing 16-inch gas gathering line and 4-inch Flexpipe waterline adjacent to the proposed pad. The pipeline will be installed south of the Currier 16-07 pad and within an existing pipeline corridor. The gas pipeline and water gathering line will result in 0.9 acres of short-term disturbance but will be installed within previously disturbed surface. Once the pipelines are installed, the disturbance will be immediately reclaimed.

Interim reclamation will begin after all wells are drilled and completed as planned with production facilities installed at the Currier 16-07. During interim reclamation, the cut and fill slopes will be reshaped and contoured, reclaiming approximately 6.9 acres. The Production Pad Surface (long-term well pad disturbance) will be 2.1 acres. The total long-term disturbance associated with this pad and access road will be 3.1 acres.

Table 1. Disturbance Acreage

Well Pad	**Disturbance in Acres**
Area of Disturbance	9.0
Working Pad Surface	4.1
Area to be Interim Reclaimed	6.9
Production Pad Surface (after Interim Reclamation)	2.1
Access Road	**Disturbance in Acres**
Proposed Access Road Acreage (883 feet length)	1.0
Pipeline	**Disturbance in Acres**
Proposed Pipeline* (781-foot Segment) (Installed in Previously Disturbed Pipeline ROW)	0.9

Disturbance Totals - Acres			
New	**Previously Disturbed**	**Short-term**	**Long Term**
10	**0.9**	**10.9**	**3.1**

3. SOILS DESCRIPTION

A soils report from the Natural Resource Conservation Service (NRCS) indicates the Currier 16-07 Area of Disturbance, WPS, pipeline and access road are composed of two NRCS Map Units: Empedrado loam, 25 to 45 percent slopes (Map Unit 34) and Hesperus-Empedrado,

moist-Pagoda complex 5 to 35 percent slopes (Map Unit 47). Both map units occur in the proposed disturbed areas of the Currier 16-07: Area of Disturbance, WPS, and Access Road.

Table 2. Total Disturbance Per NRCS Map Unit

Map Unit	NRCS Soil Description	Total Disturbance Per Map Unit
34	Empedrado loam, 25 to 45 percent slopes	8.0
47	Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes	2.9
Total Acreage Disturbance		**10.9**

EMPEDRADO LOAM, 25 TO 45 PERCENT SLOPES (NRCS MAP UNIT 34)

The Empedrado loam, 25 to 45 percent slopes, is composed of Empedrado and similar soils (80%) and minor components (20%). The Empedrado loam occurs at an elevation of 7,400 to 7,900 feet and is classified as not prime farmland. Classified as hydrologic soil group B with a high runoff class. The depth to water table is more than 80 inches.

The Empedrado loam is a well drained clay loam with a high available water supply. The setting landform is mountains and parent material is mixed rock colluvium derived from sedimentary rock.

Table 4. Empedrado Loam (Map Unit 34) Profile

Site Feature	Typical Profile			
Area of Disturbance, WPS, Pipeline, and Access Road	A - 0 to 10 inches: **loam**	Bt- 10 to 21 inches: **clay loam**	Bk1 - 21 to 28 inches: **gravelly sandy clay loam**	Bk2 - 28 to 60 inches: **loam**

HESPERUS-EMPEDRADO, MOIST - PAGODA COMPLEX (NRCS MAP UNIT 47)

The Hesperus-Empedrado, moist -Pagoda complex 5 to 35 percent slopes, is identified as Map Unit 47. The Hesperus-Empedrado, moist-Pagoda complex is within the following proposed disturbed areas of the Currier 16-07: Area of Disturbance, WPS, and Access Road.

The Hesperus-Empedrado, moist - Pagoda complex is composed of Hesperus and similar soils (35%) and Empedrado and similar soils (30%), the Pagoda and similar soils (20%), and minor components (15%). The Hesperus-Empedrado, moist-Pagoda complex occurs in elevation of 6,200 to 8,500 feet and is classified as not prime farmland. The depth to water table is more than 80 inches. The available water supply is rated high with a high to very high runoff class.

The Hesperus soil is a well drained clay loam. Hesperus is classified as hydrologic soil group C. The setting landform is mountainsides. The parent material is residuum weathered from sandstone and shale.

The Empedrado, moist soil is a well drained loam/ gravelly sandy clay loam. Empedrado, moist is classified as hydrologic soil group B. The setting landform is benches. The parent material is colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale.

The Pagoda soil is a well drained clay loam/clay and is classified as hydrologic soil group C. The setting landform is mountains & benches and the parent material is colluvium derived from shale.

Table 5. Hesperus-Empedrado, moist -Pagoda complex (Map Unit 47) Profile

Site Feature	Composition	Typical Profile			
Area of Disturbance, WPS, Pipeline, and Access Road	Hesperus	H1 - 0 to 7 inches: **loam**		H2 -7 to 60 inches: **clay loam**	
	Empedrado	H1 - 0 to 10 inches: **loam**	H2 - 10 to 21 inches: **clay loam**	H3 - 21 to 28 inches: **gravelly sandy clay loam**	H4 - 28 to 60 inches: **loam**
	Pagoda	H1 - 0 to 6 inches: **clay loam**	H2 - 6 to 17 inches: **clay loam**	H3 - 17 to 27 inches: **clay**	H4 - 27 to 60 inches: **clay**

PRE-DISTURBANCE VEGETATION COMPOSITION

Photographs of the site location were taken June 7, 2023, with aerial photogrammetry taken by drone on June 26, 2023. Photographs, including panoramic and cardinal direction, display the current proposed location. Vegetation communities within the proposed disturbance area and immediately surrounding the proposed well pad are comprised of mountain sagebrush shrublands and Gambel's oak shrublands with an understory of perennial forbs and grasses.

4. REFERENCE AREA AND VEGETATION COMPOSITION

WestWater Engineering (WestWater) conducted a vegetation assessment for the Currier 16-07 reference area during the growing season of 2023. WestWater Engineering (WestWater) conducted a vegetation assessment on July 6, 2023. Monitoring was conducted during peak growing season.

The reference transect is located in a mountain sagebrush shrubland plant community composed primarily of mountain sagebrush and roundleaf snowberry with an understory of native forbs and perennial grass species. Mountain shrublands present in the project area include serviceberry (*Amelanchier alnifolia*), Gambel oak (*Quercus gambelii*), Roundleaf snowberry (*Symphoricarpos rotundifolius*), and Mountain big sagebrush (*Artemisia tridentata vaseyana*), along with native grasses and forbs. Results from the line-point intercept permanent transect showed 72 percent foliar cover and zero percent basal cover. The Vegetation Assessment is provided in **Appendix A.**

The final land use will be non-crop land (rangeland). In accordance with Rule 304.b.(9).B.i., Rule 304.b.(9).B.ii., and Rule 304.b.(9).B.iii. Laramie designated a reference area for the Currier 16-07. Four photographs in each cardinal direction and two panoramic photographs showing vegetation cover of the reference area were taken during the peak growing season on June 7, 2023. An aerial photograph of the reference area, collected by an aerial unmanned aircraft, was taken on June 26, 2023.

Reference Area Coordinates: Latitude: 39.277789°; Longitude: - 107.773701°

5. KNOWN WEED INFESTATIONS

The Currier 16-07 will be a newly constructed well pad in the vicinity of existing natural gas infrastructure. A weed survey was conducted on May 5th, 2023, by WestWater. Cheatgrass and quackgrass were the only Colorado State listed noxious weed species observed within the survey area. Noxious weeds observed were scattered along the existing access roads and disturbance areas. Land management practices (i.e. livestock grazing, oil and gas development, etc.) contribute to the spread of noxious weeds in the project area. In order to reduce the spread of noxious weeds in the project area, Laramie will adhere to and implement the Mesa County Noxious Weed Management Plan for noxious weed species listed in Mesa County.

6. GATHERING LINES

The appropriate one-calls need to be made prior to digging. Flowlines installed within the WPS will remain for the duration of the production phase of the project and will not be reclaimed during interim reclamation. Approximately 781 feet, with a 50-foot width disturbance, of pipeline will be installed to tie into Laramie's existing lines adjacent to the proposed pad. The pipeline will be installed south of the Currier 16-07 pad and within an existing pipeline corridor. Pipeline installation will result in 0.9 acres of short-term disturbance but will be installed within previously disturbed surface. Once the pipelines are installed, the disturbance will be immediately reclaimed.

7. ACCESS ROAD

The Currier 16-07 will be accessed from existing private lease roads located on private surface. A site-specific road will be constructed to access the Currier 16-07 from the existing private lease access road. The site-specific access road for the Currier 16-07 will be 883 feet in length and will result in 1.0 acres of disturbance. Temporary disturbed areas associated with the construction of the road will be promptly reclaimed. No final reclamation is proposed for the site-specific access road until final reclamation. The existing private lease road, which provides access to well pads, adjacent parcels in the area, and used for agriculture operations will not be reclaimed.

8. REMOVAL OF DRILLING, COMPLETION EQUIPMENT AND ALL ASSOCIATED DEBRIS AND WASTE MATERIALS

All debris and waste will be removed per ECMC Rule 1003.a. After completion activities, Laramie will reduce the size of the Currier 16-07 to the minimum surface area needed for production facilities and future workovers, while providing for reshaping and stabilization of cut and fill slopes. In brief, interim reclamation will be accomplished by grading, leveling, and seeding with a seed mix appropriate for the area. Interim reclamation will reduce the disturbed area at the Currier 16-07 to approximately 3.1 acres (2.1 acres for the Production Pad Surface and 1.0 acres for the site-specific access road) after full development.

The well location and surrounding areas(s) will be cleared of all debris, materials, and trash not required for production. Other waste and spoil materials will be disposed at a local landfill. All equipment not required for production will be removed from the well pad.

To maintain compliance, any material will be disposed of in accordance with the Currier 16-07 Waste Management Plan (WMP). All E&P waste disposal will adhere to the applicable 900 series rules. Disposal of E&P waste and non-E&P waste is specifically addressed in the Currier 16-07 WMP, including approved waste management disposal facilities.

Summary of Interim Reclamation Activities

Reclamation and remediation for interim reclamation will include the following actions:

- Decommissioning activities: all unnecessary equipment for the production and inspection activity will be removed.
    - If decommission activities are involved on long-term production equipment, a Form 27 will be submitted to ECMC for approval.
- Laramie will install construction stormwater control measures around the area (~6.9 acres) to be interim reclaimed
- Laramie will restore the area to pre-development conditions by re-contouring and re-vegetating the site.
- Soil from the initial grading activities has been redistributed across the site and will be reseeded with a site-appropriate approved seed mix.
- Laramie will seed the reclaimed area utilizing the BLM Colorado River Valley Field Office recommend seed mix for that elevation or as requested by the Surface Owner.
- Laramie will monitor the site to ensure that a uniform vegetative cover has been established that reflects pre-disturbance or reference area forbs, shrubs, and grasses with total percent plant cover of at least eighty percent (80%) of pre-disturbance or reference area levels, excluding noxious weeds.

9. MANAGEMENT OF WASTE MATERIAL

Drilling pits will not be constructed or utilized at the Currier 16-07; therefore, ECMC Rule 1003.d. is not applicable to this Oil and Gas Location. To maintain compliance, any material

will be disposed of in accordance with the Currier 16-07 WMP. All E&P waste disposal will adhere to the applicable 900 series rules. Disposal of E&P waste and non-E&P waste is specifically addressed in the Currier 16-07 WMP, including approved waste management disposal facilities.

10. INTERIM RECLAMATION AREAS – ECMC RULE 1003.B

When conducting interim reclamation activities, Laramie will utilize the Currier 16-07 Topsoil Protection Plan and the Dust Mitigation Plan. Laramie will initiate interim reclamation activities as early as possible and will grade the site as shown in the Proposed Reclamation drawing. All interim reclamation work will begin within six (6) months after the last well on the pad is completed and the site is turned over to Production Operations.

Table 4. Operational Phases Time Estimates

Stage	Estimated Time Interval (Days)
Construction	30
Drill Rig Mobilization	4
Drilling	104
Drill Rig Demobilization	4
Production Installation	21
Completions and Flowback Staging and Demobilization	20
Completions and Flowback	58
Interim Reclamation	14
Total Days of Pre-Production Activities	**255**

11. COMPACTION ALLEVIATION – ECMC RULE 1003.C.

Compaction can reduce water infiltration and also hinder the penetration of the sprouting seed. Compacted areas of the well site surface will be ripped. Ripping will be undertaken to eighteen (18) inches unless and to the extent bed rock is encountered at a shallower depth.

12. RECONTOURING

The Currier 16-07 is located north of the Grand Mesa in the eastern region of Mesa County. The topography of the area consists of rolling hills north of the Grand Mesa. All cellars, rat holes and other boreholes at drilling locations unnecessary for further lease operations will be backfilled to conform to surrounding terrain after the drilling rig is released. Areas not necessary for production and future workovers will be reshaped to resemble the original landscape contour. Stockpiled topsoil will be redistributed on the area to be reclaimed and seeded.

Construction stormwater control measures will be placed around the area (~6.9 acres) to be interim reclaimed prior to commencement of any grading/ re-contouring activities. Long-term stormwater control measures will be installed after the pad is interim

reclaimed. Stormwater structures will be reused if possible. After re-contouring of the 6.9 reclaimed acres to like pre-existing contours and topsoil is redistributed, revegetation efforts will be employed.

13. RE-ESTABLISH AND STABILIZE DRAINAGE FEATURES

The Currier 16-07 surface lands are privately owned surface (Fee Surface). Laramie has an established Surface Use Agreement with the Surface Owner. During interim reclamation of the well site, fill material will be pushed into cuts and up over the back slope. No depressions will be left that will trap water or form ponds. Upon completion of backfilling, recontouring, and leveling, the stockpiled topsoil will be spread evenly over the areas to be reclaimed. All disturbed surfaces will be seeded with a seed mixture recommended by the BLM or as requested by the Surface Owner. Seed mixtures are determined by elevation and predominant vegetation.

Permanent stabilization will be achieved by seeding and applying mulch as necessary. All areas of disturbance will be seeded to establish permanent vegetation when topsoil is returned during the reclamation process. Mulch will be applied as necessary to enhance the seeding process or to stabilize slopes to protect the new seeding. Hydro-seeding will be utilized in areas too steep to seed with conventional drills or broadcasters. Those areas that are predominantly (90-100%) rock faces that are vertical or near vertical will be left as is and monitored for slope stability.

Stormwater control measures for the interim reclamation are depicted in the Interim Reclamation Plan (**Proposed Interim Reclamation Drawing** - **Appendix B)**. Stormwater control measures for this phase include V-ditch and berm, sediment traps, and outlet hoses.

14. ESTABLISH DESIRED SELF-PERPETUATING PLANT COMMUNITY – ECMC RULE 1003.E.

After completions and flowback operations of the proposed 23 new directional wells, Laramie will reclaim 6.9 acres of the original disturbance area, contouring the reclaimed area to the natural slope or topography. Prior to construction, the location was classified as non-crop (rangeland). Laramie will implement Rule 1003.e.(2). and reclaimed land will be restored to rangeland.

All disturbed surfaces will be seeded with a seed mixture recommended by the BLM or to Surface Owner preference. Seed mixtures are determined by elevation and predominant vegetation. For the Currier 16-07, Laramie will utilize Mixed Mountain Shrubland. The composition of the seed mix is described in the *BLM Seed Mixes by Habitat Type* (**Appendix C**).

At a minimum Laramie will apply the BLM standard of 20 pounds per acre for drill seeding and 40 pounds per acre for broadcast/hydroseeding.

15. SEEDBED PREPARATION AND SEEDING - ECMC Rule 1003.E.

All disturbed surfaces will be seeded with a seed mixture recommended by the BLM. Seed mixtures are determined by elevation and predominant vegetation.

The seedbed will be prepared by disking and roller packing following the natural contours. Seed will be drilled on contours at a depth no greater than one-half inch (0.5 inch). In areas that cannot be drilled, seed will be broadcast at double the seeding rate and harrowed into the soil. Certified weed-free seed will be used. Seeding will occur within 24 hours following completion of final seedbed preparation to reduce the potential for establishment of weeds and before crusting of the soil, which can impede germination. A seedbed will be prepared with consideration of soil roughening on the steeper slopes to inhibit erosion. If the event that seeding is unsuccessful, Laramie will apply subsequent seedings. Amendments will be utilized when deemed necessary.

Time of seeding will depend on the season of when pre-production activities are finalized, and production operations have commenced. Seeding typically occurs immediately after reclamation and while the soil is still loose; however, if elevated temperatures and dry conditions exist seeding activities may be delayed until fall.

Site Stability During Interim Reclamation Activities

Laramie will ensure site stability of reclaimed areas and maintain the production pad to prevent any of the following:

1. Large rills or gullies.
2. Perceptible soil movement or head-cutting in drainages.
3. Slope instability on or adjacent to the reclaimed area.
4. Slopes shall be stabilized using appropriate reshaping and earthwork measures, including proper placement of soils and other materials.

16. FENCING

Areas within the North Vega Operations area will be analyzed on a site-by-site basis to determine if livestock exclusion will increase and expedite vegetation establishment. Fencing will be installed if deemed to be advantageous or if the Surface Owner requests fencing. If the well pad is fenced, Laramie will incorporate wildlife friendly (as determined by CPW) fencing around those areas that are interim reclaimed.

17. MANAGEMENT OF INVASIVE PLANTS - ECMC RULE 1003.F.

Laramie will maintain weed control at the Oil and Gas Location in accordance with ECMC Rule 1003f. *Weed Control*. Ongoing post-interim reclamation maintenance and monitoring activities will take place when interim reclamation grading, and contouring have been completed. Such post activities include, but are not limited to, inspection and maintenance of protective vegetation and the monitoring of erosion prevention design measures. This will be performed by Laramie and/or a consultant. Laramie will utilize the Mesa County Noxious Weed Management Plan (**Appendix D**).

Weed control measures will be conducted in compliance with the Colorado Noxious Weed Act, C.R.S. §35-5.5-115 and the current rules pertaining to the administration and enforcement of the Colorado Noxious Weed Act. Field personnel will monitor the site for weeds. If weeds are present on site, the Operations Supervisor will be notified, and a certified weed sprayer will inspect the site for noxious and invasive weeds and if discovered will treat them accordingly.

18. RECLAMATION MONITORING, INSPECTION, MAINTENANCE, AND REPORTING

Inspections will be conducted to ensure proper revegetation. Inspections will be conducted annually during the growing season to determine the status of the reclaim and revegetation until at least 80% cover is established. Additional seed application or amendments will be applied if deemed necessary. Successful native vegetation establishment for interim and final reclamation takes at least three to five years in the North Vega region area based on discussions with BLM Resource Specialists.

19. INTERIM RECLAMATION COMPLETION NOTICE, FORM 4. – ECMC RULE 1003.E.(3).

Laramie will comply with Rule 1003.e.(3) and will submit a Sundry Notice, Form 4, describing interim reclamation mitigation efforts and plans. Photographs will be submitted, as described in Rule 1003.e.(3), to document interim reclamation status.

20. INTERIM RECLAMATION BEST MANAGEMENT PRACTICES

- All interim reclamation work will begin within six (6) months after the last well on the pad is completed and the site is turned over to Production Operations.
- Compacted areas of the well site surface will be ripped. Ripping will be undertaken to eighteen (18) inches unless and to the extent bed rock is encountered at a shallower depth.
- Laramie will properly characterize and dispose of all waste (i.e. the specific landfill/waste disposal location allows for acceptance of the waste stream) during interim reclamation activities.
- Laramie will apply a BLM approved seed mix.
- Areas of interim reclamation will be re-contoured to blend with natural surrounding topography. Subsoil will be applied first, followed by topsoil. Each soil layer will be packed separately.
- Annual reclamation inspections will be conducted during the growing season until at least 80% cover is established.
- Laramie personnel visit the site at least weekly. The personnel will monitor for weeds and if discovered, they will notify the Operations Supervisor. The Operations supervisor will notify a certified weed sprayer to inspect the site. If noxious or invasive weeds are detected the weeds will be treated accordingly. Weeds that are not invasive or noxious will be treated on an as needed basis.
- At a minimum Laramie will apply the BLM standard of 20 pounds per acre for drill seeding and 40 pounds per acre for broadcast/hydroseeding.

LIST OF APPENDICES	
Appendix A	Reference Area Vegetation Assessment
Appendix B	Proposed Interim Reclamation Drawing
Appendix C	BLM Seed Mixes by Habitat Type
Appendix D	Mesa County Noxious Weed Management Plan

APPENDIX A

Reference Area Vegetation Assessment

LARAMIE ENERGY
CURRIER BCU 0993-16-07 WELL PAD LOCATION

VEGETATION ASSESSMENT

Cover Photo: Reference vegetation transect.

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July 2023

INTRODUCTION

Laramie Energy, LLC. requested that WestWater Engineering (WestWater) conduct a vegetation assessment for the Currier BCU 0993-16-07 (Currier 16-07) well pad location. The proposed project would be located within Mesa County, Colorado in Section 16, Township 9 South, Range 93 West on privately owned lands.

PROJECT AREA DESCRIPTION

The proposed project would be located along a ridge at an elevation of approximately 7,400 feet (Figure 1). There are no prominent topographic features in the surrounding area. Buzzard Creek is located south of the project area. Drainages in the surrounding area typically flow north to south towards Buzzard Creek. The historical and current land use description at the site (per COGCC descriptions on Form 2A) is Rangeland.

Vegetation communities within the proposed disturbance area and immediately surrounding the proposed well pad are comprised of mountain sagebrush shrublands and Gambel's oak shrublands with an understory of perennial forbs and grasses. Common plants observed during the surveys are presented in Table 1.

Table 1. Common plant species observed within the survey area.

Common Name	*Scientific Name*	Abundance*	Habitat Type
Grasses			
Cheatgrass	*Bromus tectorum*	xxx	Disturbed areas, sagebrush shrublands, oakbrush shrublands
Crested wheatgrass	*Agropyron cristatum*	xxx	Disturbed areas
Field brome	*Bromus arvensis*	xxx	Disturbed areas
Foxtail barley	*Hordeum jubatum*	xxx	Disturbed areas
Intermediate wheatgrass	*Thinopyrum intermedium*	xxx	Disturbed areas
Kentucky bluegrass	*Poa pratensis*	xxx	Sagebrush shrublands, oakbrush shrublands
Muttongrass	*Poa fendleriana*	xxx	Disturbed areas, sagebrush shrublands
Orchardgrass	*Dactylis glomerata*	xx	Disturbed areas, oakbrush shrublands, sagebrush shrublands
Prairie Junegrass	*Koeleria macrantha*	xxx	Disturbed areas, sagebrush shrublands
Quackgrass	*Elymus repens*	xx	Disturbed areas
Smooth brome	*Bromus inermis*	xxx	Disturbed areas, sagebrush shrublands, oakbrush shrublands

Table 1. Common plant species observed within the survey area.

Common Name	*Scientific Name*	Abundance*	Habitat Type
Western wheatgrass	*Pascopyrum smithii*	xx	Disturbed areas, sagebrush shrublands, oakbrush shrublands
Forbs			
American vetch	*Vicia americana*	xxx	Sagebrush shrublands, oakbrush shrublands
Common dandelion	*Taraxacum officinale*	xxx	Disturbed areas, oakbrush shrublands, sagebrush shrublands
Common plantain	*Plantago major*	xxx	Disturbed areas, sagebrush shrublands
Common yarrow	*Achillea millefolium*	xxx	Disturbed areas, sagebrush shrublands, oakbrush shrublands
Curlycup gumweed	*Grindelia squarrosa*	xx	Disturbed areas, sagebrush shrublands
Drummond's rockcress	*Arabis drummondii*	xx	Sagebrush shrublands, oakbrush shrublands
European stickseed	*Lappula squarrosa*	xxx	Disturbed areas
Hoary tansyaster	*Machaeranthera canescens*	xxx	Disturbed areas
Prickly lettuce	*Lactuca serriola*	xxx	Disturbed
Silvery lupine	*Lupinus argenteus*	xxx	Sagebrush shrublands, oakbrush shrublands
Small tumbleweed mustard	*Sisymbrium loeselii*	xx	Disturbed areas
Sweetclover	*Melilotus officinalis*	xxx	Disturbed areas
Tapertip onion	*Allium acuminatum*	xxx	Sagebrush shrublands
Wyoming Indian paintbrush	*Castilleja linariifolia*	xxx	Sagebrush shrublands, oakbrush shrublands
Yellow salsify	*Tragopogon dubius*	xx	Disturbed areas, sagebrush shrublands
Shrubs/Trees			
Gambel oak	*Quercus gambelii*	xxx	Oakbrush shrublands
Mountain big sagebrush	*Artemisia tridentata vaseyana*	xxx	Disturbed areas, sagebrush shrublands, oakbrush shrublands

Table 1. Common plant species observed within the survey area.

Common Name	*Scientific Name*	Abundance*	Habitat Type
Roundleaf snowberry	*Symphoricarpos rotundifolius*	xxx	Sagebrush shrublands, oakbrush shrublands
Rubber rabbitbrush	*Ericameria nauseosa*	x	Sagebrush shrublands, oakbrush shrublands
Saskatoon serviceberry	*Amelanchier alnifolia*	xxx	Sagebrush shrublands, oakbrush shrublands
Wyoming big sagebrush	*Artemisia tridentata wyomingensis*	xx	Sagebrush shrublands, oakbrush shrublands
Yellow rabbitbrush	*Chrysothamnus viscidiflorus*	xx	Sagebrush shrublands

*Abundance:
xxx= High frequency; with uniform distribution across project area.
xx= Moderate frequency; occurrence scattered throughout project area.
x= Infrequent; only a small number of individuals noted within project area.

VEGETATION ASSESSMENT

Sampling methods

The vegetation sampling protocol used involves a modified "line point-intercept method" based on the National Park Service Fire Monitoring Handbook (USDI National Park Service 2003) and Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Volume 1: Core Methods (Herrick et al 2015). The line point-intercept method uses the contact of a point to measure cover. The theory behind this method is that if an infinite number of points are placed in a two-dimensional area, the exact cover of a plant species can be determined by counting the number of points that intersect that species.

One reference transect was established near the well pad in a similar vegetation community. The following techniques were used to collect the sample data:

1. Each sample site was randomly selected within an area representative of the vegetative community being affected by the project.
2. The transect was designated Reference Transect.
3. A metal rebar stake was placed in the ground to anchor a 50-meter measuring tape (0-meters) and the tape extended across the vegetation on the site. A second rebar stake was placed and anchored the 50-meter end of the tape.
4. The beginning and ending point of the transect was recorded using a GPS receiver. Azimuths from the 0-meter to the 50-meter point were recorded.
5. Photographs were taken along the transect that recorded vegetation condition from 0 to 50-meters.

6. Point count data were collected at 1.0-meter intervals along a 50-meter tape measure using a thin, straight metal rod for a total of fifty samples taken along the transect.
7. The first plant species encountered was recorded in the "Top Layer" column. Subsequent species and litter were recorded in the "Lower Canopy Layers" columns. Each species was recorded by 4 letter code (first two letters each of genus and species); unique species were recorded only once per sample point.
8. Ground cover was recorded as a species code (for a basal intercept), rock, bedrock, moss, soil, embedded litter, or duff as defined by the sampling protocol.
9. Other species of vegetation incidentally observed in the sample area were recorded (in addition to those recorded during sampling).

Identification of plant species was aided by using pertinent published field guides (Ackerfield 2015, Whitson et al. 2006, Weber and Wittmann 2012).

Results

Vegetation monitoring was conducted by WestWater scientists on July 6, 2023. Monitoring was conducted during the growing season. Percent foliar cover and percent basal cover results from the line-point intercept permanent transect are provided in Table 2, along with the latitude/ longitude locations and magnetic azimuth from 0-meters to 50-meters for the transect. Photographs of the reference area are provided in Appendix A.

Table 2. Percent foliar and basal cover for vegetation monitoring transect.

Reference Transect		
Transect Location **0-meter terminus: Lat. 39.27735577, Long. -107.7722069** **50-meter terminus: Lat. 39.27693827, Long. -107.7724324** **Azimuth (true north): 207°**		
Group	**% Foliar Cover**	**% Basal Cover**
Native Perennial Graminoids	20	0
Introduced Perennial Graminoids	0	0
Native Annual Graminoids	0	0
Introduced Annual Graminoids	4	0
Native Perennial Forbs	18	0
Introduced Perennial Forbs	0	0
Native Annual/Biennial Forbs	0	0
Introduced Annual/Biennial Forbs	0	0
Subshrubs/Shrubs	30	0
Trees	0	0
Total Percent Foliar Cover	**72**	**0**
Litter	**20**	**0**
Bare ground	**8**	

The reference transect is located in a mountain sagebrush shrubland plant community composed primarily of mountain sagebrush and roundleaf snowberry with an understory of native forbs and perennial grass species. A summary of plant species recorded along the transect and their percent foliar cover along is displayed in Table 3.

Table 3. Plant species recorded along reference transect.

Common Name	***Scientific Name***	**Percent Foliar Cover**
Crandall's beardtongue	*Penstemon crandallii*	4
tailcup lupine	*Lupinus caudatus*	10
muttongrass	*Poa fendleriana*	4
Gambel oak	*Quercus gambelii*	4
Saskatoon serviceberry	*Amelanchier alnifolia*	6
Mountain sagebrush	*Artemisia tridentata* ssp. *vaseyana*	20
Roundleaf snowberry	*Symphoricarpos rotundifolius*	4
common yarrow	*Achillea millefolium*	2
field brome	*Bromus arvensis*	4
prairie Junegrass	*Koeleria macrantha*	4
western wheatgrass	*Pascopyrum smithii*	8
Kentucky bluegrass	*Poa pratensis*	2
	Total	**72**

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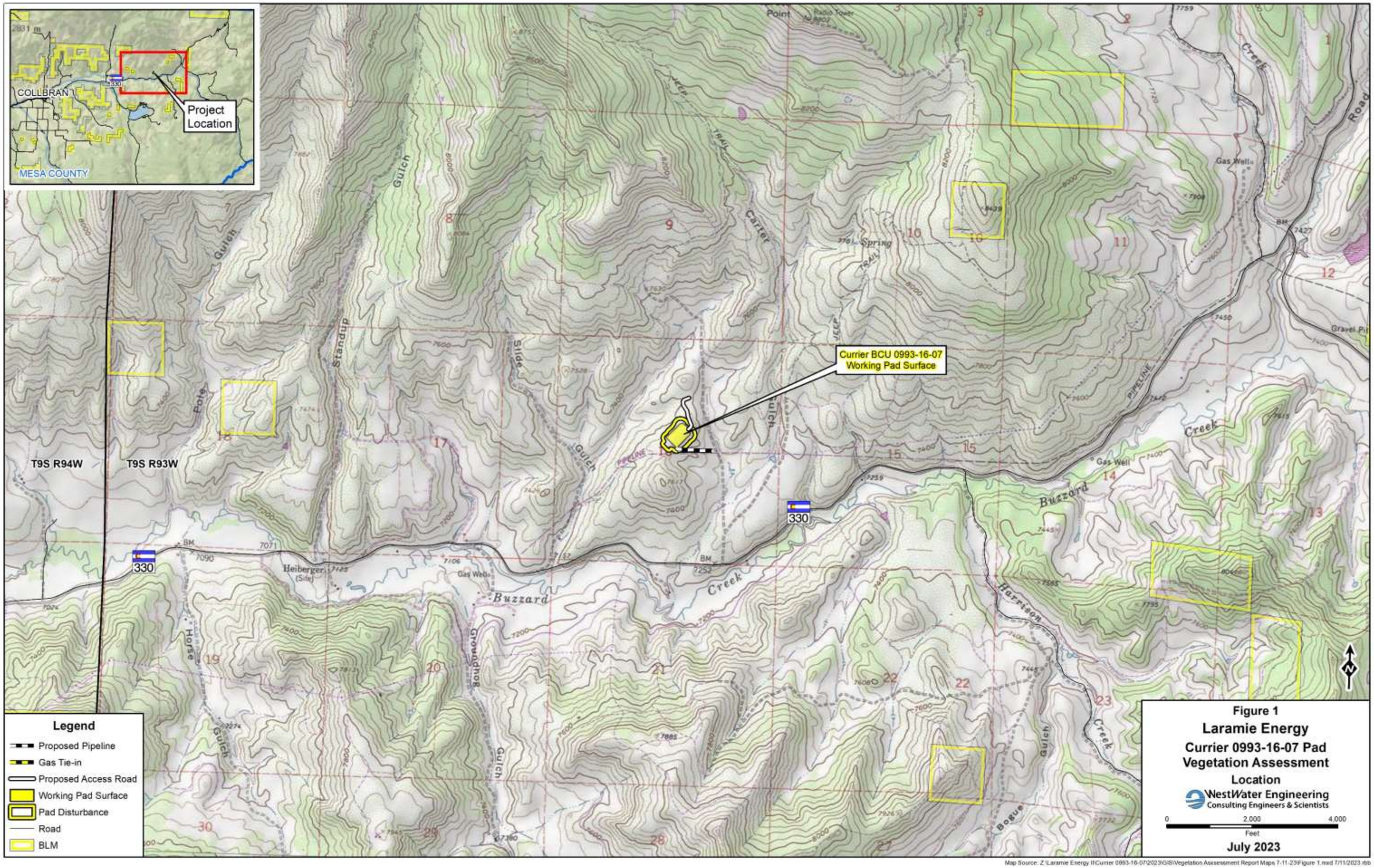

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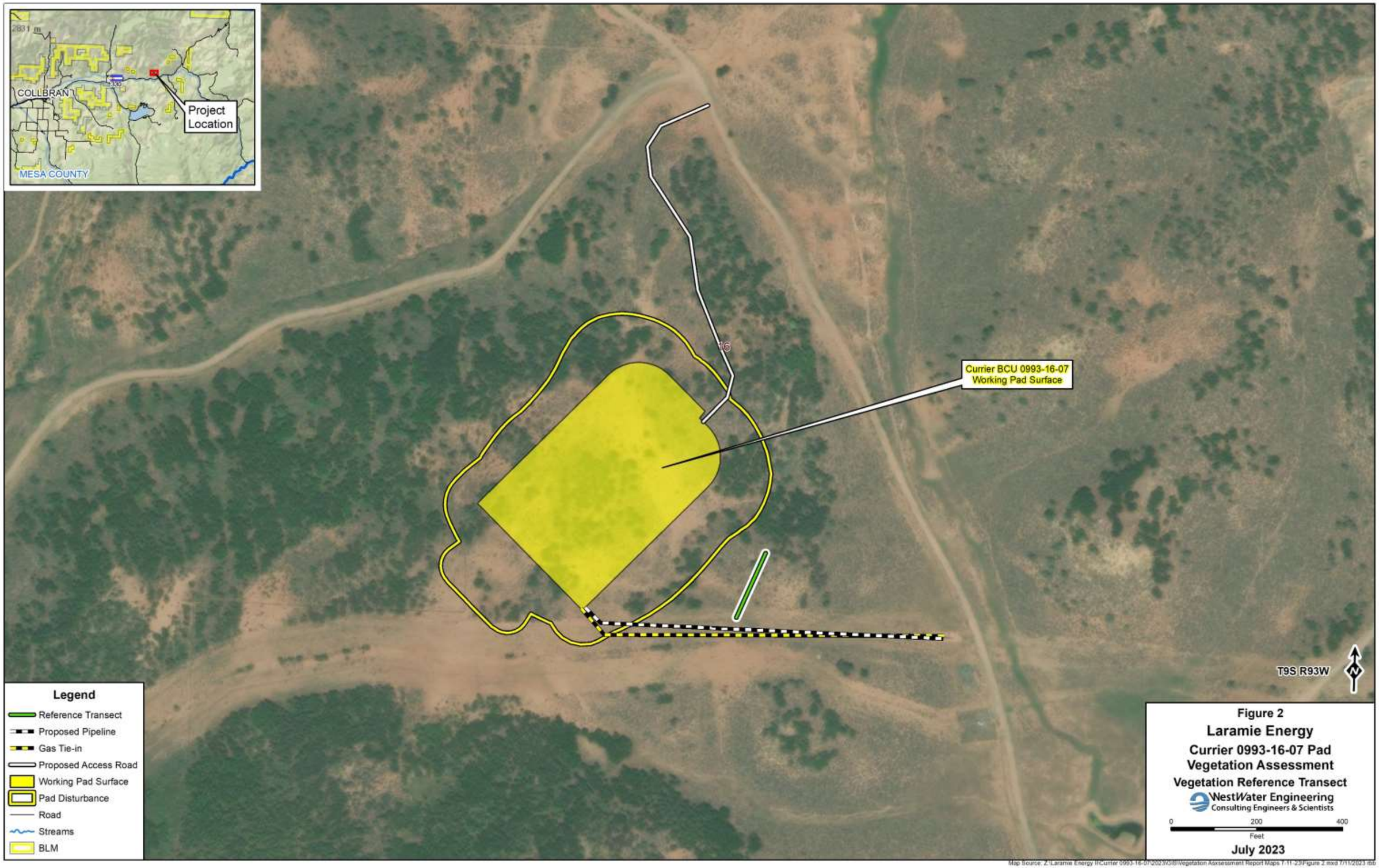
2831 m
COLLBRAN
330
MESA COUNTY
Project Location
Currier BCU 0993-16-07
Working Pad Surface
T9S R93W
Legend
Reference Transect
Proposed Pipeline
Gas Tie-in
Proposed Access Road
Working Pad Surface
Pad Disturbance
Road
Streams
BLM
Figure 2
Laramie Energy
Currier 0993-16-07 Pad
Vegetation Assessment
Vegetation Reference Transect
WestWater Engineering
Consulting Engineers & Scientists
0
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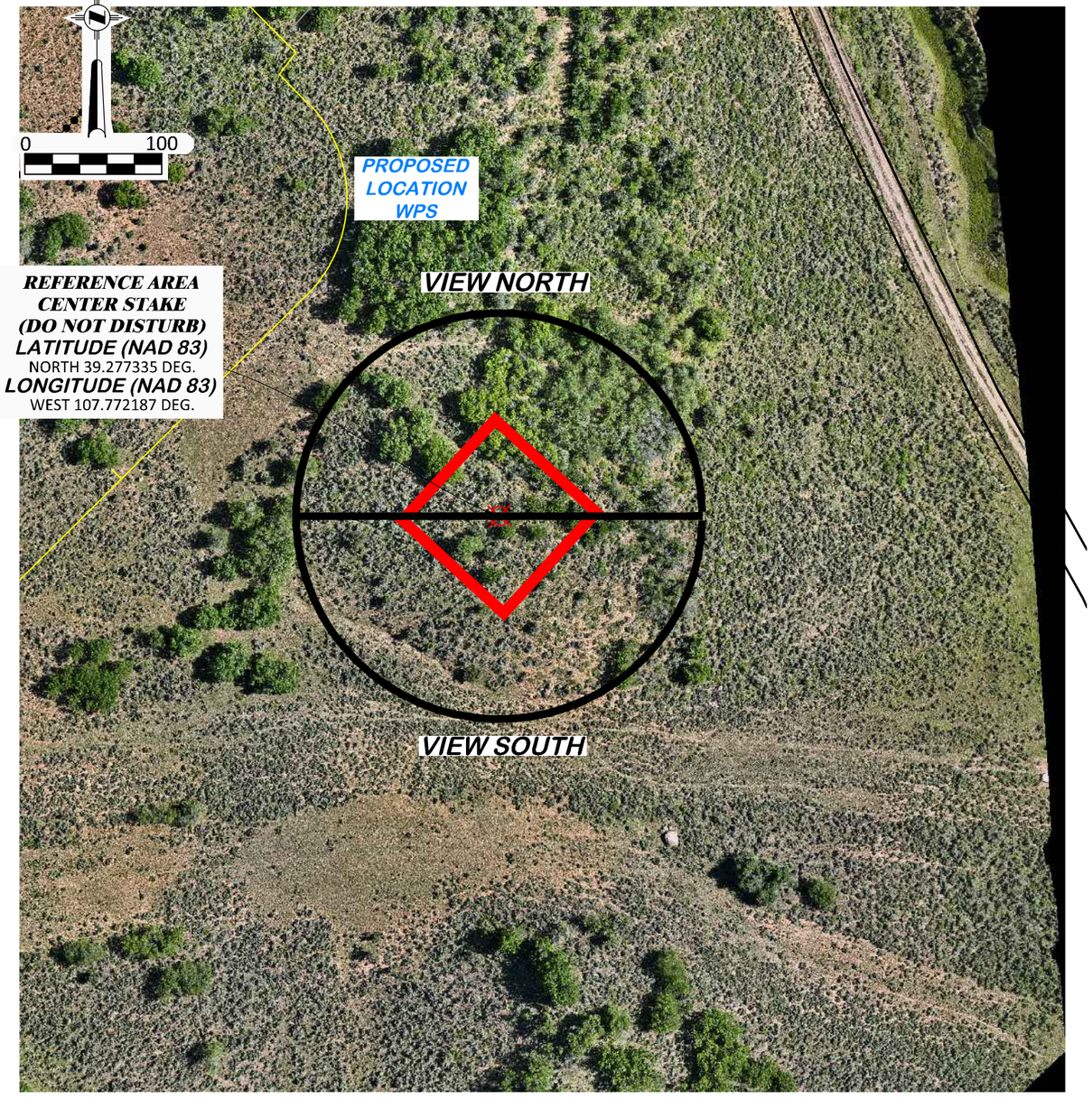
400
Feet
July 2023
Map Source: Z:\Laramie Energy II\Currier 0993-16-07\2023\GIS\Vegetation Assessment Report Maps 7-11-23\Figure 2.mxd 7/11/2023 rbb

APPENDIX A

REFERENCE AREA PHOTOGRAPHS

AERIAL REFERENCE PHOTO



AERIAL PHOTO SOURCE
AERIAL UNMANNED AIRCRAFT
PHOTOGRAMMETRY TAKEN 6/26/2023

REFERENCE AREA PHOTOS
6/7/2023

W N E

LOCATION AREA LOOKING NORTH

E S W

LOCATION AREA LOOKING SOUTH

CURRIER BCU 0993-16-07 PAD

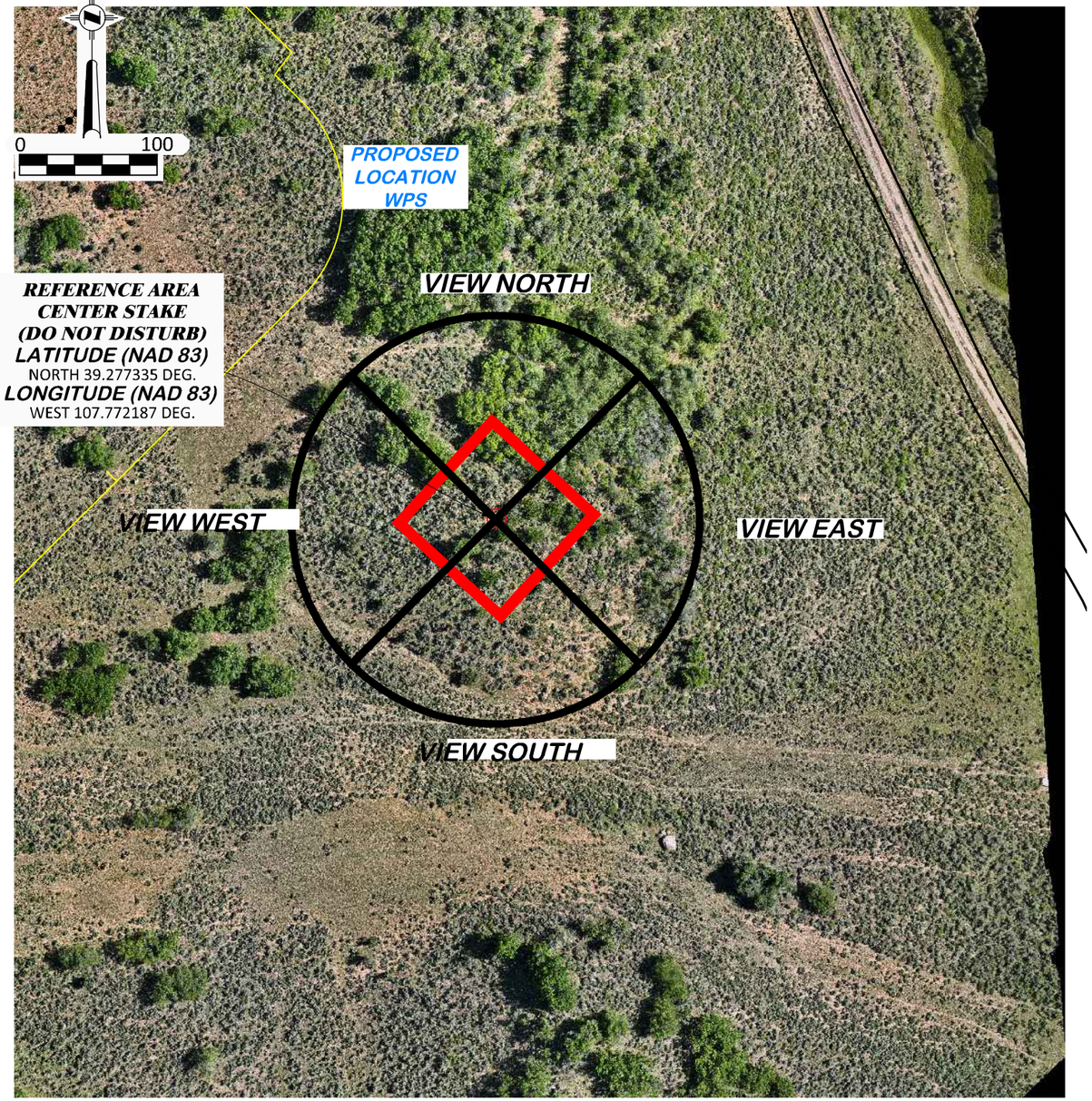
DRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 3/22/2023 - DEH	SCALE: NONE
REVISED: N/A	DRG JOB No. 22254
	304b(9)Bii REF PHOTO

REFERENCE AREA PHOTOS

LARAMIE ENERGY, LLC
CURRIER BCU 0993-16-07
SWNE, SECTION 16, T. 9 S., R. 93 W., 6th P.M.,
MESA COUNTY, COLORADO

AERIAL REFERENCE PHOTO



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AERIAL UNMANNED AIRCRAFT
PHOTOGRAMMETRY TAKEN 6/26/2023

REFERENCE AREA PHOTOS

REFERENCE AREA LOOKING NORTH
6/7/2023

REFERENCE AREA LOOKING SOUTH
6/7/2023

REFERENCE AREA LOOKING EAST
6/7/2023

REFERENCE AREA LOOKING WEST
6/7/2023

CURRIER BCU 0993-16-07 PAD

DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

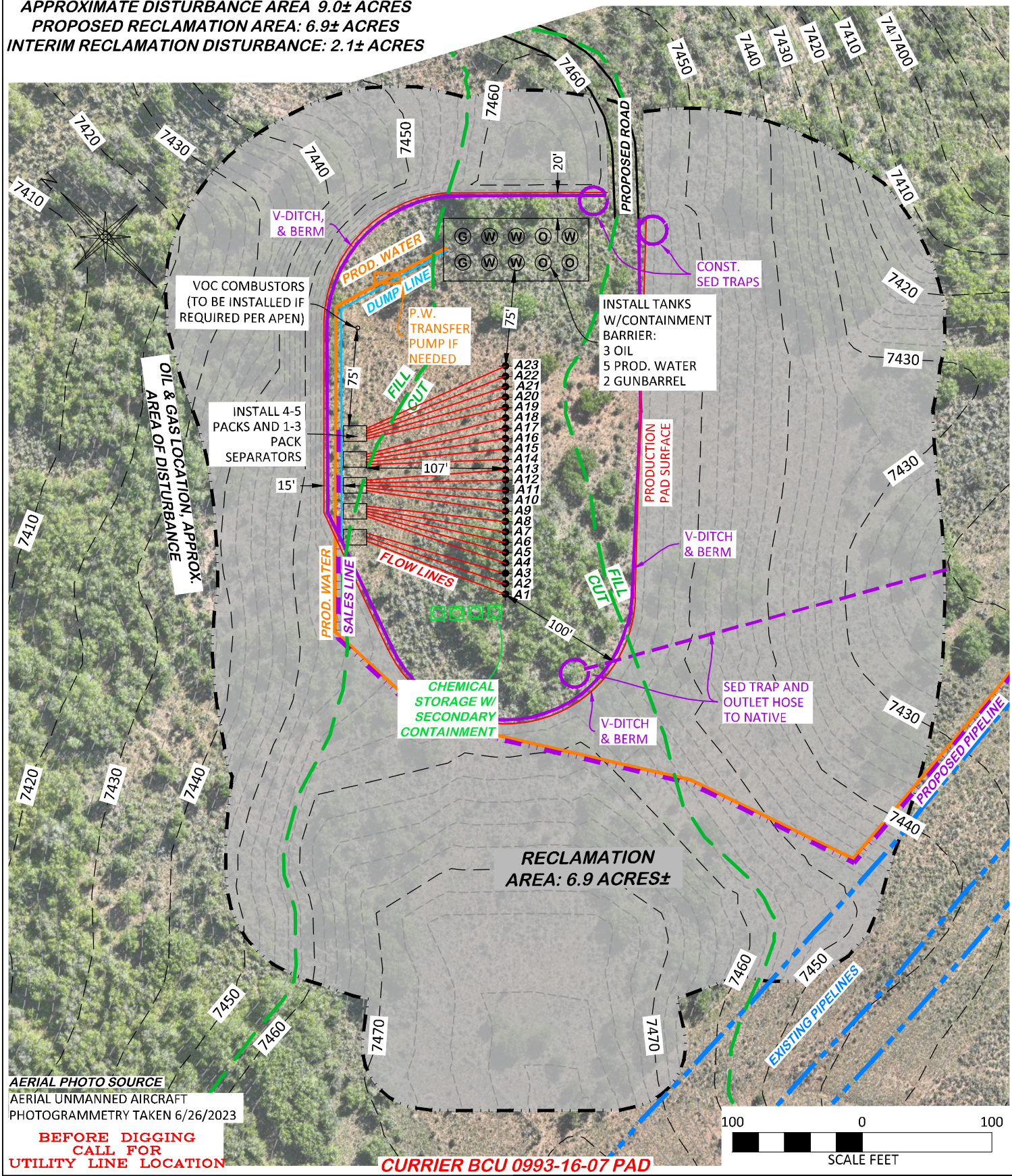
DRAWN: 3/22/2023 - DEH	SCALE: NONE
REVISED: N/A	DRG JOB No. 22254
	304b(9)Bii REF PHOTO (2)

REFERENCE AREA PHOTOS

LARAMIE ENERGY, LLC
CURRIER BCU 0993-16-07
SWNE, SECTION 16, T. 9 S., R. 93 W., 6th P.M.,
MESA COUNTY, COLORADO

APPENDIX B

Proposed Interim Reclamation Drawing



AERIAL PHOTO SOURCE
AERIAL UNMANNED AIRCRAFT PHOTOGRAMMETRY TAKEN 6/26/2023

BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

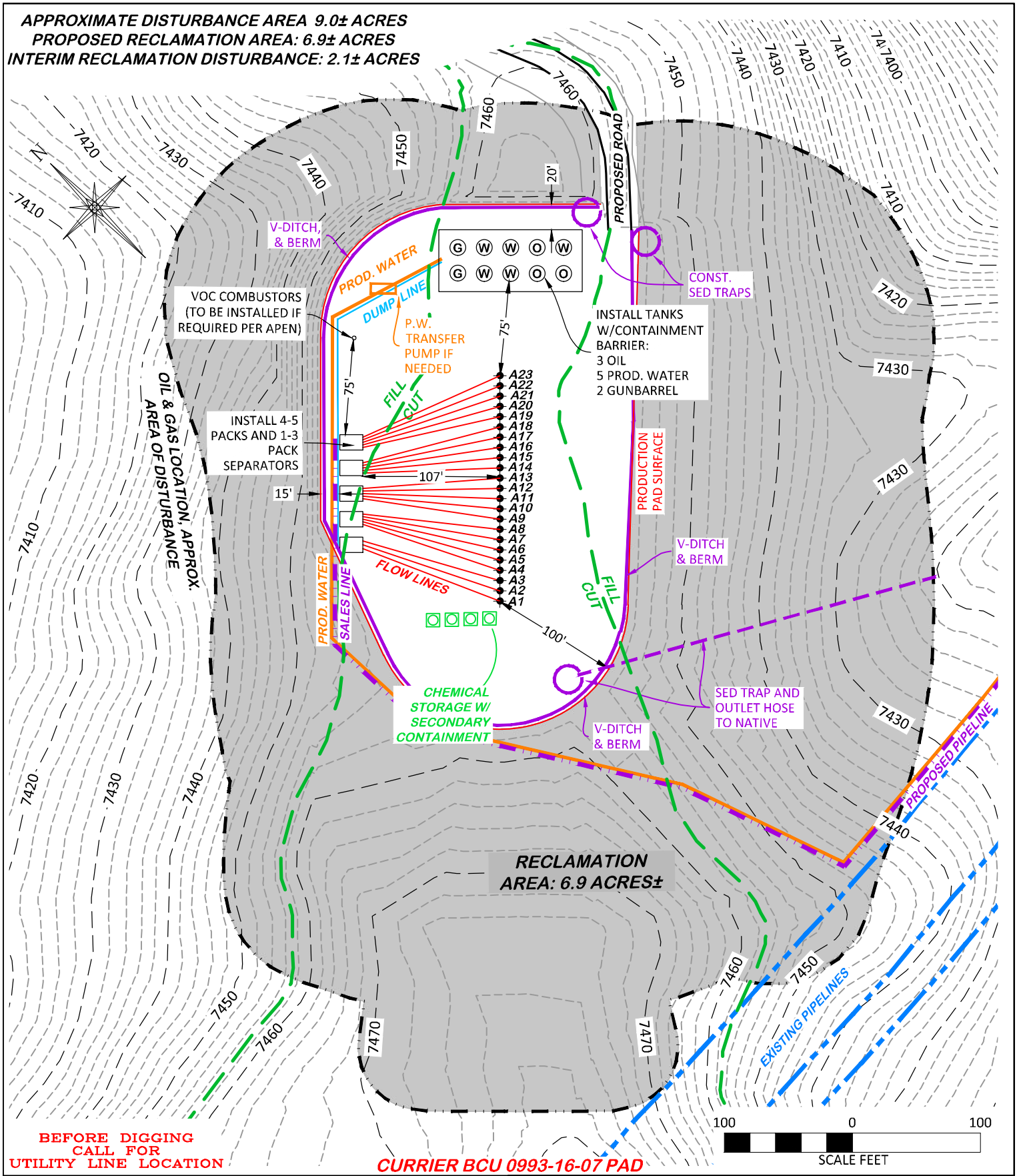
CURRIER BCU 0993-16-07 PAD

DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 7/5/2023 - DEH	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 22254
	304c(16) RECLAMATION ARL

INTERIM RECLAMATION PLAN

PROPOSED INTERIM RECLAMATION
LARAMIE ENERGY, LLC
CURRIER BCU 0993-16-07
SWNE, SECTION 16, T. 9 S., R. 93 W., 6th P.M., MESA COUNTY, COLORADO



DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 7/5/2023 - DEH	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 22254
	304c(16) RECLAMATION

INTERIM RECLAMATION PLAN

PROPOSED INTERIM RECLAMATION
LARAMIE ENERGY, LLC
CURRIER BCU 0993-16-07
SWNE, SECTION 16, T. 9 S., R. 93 W., 6th P.M., MESA COUNTY, COLORADO

APPENDIX C

BLM Seed Mixes by Habitat Type

BLM MENU-BASED NATIVE RECLAMATION SEED MIXES BY HABITAT TYPE
(October 2021)

- All seed placed on public land shall be approved by the BLM and meet BLM standards for species and seeding rate for the specific habitat type within the project area.
- Seed mix labels and test results shall be provided to the BLM for approval before application.
- All seed shall be tested by a registered seed analyst for viability/germination and noxious weeds at an official state seed analysis lab, within one year of acceptance date.
- Certification shall include a minimum germination rate of 80%, a minimum purity of 90%, source-identification, no noxious weed seeds and no more than 0.5% weight of other weed seeds. Mulch shall be certified weed free. (IM 2006-073)
- For drill-seeding, small seeds (>500,000 per pound) must be packaged separately to allow for separate application and planted no deeper than 0.25 inch.
- The seeding rates in the following tables are based on **60 pure live seeds (PLS) per square foot** for drill-seeding. This is doubled to **120 PLS per square foot** for broadcast-seeding or hydroseeding. For hydroseeding/hydromulching, application of seeds and mulch shall be two separate steps.

Low Elevation Salt-Desert Shrub/Basin Big Sagebrush (8 to 12 inches precipitation)

Common Name	*Species Name*	*Variety*	*Seeds per Pound*	*PLS lbs/acre*
Plant All of the Following Grasses (15% of Mix Each, 45% Total)				
Indian Ricegrass	*Achnatherum hymenoides*	Native Colorado/Utah source or Nezpar, Paloma, Rimrock	141,000	2.8
Alkali Sacaton	*Sporobolus airoides*	Native Colorado/Utah source preferred	5,000,000	0.08
Sand Dropseed	*Sporobolus cryptandrus*	UP* Dolores or native Colorado/Utah source preferred	1,750,000	0.2
And Three of the Following Grasses (10% of Mix Each, 30% Total)				
Bottlebrush squirreltail	*Elymus elymoides*	Fish Creek, Toe Jam Creek, Wapiti	192,000	1.4
Salina Wildrye	*Leymus salinus*	UP* Dolores or native Colorado/Utah source preferred	125,000 (estimate)	2.1
Western Wheatgrass	*Pascopyrum smithii*	UP* variety or Arriba, Recovery, Rodan, Rosana	110,000	2.4
Purple Three-awn	*Aristida purpurea*	Native Colorado/Utah source preferred	275,000	1.0
And Two of the Following Shrubs (5% of Mix Each, 10% Total)				
Fourwing Saltbush	*Atriplex canescens*	Native Colorado/Utah source preferred	50,000	3.9
Shadscale Saltbush	*Atriplex confertifolia*	Native Colorado/Utah source, or Rincon, Snake River, Wytana	60,000	3.3
Gardner's Saltbush	*Atriplex gardneri*	Native Colorado/Utah source preferred	111,500	1.8

And Three of the Following Forbs/Subshrubs (5% of Mix Each, 10% Total) *					
Common Name	***Scientific Name***	***PLS lbs/acre***	***Common Name***	***Scientific Name***	***PLS lbs/acre***
Broom Snakeweed	*Gutierrezia sarothrae*	0.08	Scarlet Globemallow	*Sphaeralcea coccinea*	0.26
Lewis Blue Flax	*Linum lewisii*	0.8	Western Yarrow	*Achillea millefolium*	0.04
Scarlet Gilia	*Ipomopsis aggregata*	0.36	Winterfat	*Krascheninnikovia lanata*	1.06

*Preferred source = Uncompahgre Project (UP), Kathy See, nativeplant@upartnership.org, 970-240-9498, 970-901-8247 if available; otherwise another native Colorado/Utah source is preferred.

Mixed Mountain Shrubland – Mesic (Gambel's Oak/Mountain Sagebrush)
(16 to 22 inches precipitation)

Common Name	*Species Name*	*Variety*	*Seeds per Pound*	*PLS lbs/acre*
Plant Three of the Following Grasses (15% of Mix Each, 45% Total)				
Mountain Brome	*Bromus marginatus*	UP* Cold Springs preferred, or Bromar, Garnet	64,000	6.1
Slender Wheatgrass	*Elymus trachycaulus*	San Luis	159,000	1.6
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	Native Colorado/Utah source, or Anatone, Goldar	140,000	2.8
Rocky Mountain Fescue	*Festuca saximontana*	Colorado/Utah source preferred	1,200,000	0.3
And One of the Following Grasses (10% of Mix Each, 20% Total)				
Prairie Junegrass	*Koeleria macrantha*	Native Colorado/Utah source preferred	2,315,000	0.1
Mutton Bluegrass	*Poa fendleriana*	Native Colorado/Utah source preferred	890,000	0.3
And One of the Following Grasses (10% of Mix Each, 10% Total)				
Western Wheatgrass	*Pascopyrum smithii*	UP* variety native Colorado/Utah source, or Arriba, Recovery, Rodan, Rosana	110,000	2.4
Thickspike Wheatgrass	*Elymus lanceolatus*	Bannock, Critana, Schwendimar	154,000	1.7
And One of the Following Grasses (10% of Mix Each, 10% Total)				
Columbia Needlegrass	*Achnatherum nelsonii*	Native sources within 500 miles preferred	150,000	1.7
Lettermann Needlegrass	*A. lettermanii*	Native sources within 500 miles preferred	225,000	1.2

And Five of the Following Forbs (3% of Mix Each, 15% Total) *					
Common Name	***Scientific Name***	***PLS lbs/acre***	***Common Name***	***Scientific Name***	***PLS lbs/acre***
American Vetch	*Vicia americana*	2.4	Rocky Mountain Penstemon	*Penstemon strictus*	0.1
Bigelow's Tansy-aster	*Machaeranthera bigelovii*	0.05	Scarlet Gilia	*Ipomopsis aggregata*	0.2
Blanketflower	*Gaillardia aristata*	0.6	Showy Daisy	*Erigeron speciosus*	0.05
Great Basin Penstemon	*Penstemon subglaber*	0.19	Sticky Geranium	*Geranium viscosissimum*	1.6
Hairy Goldenaster	*Heterotheca villosa*	0.1	Sulphur Buckwheat	*Eriogonum umbellatum*	0.4
Lewis Blue Flax	*Linum lewisii*	0.5	Tailcup Lupine	*Lupinus caudatus*	4.4
Little Sunflower	*Helianthella uniflora*	1.9	Utah Sweetvetch	*Hedysarum boreale*	1.7
Mule's-ears	*Wyethia amplexicaulis*	2.8	Western Yarrow	*Achillea millefolium*	0.03

*Preferred source = Uncompahgre Project (UP), Kathy See, nativeplant@upartnership.org, 970-240-9498, 970-901-8247 if available; otherwise another native Colorado/Utah source is preferred.

APPENDIX D

Mesa County Noxious Weed Management Plan

MESA COUNTY

Noxious Weed Management Plan

Revised 2020

Table of Contents

Definitions & Abbreviations

1. Act: the Colorado Noxious Weed Act, Title 35, Article 5.5, Colorado Revised Statutes (C.R.S.) as amended.

2. Annual weed: a weed that lives for one year then dies. Seeds are the primary dispersal mechanism for annual plants.

3. Arbitration panel: In an enforcement situation involving noxious weeds that are not slated for eradication, a landowner may request an arbitration panel to determine a management plan for the landowner's infested property. The arbitration panel is chosen by the local governing body and "shall be comprised of a weed management specialist or weed scientist, a landowner of similar land in the same county, and a third panel member chosen by agreement of the first two panel members." (C.R.S. 35-5.5-109(4)(b)).

4. Authorized agent: a local or State government employee or appointed pest inspector.

5. Best Management Practices: recommendations for the most reasonable, effective and economical but least harmful methods of weed control including appropriate integrated weed management methods.

6. Biennial weed: a weed that has a two year life cycle. It germinates and grows leaves one year, then sends up a flower stalk and sets seed the following year. Seeds are the primary dispersal mechanism for biennial plants.

7. Biological control: see "Integrated Weed Management"

8. Biocontrol agent: a living creature that is used to control undesirable pests. Includes insects, diseases, and vertebrate animals, among others.

9. BOCC: Mesa County Board of Commissioners.

10. Bolting: a stage in the life cycle of a plant when it sends up a flower stalk.

11. CDA: Colorado Department of Agriculture

12. Chemical control: see "Integrated Weed Management"

13. Commissioner: Commissioner of the Colorado Department of Agriculture (a.k.a. Commissioner of Agriculture)

14. Containment: see "Management criteria"

15. State Coordinator: Colorado State Weed Coordinator under contract with, or appointed by the Commissioner of Agriculture.

16. County: Mesa County

17. Cultural control: See "Integrated Weed Management"

18. Elimination: removing and destroying live plants of List A or List B species designated for eradication, and preventing seed production until the seed source is depleted - considered the first step in the eradication process.

19. Eradication: see "Management criteria".

20. Infestation: An area of land overrun with or dominated by weed species.

21. Integrated Weed Management: the planning and implementation of a coordinated program that uses a variety of effective tools to manage noxious weeds. Elements of an IWM plan include weed identification, education, prevention, cultural practices, mechanical removal, chemical use, and biological control.
    a. Biological control: the deliberate introduction of living agents (natural enemies), such as insects, vertebrate predators, grazing animals, and plant diseases, to reduce the population of a pest.
    b. Chemical control: the use of one or more herbicides to damage or destroy targeted plants by spraying, injection, painting or other proper and legal method.
    c. Cultural control: sensible land management practices such as dense seeding with competitive species, crop rotation, careful irrigation practices, proper fertilization, and sensible grazing regimes.
    d. Mechanical control: the physical removal of a weed by such methods as pulling, hand grubbing, rogueing, hoeing, burning, grazing, tillage, plowing, solarization and mowing.

22. Landowner: any owner of record of State, federal, county, municipal, or private land.

23. List A Species: "…rare noxious weed species that are subject to eradication wherever detected Statewide in order to protect neighboring lands and the State as a whole." (C.R.S. 35-5.5-108(2)(a)(I)).

24. List B Species: "…noxious weed species with discrete Statewide distributions that are subject to eradication, containment, or suppression in portions of the State designated by the commissioner in order to stop the continued spread of these species." (C.R.S. 3-5.5-108(2)(a)(II)).

25. List C Species: "…widespread and well-established noxious weed species for which control is recommended but not required by the State, although local governing bodies may require management." (CSR 3-5.5-108(2)(a)(III)).

26. Management criteria: the specific desired result of integrated weed management efforts including:
    a. Containment: "…maintaining an intensively managed buffer zone that separates infested regions, where suppression activities prevail, from largely uninfested regions, where eradication activities prevail." (C.R.S. 35-5.5-103(11.7)(b)).

b. Eradication: "…reducing the reproductive success of a noxious weed species or specified noxious weed population in largely uninfested regions to zero and permanently eliminating the species or population within a specified period of time. Once all specified weed populations are eliminated or prevented from reproducing, intensive efforts continue until the existing seed bank is exhausted." (C.R.S. 35-5.5-103(11.7)(a)).
c. Suppression: "…reducing the vigor of noxious weed populations within an infested region, decreasing the propensity of noxious weed species to spread to surrounding lands, and mitigating the negative effects of noxious weed populations on infested lands." Suppression efforts may employ a wide variety of integrated management techniques. (C.R.S. 35-5.5-103(11.7)(c))

27. Mechanical control: see "Integrated Weed Management"

28. Neighboring: a property with a boundary immediately adjacent to the boundary of another property.

29. Noxious weed: a non-native plant that has been designated by State rule as being noxious or has been declared a noxious weed by a County Advisory Board, and meets one or more of the following criteria:
    A. aggressive invaders detrimental to agriculture or native plant communities,
    B. may be poisonous to livestock,
    C. may be carriers of or hosts to insects, diseases or parasites,
    D. are detrimental to sound management of native or agricultural ecosystems.

30. Noxious weed list: a list of weed species subject to specific management regulations or otherwise of concern to a governing agency. The Colorado Noxious Weed List ("State List") categorizes noxious weeds as A, B, C and Watch List species and is created by the State Noxious Weed Advisory Committee and approved by the Commissioner.
    The Mesa County Noxious Weed List ("County List") is composed of State List species present in the County and may include additional species of concern. The County List is created by the Mesa County Weed Advisory Board and approved by the BOCC.

31. Perennial weed: a weed that lives for 3 or more years. These species usually spread by root systems or root pieces, as well as seeds.

32. Propagules: plant parts (e.g. seeds and root pieces) that have the ability to give rise to new plants.

33. Program: Mesa County Noxious Weed & Pest Management, and County employees working for and with the Program.

34. Program Coordinator: the agent or Mesa County employee designated by the BOCC to supervise and direct weed management in accordance with the Mesa County Noxious Weed Management Plan.

35. Rosette: a circular growth of leaves that forms after germination of some plants.

36. ROW: right-of-way, or, rights-of-way

37. Rules: Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act (8 CCR 1206-2)

38. State: State of Colorado

39. State Noxious Weed: any noxious weed identified by rule by the Commissioner of the Colorado Department of Agriculture.

40. Suppression: see "Management criteria"

41. Weed Advisory Board ("WAB"): the Mesa County Weed Advisory Board are the citizens appointed by the Board of County Commissioners to advise on management of noxious weeds in the County jurisdiction.

42. Weed management plan: a noxious weed management plan developed by any person, agency, the Commissioner or the Board, using integrated weed management techniques, methods or practices. The Mesa County Noxious Weed Management Plan is this document and is referred to as the "Plan".

1.0 Authority: Colorado Noxious Weed Act (Act): C.R.S. Title 35, Article 5.5, as Amended

1.1 Purpose of C.R.S. Title 35, Article 5.5

Certain undesirable plants, primarily aggressive non-native invaders, constitute a threat to the "continued economic and environmental value of the lands of the State and if present in any area of the State must be managed" These species must be managed in an organized and coordinated manner on private and public lands, using integrated management techniques "which are least damaging and which are practical and economically reasonable." (C.R.S. 35-5.5-102)

1.2 Duties to Manage Noxious Weeds

As mandated by the Colorado Noxious Weed Act (C.R.S. 35-5.5-104), all persons shall control noxious weeds on their property if such plants are a threat to neighboring landowners or natural ecosystems. Weed control programs should be integrated in their approach, using all available technologies to achieve effective weed control.

It is unlawful for persons to "intentionally introduce, cultivate, sell, offer for sale, or knowingly allow to grow" any species recognized as a noxious weed by the State (C.R.S. 35-5.5-104.5(1)(a)), with a few exceptions (C.R.S. 35-5.5-104.5(1)(a)(I-V)).

1.2.1 Mesa County Noxious Weed Management Plan & Weed Advisory Board

To comply with the Act, the Mesa County Board of Commissioners (BOCC) has adopted this Mesa County Noxious Weed Management Plan (Plan) for all of the unincorporated lands within its jurisdiction. The BOCC may adopt regulations, ordinances or resolutions to enforce this Plan and promote noxious weed management in the county. The Mesa County Noxious Weed & Pest Management Coordinator (Program Coordinator) and other authorized agents of Mesa County (County) may be used to enforce noxious weed control and to otherwise administer the provisions of the Act. (C.R.S. 35-5.5-105)

Local landowners are appointed by the BOCC to the Mesa County Weed Advisory Board (WAB) to advise on noxious weed management in County jurisdiction. The WAB has the power and duty to: develop the Mesa County Noxious Weed Management Plan, recommend management criteria and integrated management methods for noxious weeds, propose species for inclusion in the Mesa County Noxious Weed List, review and revise the Plan as needed at least once every three years and submit it to the BOCC. The WAB can request that specific landowners submit weed management plans (Appendix A) when appropriate. (C.R.S. 35-5.5-107)

The BOCC may choose to approve, modify or reject weed management plans, or any other recommendations of the WAB; however, management plans for species with State designated eradication plans cannot be rejected unless the County submits a waiver of compliance to the Commissioner of the Colorado Department of Agriculture (Commissioner) (Rules: 8 CCR 1206-2 Part 6).

1.2.2 Coordinated Efforts between the State and County

The Colorado Department of Agriculture (CDA) has determined that "an organized and coordinated effort must be made to stop the spread of noxious weeds" (C.R.S. 35-5.5-102). This

effort is facilitated by the Colorado Noxious Weed Coordinator (State Coordinator) who builds local coalitions and coordinates efforts of state, federal, local, and private landowners in developing a state weed management plan for each species on the Colorado Noxious Weed List.

When requested by the State Coordinator, the authorized agent from each county will submit a management plan for a particular species proposing which level of control will be implemented in their respective county: eradication, suppression, or containment. The State Coordinator compiles all recommendations and submits a State weed management plan for each species, as requested, to the Colorado State Noxious Weed Advisory Committee (Committee). The Committee reviews and recommends the noxious weed management plans to the Commissioner who, via the State legislature, incorporates the plans into the Rules (Rules: 8 CCR 1206-2).

1.2.3 Designation of Colorado List A, B & C Noxious Weeds

The Rules designate and classify noxious weeds into three categories (C.R.S. 35-5.5-108), and the Commissioner prescribes acceptable management criteria for each species on Lists A and B.

- **"List A**" species are designated as weeds to be eradicated throughout Colorado. Eradication of all List A species is required whether or not they appear on an individual county's noxious weed list. List A species management plans prioritize control methods that are intended to kill/remove all plants of that species, and prevent future re-growth through seed spread/root propagules.

- **"List B"** species are further established species for which the intent of weed management plans is to stop their continued spread. List B species management plans are created on a county-by-county basis. Plans may require eradication, containment, or suppression of a certain species in designated areas depending upon the population and coverage of the noxious weed. List B species designated by the State Coordinator for eradication in Mesa County are described as "List A" species on the Mesa County Noxious Weed List.

- **"List C"** species are typically widespread within Colorado. The weed management plans for List C species, when adopted, will be designed "to support the efforts of local governing bodies to facilitate more effective integrated weed management." "The goal of such plans will be to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species." (Rules: Section 5.2)

- **"Watch List"** species are those that pose a potential economic or ecologic threat but are yet to have any State regulation. The purpose of the Watch List is to encourage identification and reporting of these species to the State to assist in determining which species should be designated as noxious weeds.

Visit the CDA website (Appendix D) or contact the Program for a complete Colorado Noxious Weed List.

Local governments or landowners may request a compliance waiver from the Commissioner that releases the local government or landowner from "certain obligations of eradication for a specific population of a List A or List B species" (C.R.S. 35-5.5-108.5 (2.7)).

The Mesa County Noxious Weed List ("List) and management criteria for List A and B species can be found in Section 1.3 and Table 1 of this document.

1.2.4 Procedure for Enforcement of Eradication - List A and List B Species

Local governing bodies shall "initiate and maintain contact with landowners who are affected by list A species and populations of list B species designated for eradication" (C.R.S. 35-5.5-108.5(3)). Each county shall "provide affected landowners with technical assistance" (C.R.S. 35-5.5-108.5(3)(b)(I)) and "carry out sufficient measures, including project oversight and enforcement" (C.R.S. 35-5.5-108.5(3)(b)(II)) to ensure that eradication of so designated species is accomplished. (C.R.S. 35-5.5-108.5(3)(b)(III, IV)) Each county shall "provide the Commissioner with assistance in disseminating financial resources to affected landowners and mapping data pursuant to the rules promulgated by the Commissioner, and determine the cost of eradication to be borne by the landowners." The Commissioner may implement eradication programs directly if a county fails to perform its duties in regards to eradication.

A landowner affected by any list A species or a List B species designated for eradication shall allow the authorized agent(s) of the county access to the affected property for the purpose of inspection and eradication when at least one of the following conditions occur:

"(a) The affected landowner or occupant has requested the inspection; or

(b) A neighboring landowner or occupant has reported a suspected noxious weed infestation and requested an inspection; or

(c) An authorized agent of the local government or Commissioner has made a visual observation from a public right-of-way or area and has reason to believe that a noxious weed infestation exists." (C.R.S. 35-5.5-108.5 (4))

If a noxious weed infestation is suspected, a letter must be sent via certified mail defining the problem and requesting an inspection. If entry is refused or there is no response from the landowner after 10 days from the mailing date of the certified letter, an inspection warrant must be obtained by the authorized agent from a county or district court before an inspection is conducted (CSR 35-5.5-108.5(5)(b)(I)). A landowner cannot deny entry to inspect if a warrant is secured.

After inspection, a notice outlining the problem, stating steps to be taken for eradication and advising the landowner to commence eradication within a specified time frame shall be sent by certified mail. Within five (5) days of mailing the certified letter, the landowner shall comply with the recommendations or submit an acceptable noxious weed eradication plan. The county shall take action in the case of failure of the landowner to comply with the Act, by implementing the eradication plan, and assessing the entire cost of the eradication action to the landowner. The assessment becomes a lien on the property until paid. Funds collected shall be used in the furtherance of the county's weed management efforts.

Once an eradication effort is made, the county has the right to enter the property to ensure compliance with the requirements of the eradication plan. The landowner may apply to the Commissioner for a waiver of compliance for species with an eradication designation (C.R.S. 108.5(14).

The county cannot compel a private owner to control weeds without first applying the same control measures on any county-owned land or rights-of-way adjacent to the private property in question. If the county fails to take the actions outlined above for List A and List B species designated for eradication, the Commissioner is authorized to perform the eradication effort.

State agencies have the same responsibility as private landowners for List A and List B species designated for eradication (C.R.S. 35-5.5-110). Notification by the county is the same as for private landowners. The county has the power to enter infested public lands and undertake the eradication effort if the State agency does not comply with the eradication plan. The State agency having jurisdiction over the treated land shall pay for the expenses associated with the eradication effort. The county may enter into a written reimbursement agreement with the State agency.

1.2.5 Procedure for Enforcement of Management of Species Not Designated for Eradication

A landowner affected by either List B or List C species designated for containment or suppression shall allow the authorized agent(s) of the county access to inspect the affected property when at least one of the following conditions occur:

"(a) The affected landowner or occupant has requested the inspection; or

(b) A neighboring landowner or occupant has reported a suspected noxious weed infestation and requested an inspection; or

(c) An authorized agent of the local government or Commissioner has made a visual observation from a public right of way or area and has reason to believe that a noxious weed infestation exists." (C.R.S. 35-5.5-109)

Before entering private property, the landowner or occupant must be notified of the pending inspection by certified mail. If entry is refused, an inspection warrant must be obtained by the authorized agent before the property can be inspected (C.R.S. 35-5.5-109(2)(b)). A landowner cannot deny entry to inspect if a warrant is secured. When noxious weeds are identified on a property, the authorized agent shall notify the landowner by certified mail which noxious weeds were found, how to control those weeds, and advise them to begin management within a specified time frame. Within 10 days of receipt of notification, the landowner or occupant must comply with the recommendations, submit an acceptable weed management plan, or request an arbitration panel hearing (C.R.S. 35-5.5-109(4)(a)). The county has the authority to control the weeds in the case of failure by the landowner to comply with the notification and assess the cost of control plus overhead expenses, up to 20% (C.R.S. 35-5.5-109(5)(a)(II)). The county has the right to enter the property to ensure compliance with the requirements of the management plan. The county cannot force a private owner to control weeds without first having equal or greater control measures on any county-owned lands adjacent to the private property in question.

1.2.6 Nuisance Declaration, Interagency Agreements and Funding

Noxious weeds may be declared a public nuisance, subject to all applicable laws and remedies for abatement (C.R.S. 16-13, Part 3), including removal or destruction of the weeds (C.R.S. 35-5.5-113).

The county may enter into cooperative agreements for weed management with State and federal agencies (C.R.S. 35-5.5-111). Public lands under the jurisdiction of the county, including roads, highways, rights-of-way, and easements, must be in compliance with the Act (C.R.S. 35-5.5-112).

A State noxious weed management fund was established to fund grants or contracts for weed management projects and education including procedures for allocation of funds to appropriate entities (C.R.S. 35-5.5-116). Each county may levy a tax of not more than 5 mils, upon voter approval, to fund noxious weed management programs (C.R.S. 35-5.5-119).

1.3 Mesa County Noxious Weed List

Each county adopts a noxious weed list for weeds of importance to their county. The Mesa County Noxious Weed List includes 29 weeds as of 2017 (Table 1). Mesa County "A" species are Colorado List A species known to exist/have existed in the County, and List B species designated for eradication in the County. Mesa County "B" species include Colorado List B and List C species, each with specified management criteria for Mesa County.

Weeds that are not on a Colorado Noxious Weed List or that do not have a State weed management plan may be designated as a Mesa County noxious weed by the BOCC. Any person or organization can submit proposals to the Mesa County Weed Advisory Board (WAB) to add species to the County List. Proposals shall include a justification for addition to the County List and a suggested management plan that outlines areas of eradication, suppression and/or containment according to the amount and coverage of the species. Should the WAB approve the proposal, they will, in cooperation with the Program Coordinator, submit a petition to add the species to the County List to the BOCC. The BOCC will consider the petition at public hearing after a publicized 30-day public comment period.

The County List shall be published in a local newspaper in the spring of each year, stating the common and scientific names of each species

Table 1 indicates the Mesa County Noxious Weed List and designations (A, B) the corresponding Colorado Noxious Weed List designations (A, B, C, Watch), and comments regarding species locations and management criteria.

Table 1: Mesa County Noxious Weed List and Management Criteria

COMMON NAME	SCIENTIFIC NAME	STATE LIST	COUNTY LIST	SPECIAL NOTES
Cypress spurge	*(Euphorbia cyparissias*)	A	A	Ornamental
Dyer's woad	(*Isatis tinctoria*)	A	A	
Giant reed grass	(*Arundo donax*)	A	A	Ornamental
Bohemian, Giant and Japanese knotweed	(*Polygonum bohemicum*) (*P.sachalinense)* (*P. cuspidatum*)	A	A	Ornamental
Myrtle spurge	(*Euphorbia myrsinites*)	A	A	Ornamental
Purple loosestrife	(*Lythrum salicaria*)	A	A	Escaped into valley wetlands
Yellow starthistle	(*Centaurea solstitialis)*	A	A	Escaped into rangeland: Mesa, Glade Park
Flowering Rush	(Butomus umbellatus)	A	A	Ornamental/escaped into Leach Creek GJ
Absinth wormwood	(*Artemesia absinthium*)	B	A	Ornamental
Chinese clematis	(*Clematis orientalis*)	B	A	Ornamental/ escaped along CO River in Palisade
Dalmatian toadflax	(*Linaria dalmatica*)	B	A	Escaped to pastures/ rangeland/ roadsides: Collbran, Mesa, Glade Park
Dame's rocket	*(Hesperis matronalis)*	B	A	Ornamental/ escaped to open meadows: Mesa, Vega Lake
Diffuse knapweed	(*Centaurea diffusa*)	B	A	Escaped to roadsides/disturbed areas
Leafy spurge	(*Euphorbia esula*)	B	A	Escaped to pasture/rangeland/ disturbed areas
Plumeless thistle	(*Carduus acanthoides*)	B	A	
Spotted knapweed	(*Centaurea maculosa*)	B	A	Escaped to roadsides/disturbed areas
Sulfur cinquefoil	(*Potentilla recta*)	B	A	Escaped to roadsides/disturbed areas
Yellow toadflax	(*Linaria vulgaris*)	B	A	Ornamental/escaped along CO River
Bull thistle	(*Cirsium vulgare*)	B	B	Suppress. Treated on County ROW
Canada thistle	(*Cirsium arvense*)	B	B	Suppress. Treated on County ROW
Common tansy	(*Tanacetum vulgare*)	B	B	Suppress. Treated on County ROW
Hoary cress/Whitetop	(*Cardaria draba*)	B	B	Suppress. Treated on County ROW
Houndstongue	(*Cynoglossum*	B	B	Suppress. Treated on County

	officinale)			ROW
Musk thistle	(*Carduus nutans*)	B	B	Suppress. Treated on County ROW
Oxeye daisy	(*Chrysanthemum leucanthemum*)	B	B	Suppress. Treated on County ROW
Perennial pepperweed	(*Lepidium latifolium*)	B	B	Contain to I-70/CO river corridor
Russian knapweed	(*Acroptilon repens*) (L)	B	B	Suppress. Treated on County ROW
Scotch thistle	(*Onopordum acanthium*)	B	B	Suppress. Treated on County ROW
Tamarisk	(*Tamarix parviflora, T. ramosissima*)	B	B	Suppress. Treated on designated County parcels
Goatshead/Puncturevine	(*Tribulus terrestris*)	C	B	Suppress. Treated on County ROW
Additional State List A Noxious Weeds -Eradication Statewide				
Common name	Scientific name	These species may exist in Mesa County in areas not yet identified by Mesa County Noxious Weed & Pest Management. In all instances treatment efforts toward eradication is required for each of these species. Please contact the Program if one of these species is believed to be present in Mesa County.		
African rue	(*Peganum harmala*)			
Camelthorn	(*Alhagi pseudalhagi*)			
Common crupina	(*Crupina vulgaris*)			
Elongated mustard	(Brassica elongata)			
Giant salvinia	(*Salvinia molesta*)			
Hairy willow-herb	(Epilobium hirsutum)			
Hydrilla	(*Hydrilla verticillata*)			
Meadow knapweed	(*Centaurea pratensis*)			
Mediterranean sage	(*Salvia aethiopis*)			
Medusahead rye	*(Taeniatherum caput-medusae*)			
Orange hawkweed	(*Hieracium aurantiacum*)			
Parrotfeather	(Myriophyllum aquaticum)			
Rush skeletonweed	(*Chondrilla juncea*)			
Squarrose knapweed	(*Centaurea virgata*)			
Tansy ragwort	(*Senecio jacobaea*)			
Watch List Species of Concern in Mesa County				
Common reed	*(Phragmites australis)*	These species may be managed similarly to A, B, or C List species as funding and resources allow.		Various man-made or disturbed wetlands county-wide (year 2013-present)
Syrian bean caper	(*Zygophyllum fabago*)			I-70 near Fruita exit Disturbed sites, roadsides (year 2009-2013)
Yellow flag iris	*(Iris psuedacorus)*			Leach creek drainage (year 2016-present)

2.0 Goals & Objectives for Noxious Weed Management in Mesa County

- Promote prevention, early detection and early treatment as the most cost effective means for weed control for the preservation of agricultural production, recreational open space, natural environment, and aesthetics of urban and rural landscapes.

- Prioritize weed management activities for the Mesa County Noxious Weed & Pest Management program so as to maximize the impact of control measures and funding. (Section 3.1)

- Strive to contain, suppress or eradicate current weed infestations and reduce or eliminate weed seed production in certain species according to current State law, Rules, and Mesa County policy. (Sections 1; 3.1.1-2; 3.5, 3.6)

- Identify, monitor and promptly initiate management efforts for newly discovered high priority infestations and species so as to prevent their spread to or within unincorporated Mesa County. (Sections 3.1.1-2; 3.5.3.1; 3.6)

- Partner in the development and implementation of weed management plans for noxious weeds on Mesa County owned properties, easements, and maintained rights-of-way. (Sections 3.2.2; 3.3.1-2)

- Protect agricultural production, native plant ecosystems, watersheds, and recreational lands from degradation by noxious weeds by compliance with the Noxious Weed Act and collaborative efforts through cooperative agreements with municipal, State and federal agencies and adjacent counties and States. (Section 3.2)

- Preserve the quality of life in urban areas of unincorporated Mesa County through desirable plant stewardship and noxious weed management to enhance human health aspects, land values and aesthetics.

- Provide technical support and recommendations for noxious weed management, and partner in the development of weed management plans with private landowners and land managers, and other governmental agencies. (Sections 3.2; 3.4; 3.5.4; 3; Appendices A, B)

- Provide education for Mesa County citizens about the impact of noxious weeds on the economy and the environment. Provide relevant information about weed identification and on best management practice. (Section 3.4; Appendices A, B)

3.0 Operating Procedures for the Mesa County Noxious Weed Program

3.1 Prioritizing County Weed Management Efforts

The Program must prioritize infestations in order to allocate time to the most critical weed problems. Infestations of some noxious weeds and infestations in certain areas are deemed to be more significant than others and are ranked accordingly. The County must comply with State weed management plans for eradication, containment or suppression of noxious weed species (Table 1) and will do so with consideration of the following priorities.

3.1.1 High Priority

High priority populations are generally of species that either do not yet occur in Mesa County or do not yet occur in high numbers. Eradication and/or prevention of these weed populations is probable and desirable. The management goals for high priority noxious weed populations are to prevent the introduction of new weeds, to eradicate weeds that are not yet abundant in the county, and to stop the spread of weeds to relatively uninfested parts of the County. Early detection and rapid response are critical management tools for high priority species.

High priority populations include:

- All populations of State List A species;
- Populations of State List B species designated for eradication in Mesa County – Mesa County List A species (Table 1);
- Infestations of all State and County listed species in high traffic areas and rights-of way maintained by Mesa County;
- Populations of some species on the State Watch List. For these species, a survey of the infestation and surrounding area will be done to determine the full extent of infestation before eradication or other high priority designation is assigned;
- Populations of species that may not be listed by the State or County, at the discretion of the Program, based on their invasive quality and priority for management in adjacent counties or states.

High Priority species elicit a high level of response from the Program. Upon receiving a complaint or report of a new location of these populations, all appropriate methods will be used to contact the landowner, develop a weed management plan and coordinate treatment efforts.

3.1.2 Medium Priority

Medium priority populations are of species known to occur in Mesa County in large but sometimes relatively isolated infestations. These species are candidates for suppression and containment in general, and specific populations may be targeted for elimination and eradication if very isolated or in a sensitive area.

Medium priority populations include:

- Isolated populations of State List B species not designated as Mesa County A species**,** where such are not yet abundant and elimination**;** and eradication is feasible in that area;

- State List B species, not designated as Mesa County A species, occurring along travel corridors such as roads and rivers;
- Russian knapweed, hoary cress (white top) or other poisonous noxious weeds in pastures where they appear to be the primary food source for grazing livestock susceptible to poisoning. If this appears to be the case Mesa County Animal Control Services (MCACS) should be alerted. The Program may assist MCACS with weed identification at their request.

Upon receiving a complaint, the Program will work with landowners on a case-by-case basis as resources allow. Appropriate methods will be used to contact the landowner, develop a weed management plan and coordinate treatment efforts.

3.1.3 Low Priority

Low priority populations are generally of species that occur in large, widespread infestations or are widespread in localized parts of the county. At best these weeds can be prevented from spreading to uninfested areas and are managed on a case-by-case basis. Enforcement of low priority populations is not preferred as it is unlikely to result in adequate control where infestations are very extensive and re-infestation is likely.

Upon receiving a complaint, the Program will work with landowners on a case-by-case basis as resources allow. Appropriate methods will be used to contact the landowner, develop a weed management plan and coordinate treatment efforts.

3.2 Coordination of Weed Management Activities

The Program will coordinate whenever possible with other agencies, organizations, and Mesa County divisions to attain successful weed management activities throughout Mesa County.

3.2.1 Non-County Entities

The Act authorizes the BOCC to enter into cooperative agreements with federal and State agencies for better integration of weed control on public land within the county (C.R.S. 35-5.5-105). Mesa County has had Memoranda of Understanding with the Bureau of Land Management, the U.S. Fish and Wildlife Service and the U.S. Forest Service. Such agreements allow the sharing of resources and personnel to attain common weed management goals on public and private land. Other agencies that may have formal or informal agreements for cooperative projects include, but are not limited to: U.S. Bureau of Reclamation, Colorado National Monument, Natural Resources Conservation Service (NRCS), conservation districts, Colorado Department of Transportation, City of Grand Junction, Town of Collbran, Town of Debeque, Town of Fruita, Town of Palisade, Colorado Division of Parks and Wildlife, CSU Extension, Western Colorado Research Centers, Biological Pest Control Section of the CDA (Palisade Insectary), irrigation and drainage districts, cooperative weed management areas, and adjacent counties.

In situations where noxious weeds exist on private property adjacent to infested public lands the Program will work to remedy the situation with the agency that owns the adjacent public property before pursuing enforcement on private land. The Program may also participate in projects coordinated by non-profit organizations (i.e. the Tamarisk Coalition) to help bridge

the public/private gap and provide overall treatment in areas where many landowners are involved.

3.2.2 County Divisions

The Program cooperates with other County divisions regarding weed management on developed and undeveloped County-owned parcels; and may offer weed identification and management recommendations, or choose to conduct treatments at the expense of the Program or other responsible County division.

Weed control in Mesa County parks and facilities are the responsibility of the Facilities and Maintenance Division. Weed control on properties managed by the Mesa County Division of Transportation (MCDOT) (e.g. equipment yards) is performed jointly by MCDOT personnel and the Program.

Responsibilities of counties for control of undesirable plants in rights-of-way (ROW) are described in the Colorado Noxious Weed Act. Because ROW are the principle routes of introduction of weed seed or propagative parts via movement of vehicles, hay, animals, etc., the Program works closely with MCDOT and Colorado Department of Transportation to effectively control weeds on County and State ROW. The County contracts a licensed Commercial Pesticide Applicator for noxious weed spraying on designated County, State, and Federal ROW. This contract is administered and overseen by the Program, and funded through the MCDOT budget.

The Program may assist in reviewing community plans developed by the Planning Division. The Program can identify potential noxious weed issues, recommend solutions and provide wording for planning policies and documents.

3.3 Mapping

Mapping is a valuable tool for creating and executing integrated weed management plans for private landowners and public land managers. Effective maps provide information on the spread and extent of weeds, and can be a reference to estimate the costs of controlling weeds in a given area. Mesa County noxious weed data is tied into the County GIS database and may be shared with County divisions, State and Federal agencies, and other interested parties or organizations. The Program provides specific data to the CDA for the State weed mapping program as requested.

3.3.1 Rights-of-Way

Rights-of-way on MCDOT-maintained roads are inspected; and weed infestations are mapped on an on-going basis as time and personnel allow. This information is used to update the ROW weed spraying contract and to identify additional project areas for the Program.

3.3.2 County Owned Properties

Undeveloped County-owned properties may be inspected, and noxious weeds mapped by the Program as time allows. The Program will coordinate with the appropriate division(s) to develop a weed management plan.

3.3.3 Private property

Mapping on private property occurs when and where the Program is involved with the treatment and monitoring of Mesa County List A species, and other species or areas of concern

designated by the Program. Noxious weeds reported by a landowner, a government employee or a concerned citizen may be mapped and used for the education of the owner and in enforcement actions.

3.4 Licensing & Education

3.4.1 Public Education

Mesa County Noxious Weed & Pest Management places a high priority on public education and outreach and strives to be a hub of information for local citizens, agencies and organizations.

Educational efforts should:

- Assist the public with weed identification and management strategies;
- Provide information on the best management practices for control of species on the Mesa County and Colorado Noxious Weed Lists;
- Explain the environmental impact of weeds on our quality of life, on agricultural production, and on native plants and wildlife;
- Stress the economic impact of weeds on agricultural production and the cost of food, native plants and community ecology, wildlife habitat, real estate values, wildfire management, and recreational opportunities, among others;
- Be available in various formats such as online, in-person presentations, booths at community events, announcements and publications in local media, and useful hand-outs/literature distributed for free to interested citizens.

Citizens of Mesa County are encouraged to take ownership of their weed problems and make the necessary effort to control weeds on their property. The Program provides information to help make weed management as efficient and effective as possible so each individual and the county as a whole can enjoy healthy, useful landscapes. In situations where land management problems go beyond the scope of the Program, citizens will be directed to other resources such as the CDA, CSU Extension, NRCS, etc. to meet additional needs.

3.4.2 Licensing & Education for Program & Employees

It is the prerogative of Mesa County that the Program be licensed as a Public Applicator; and that the Program Coordinator be certified as Licensed Pesticide Applicator, and obtain and maintain the status of a Qualified Supervisor pursuant to the Pesticide Applicator Act C.R.S. 35-10. Seasonal employees may be trained as Applicator Technicians.

Because these certifications allow use of a wider range of herbicides that may be appropriate for certain treatments, and ensure that Program personnel receive frequent training and up-to-date information on weed management, Mesa County has become licensed as a Public Applicator.

3.5 Management of Noxious Weeds on Private Property

3.5.1 Responsibility of Landowners

It is ultimately the responsibility of each landowner to manage listed noxious weeds on their properties according to State and County regulations (C.R.S. 35-5-104.5). All noxious weeds should be managed according to the State weed management plans, implementing best management practices (Appendix B). The Program may act as a resource for disseminating

weed identification and management information; and if necessary, pursue enforcement actions against landowners who refuse to comply with State regulations, and whose noxious weed infestations are shown to be materially damaging to neighboring properties.

Cooperation between a landowner and the Program is essential for effective and long-term noxious weed management. Should the presence of State List A or B species designated for eradication (Mesa County List A) be suspected on private property, "cooperation of the landowner" would mean allowing a representative of the Program access to the property in question for inspection; and if the weed infestation is confirmed, developing a weed management plan (Appendix A) with the assistance of the Program, treating the infestation appropriately and monitoring as necessary.

3.5.2 Public Requests for Assistance

When a landowner or resident requests assistance with weed identification and management on the property they own or upon which they reside, the Program may handle the situation in a way it determines appropriate according to the goals of the Program and the confines of the resources available to the Program.

For general plant and weed identification and basic management strategies, citizens may be directed to the CSU Extension, NRCS, or other organizations suited to fulfill those needs of the general public.

Site visits may be conducted at the Program's discretion to confirm the presence of suspected high priority noxious weeds. If such are confirmed, the Program may assist the landowner/resident with the development of a weed management plan and suggest treatment options.

3.5.3 Procedure for Enforcement

Should a landowner fail to cooperate where a noxious weed infestation is present and not being managed appropriately, the Program may bring the case to the WAB. The WAB will decide whether or not the case should be pursued. The following sections detail the steps toward pursuing compliance and taking enforcement actions if necessary.

3.5.3.1 Scenarios Requiring Compliance or Enforcement

The following situations are recognized as priorities for pursuing compliance toward noxious weed management on private property, and implementing enforcement if necessary:

- Infestations of high and medium priority noxious weeds as defined in Sections 3.1.1 and 3.1.2;
- Infestations noted by the Program, that are encroaching on County maintained rights-of-way that make it more difficult, or more costly, for the County to control or eradicate such noxious weeds on County maintained rights-of-way;
- Infestations of noxious weeds that threaten productive agriculture where a complaint has been filed with the Program;
- Infestations of noxious weeds that threaten a non-agricultural property where a complaint has been filed with the Program.

3.5.3.2 Program Responsibility

It is the responsibility of the Mesa County Noxious Weed & Pest Management program to follow all procedures established in C.R.S. 35-5.5 on any County property before enforcement of control of noxious weeds is carried out on adjacent privately owned land.

The Program will keep complete records of all interactions (conversations, phone calls, letters, emails, actions taken, etc.) with landowners. Bills for the cost of control measures (when appropriate) will be prepared by the Program and submitted to the County Finance Division for processing.

In all cases the Program will encourage voluntary compliance by the landowner before it is deemed necessary to implement any enforcement actions.

3.5.3.3 Complaints

If the Program receives a complaint of suspected high-priority species on private land and/or a request to conduct an inspection, the following actions will be taken to encourage compliance and/or pursue enforcement of noxious weed management by the landowner.

3.5.3.3.1 Verification of Infestation & Notification of Inspection

The Program shall confirm the presence of noxious weeds by observation from any right-of-way or neighboring property. If the infestation cannot be verified from outside the property of concern, an on-site inspection may be required. In either case, the Program shall notify the rightful landowner that: an infestation has been suspected and/or confirmed on their property, an inspection may be required and; request permission to enter the property to conduct an inspection.

A notification of inspection shall be sent by certified mail informing the landowner of the identification of the suspected or verified noxious weed present; and requesting entry to the property to conduct an inspection at a time agreed upon by the Program and the landowner. The Program may also contact the landowner in person or via call, text, or email as a courtesy.

If the landowner does not respond within 10 days, or denies access to the property, and it is deemed necessary to pursue an on-site inspection, the Program shall obtain an inspection warrant from the County court to access the property in order to conduct an inspection.

3.5.3.3.2 Notification of Confirmed Infestation

After the property has been inspected and an infestation confirmed, a notification of confirmed infestation shall be sent to the landowner by certified mail. The Program may also contact the landowner in person or via call, text, or email as a courtesy.

The notification shall include the common and scientific names of noxious weeds found, best management practices for the weeds of concern, and advise the landowner to manage the infestation. The notification shall also State that within 10 days (5 days for State List A species and populations of State List B species designated for eradication) from receipt of the certified letter, the landowner shall indicate whether she/he will:

- Comply with the terms of the notification;
- Acknowledge the terms of the notification, and submit an acceptable alternative weed management plan and schedule for completion of the plan in compliance;
- Request an arbitration panel as described in C.R.S. 35-5.5-109 (4)(a)(III), to determine the final weed management plan (except for State List A species and populations of State List B species designated for eradication where an arbitration panel is not an option)

The Program may also choose to provide the landowner with:

- Mapped locations of noxious weed infestations on the property;

- Notification that failure to contact the Program by the specified date will imply non-compliance by the landowner, and a violation of the State Noxious Weed Act (C.R.S. 35-5.5-104);
- Notification that in the event of non-compliance, enforcement procedures may be initiated by the County at the landowner's expense (C.R.S. 35-5.5-109-5a).

3.5.3.3.3 Enforcement Notice

An enforcement notice will be sent to the landowner when he/she:

- Fails to reply to notifications from the Program;
- Fails to grant the Program appropriate access or entry to the property;
- Fails to develop a weed management plan or control noxious weeds on the property;
- Fails to implement weed control within the time period specified in an approved weed management plan.

The enforcement notice shall be sent by certified mail and include:

- A copy of the certified letter notifying the landowner of a confirmed noxious weed infestation (Section: 3.5.3.3.2);
- Documentation of previous attempts to contact the landowner;
- Notification that the landowner has 10 days (5 days for State Listed A species and populations of State Listed B species designated for eradication) from receipt of the enforcement notice to indicate in writing that he/she will cooperate with the Program to develop and implement a weed management plan for the property.

3.5.3.3.4 Enforcement Action

If a landowner receives an enforcement notice and does not contact the Program within 10 days of receiving the notice, (5 days for State List A species and populations of State List B species designated for eradication) then the following steps may be taken as determined appropriate:

- The Program will review all information pertinent to the case and bring the case to the attention of the WAB;
- The WAB will recommend the case to the BOCC for further action;
- The Program shall request a right-of-entry from the BOCC in order to control the weeds;
- If right-of-entry is granted by the BOCC, the Program will schedule and conduct treatment on the property by County crews or through a private contractor;
    - treatment may include herbicide or mechanical control methods and will be paid for through the Mesa County noxious weed management budget to be re-paid by the landowner (Section 3.5.3.3.5);
- The Program will conduct follow-up site visits at appropriate times to inspect the completion and efficacy of any treatment.

3.5.3.3.5 Billing

After noxious weed control measures are completed, a bill will be prepared for the cost of control plus a 20% administrative fee as permitted under C.R.S. 35-5.5-109, and sent to the landowner by certified mail.

If the bill is not paid after 30 days, the County Treasurer may place an assessment in the form of a lien "against each lot or tract of land until paid", which "shall have priority over all other liens except general taxes and prior special assessments". Such assessment may be certified to the County Treasurer and collected and paid in the same manner as provided for the collection

of taxes. (C.R.S. 35-5.5.109-5)

Any funds collected for the management of noxious weeds on private property shall be deposited in the Mesa County noxious weed management budget.

3.5.4 Mesa County Noxious Weed Cost-Share Program

In years when funding is available a cost-share program may be implemented by the Program to assist landowners within unincorporated Mesa County with the cost of managing noxious weeds. (Appendix C)

3.6 Noxious Weed Treatment by the County on Private Property

Given the priority of the infestation and the resources of the Program, there are certain instances in which Mesa County may manage noxious weeds on private property at no cost to the landowner. Such instances are:

- Where funding is allocated to the Program for specific species and/or specific areas through grants or other funds; and where the treatment provided by the Program fits the stipulations of those particular funds;
- Where it is determined that it will be more cost-effective for the County and its citizens to conduct thorough treatment of an area rather than to pursue individual management plans and inconsistent/patchy treatment for each small section of the infested area;
    - An example of such areas include: a storm-water or natural drainage that runs through and adjacent to many individual parcels;
- Escaped populations of List A species in order to decrease the population and coverage as soon as possible before greater problems arise by the spread to adjacent land.

Treatments by the County on private property will only be conducted and prioritized as Program resources allow. In these instances:

- Each situation will be considered separately and the Program will make the final decision whether or not to spray or treat a particular weed population on private property;
- Landowners will sign a "consent to spray" agreement before treatment occurs;
- All parties involved will understand that ultimate responsibility for noxious weed management falls on the landowner, and in no way diminishes their obligation to conform to the Noxious Weed Act;
- Treatment will be conducted with the intention to return weed management to the landowner upon termination of Program resources for that project; or once the population has been brought to an appropriate level of containment.

3.7 Funding of Weed Management Projects

Funding for the Program overhead, equipment costs and permanent labor expenses is allocated from the Mesa County general fund on an annual basis. The Program will maintain a baseline of public education/outreach services, collaboration with area weed management agencies, and administration of the contract for ROW herbicide treatments.

The Program seeks and applies for additional funding from outside resources (i.e. applicable State or federal grants) to provide seasonal labor and additional project support. The extent to which the Program can provide assistance with treatment on State and Federal land,

private land, or offer a cost-sharing option for weed management is dependent on availability of funding from internal and external resources.

Pursuant to C.R.S. 35-5.5-19 the BOCC may establish a noxious weed management fund separate from the County general fund. Subject to approval of the voters, the County may levy a special tax for noxious weed control, up to 5 mils per year. No mil levied weed management fund currently exists nor is anticipated in Mesa County**.**

Appendices

Appendix A

A Guide for Developing a Weed Management Plan

The following discussion is intended to help landowners and land users devise a weed management plan. Creating a weed management plan allows the landowner or land user to assess the situation and determine what is needed for effective weed management.

A1 Weed Identification

The first and most important step in developing a plan of attack on noxious weeds is species identification. Misidentification of weed species leads to improper, costly, and ineffective control and management.

Weeds can be identified by agents and Master Gardeners at the CSU Extension office, or by the Mesa County Noxious Weed & Pest Management program (Program). Once the weed is identified, recommendations for control and management can be obtained from CSU Extension agents or Master Gardeners, the Natural Resources Conservation Service (NRCS), the Program, or licensed commercial pesticide applicators.

Proper identification of newly discovered noxious weed populations is extremely valuable for eradication efforts. Any unusual or unfamiliar plant cluster or small infestation of unusual plants or plants that appear to be spreading rapidly should be identified to determine if it poses a threat to the area.

A2 Mapping Infestation

Mapping weed infestations can provide information about the extent of the infestation, and help determine possible modes for spread and potential uninfested areas to be protected and monitored. Maps can be compiled in the method the landowner desires, be it hand-drawn or digital methods, as long as it can be easily understood and referred to throughout the treatment process. Over the long-term, maps provide historical evidence of the epicenter of an infestation, and track its spread or decline and effectiveness of control methods.

Effective maps for use in a weed management plan may include:

- Fence lines and/or boarders with other properties
- Adjacent paths, trails, roads or other corridors of transportation by animals or humans
- Any water features such as streams, ponds, irrigation drainages, etc.;
- Structures on the property and different kinds of vegetation (trees, bushes, grass) or terrain (rocky, sloping, etc.)
- Location of weed infestation(s).

A3 Determining a Management Strategy

Once the weed has been identified and the infestation has been mapped, the landowner or weed manager should consider the following in order to determine whether eradication, suppression, or containment is appropriate:

- The extent of the infestation;
- Land use and sensitive areas (grazing, crops, landscape, rangeland, water features, etc.);
- The cost of reclamation and maintenance of competitive desirable species;
- Resources available to manage weeds, monetarily and otherwise;
- Possible actions to prevent re-infestation and spread of weeds to adjacent areas.

Small weed patches can be eradicated quickly using minimal amounts of herbicide or hand digging if there is no source of continued re-infestation.

Suppression of larger patches should utilize all possible aspects of integrated management with the goal of keeping the weed from spreading and slowly reducing the size and/or density of the infestation. It may be necessary to tolerate the presence of some weeds every year during a long term program; but seed production should be reduced or eliminated whenever possible.

Containment may be the best option for very large patches (several acres) of perennial weeds that are too costly or impractical to eradicate. Depending on the species present, the infestation can be contained by spraying herbicides on or tilling around the perimeter of the patch, mowing to prevent seed production, and focusing on eliminating the weeds in areas where they are most likely to spread such as roads, waterways, or on animals.

An integrated weed management strategy that combines the release of biological control agents with chemical or mechanical control methods in different areas of the infestation may be preferred. Integrated weed management practices may be practical for large infestations, areas that are difficult to access, or to lower overall costs of weed management. Consult a weed management specialist for advice on how to combine these methods in an effective manner.

A4 Preparing a Weed Management Plan

After the weeds are properly identified, the infestation is mapped, and a general strategy is chosen, it is important to research and compare various management techniques order to develop a complete and useful weed management plan. The following specifics for each location and weed infestation may need to be considered and answered:

- The amount of time and money that is available for treatment and control efforts, chemical, mechanical, or otherwise;
- When treatment should be implemented based on the life cycle of the plant;
- Possible mechanical means that can be used, and the labor required and available;
- The type(s) of herbicides that are effective, available and appropriate for the land use and soil types on the property;
- Any biological controls methods that are available and effective;
- Details regarding possible seeding efforts including: timing and necessity, choosing native or non-native species to use, available equipment or contractors to use;
- The necessity and preference of including neighboring landowners as partners in the weed management plan to prevent re-infestation and spread of weeds to adjacent parcels.

A5 Principles of Integrated Weed Management

An integrated approach to weed management is extremely important because no single tool, such as herbicides, will do the entire job. Integrated weed management results in highly effective, affordable weed control.

The five principles of integrated weed management are:

- **Prevention:** Prevention should always be practiced and is effective on all species of weeds. Prevention includes good land stewardship, planting weed free seed, avoiding planting invasive species, using weed seed free mulch and erosion control, using clean equipment, and legal measures such as quarantines and weed laws.

- **Cultural practices:** Good stewardship of the land is essential to prevent as well as control weed infestations, and is effective for all species of weeds. Cultural practices encourage competition from desirable plants through dense seeding, fertilization, mulching, careful irrigation practices, sensible grazing regimes, and improved land management practices.

- **Physical/mechanical methods:** This includes digging, hoeing, hand grubbing or rogueing, tillage, mowing, disking and plowing, solarization, burning, etc. The target of these methods is primarily to prevent seed production. Weeds should be treated before flowers are in full bloom. In general, mechanical methods are very effective for control of annual and biennial weeds and less effective for perennials. Thoroughly cleaning equipment before moving to uninfested areas is essential to prevent the spread of weeds.

- **Biological control:** Biocontrol is the introduction of living organisms that are detrimental to the noxious weed. This may be an insect, nematode, or bacterial, fungal or viral disease or the use of forage animals such as sheep, goats or cattle in controlled grazing. Biological control rarely provides 100% control and must be incorporated with other methods for successful management. Contact the Palisade Insectary (Appendix D) for information on the availability of biocontrol agents.

- **Chemical control:** The judicious use of the proper herbicides at the optimum time can be the most effective method of control for very persistent weeds. Not all herbicides are equally effective on all weeds nor can every herbicide be used in every situation. Noxious weeds, in particular, are often not controlled successfully with "garden type" products. Read and follow the label and remember: "the label is the law"**.** Consult weed manuals and experts for the most effective chemical to use. Wear all personal protective equipment, or PPE, indicated on the label. Be sure to apply the herbicides at the proper stage of weed growth. Drought may cause plants to be less susceptible to herbicides; wait to apply herbicides until there is adequate soil moisture and the plants are actively growing again. Online resources may provide updated herbicide label and SDS information (Appendix D).

Appendix B

Best Management Practices for Noxious Weeds in Mesa County

Effective control of weeds requires persistence and vigilance as well as an understanding of weed management principles and the weed's life cycle. Choosing a method of weed control depends on many factors, including the weed species, proximity to water, presence of desirable vegetation, soil type, depth of the water table, growth stage of the weed, temperature, rainfall or lack thereof, and available labor, time, and money. The following recommendations are general in scope. Landowners should consult with weed management specialists, CSU Extension personnel, or the Mesa County Noxious Weed & Pest Program when making plans to treat noxious weeds.

B1 General Guidelines

- KNOW YOUR WEEDS! Identification is the first step in forming a weed management plan.

- Early detection is always the best defense against noxious weeds. Treat intensely when a new or small patch is found.

- Understand the biology of the weed to better select the best management practices. Know the plant's life cycle, what type of root system it has, what time of year it flowers and how long the seeds last in the soil.

- Weed management is a long term process and hence a long term commitment to the land. Weed seeds last 5-50 years in the soil and pieces of root as small as 1/2" can start a new plant and a new infestation.

- Know at which growth stage to implement control measures so that control is most effective. For example, once a biennial or annual has gone to seed, it is too late to do anything about it. Spraying a perennial weed in the rosette stage is a waste of chemicals because the root system will respond by sending up new shoots.

- Use weed free seed, hay, forage, and mulch to prevent introduction of new weeds.

- Reseed the site with competitive species. Grasses are often recommended so that broadleaf herbicides can be used to spot treat broadleaf weeds. Plant a diversity of species rather than a single species if possible.

- Mowing and burning are effective weed management tools in some situations and with certain weeds. Mowing may cause the plant to flower at the mowed height, so seed set may be reduced but not eliminated. Burning may stimulate germination of some weed seeds. Most weed seeds are not destroyed by burning because temperatures are not high enough to completely burn the seed.

- When tilling, till the weed patch last and then clean the equipment as well as possible in the field to prevent spreading roots and seeds. Always clean equipment and machinery after working in a weed patch. To avoid picking up and spreading mud that contains weed seeds, do not drive through a weed patch when the soil is wet.

- Many biological control agents are available for control of large weed patches. This is a complicated process and not recommended for small patches. Long term monitoring is essential to determine the extent of control and establishment of the agent. Biological control never provides 100% control and must be incorporated with other methods for successful management.

- Grazing can be used as a weed management tool, but is not as simple as letting the animals out into the weed patch. Obtain information on which animals to use, level of intensity and duration, and what results you can expect. Temporary fencing may be necessary until the stand is established, particularly in areas where wildlife and other grazers are active.

- Drought causes plants to shut down their growth process. Spraying weeds during dry periods is not recommended because effectiveness diminishes greatly. Treat after rainfall IF the weed is still in the proper stage for effective control.

- Not all herbicides work equally on all weeds, nor can every herbicide be used in every situation. Noxious weeds, in particular, are often not controlled successfully with products available at nurseries, garden shops and other retail gardening markets. **Read the label** and consult weed manuals and experts for the most effective chemical to use.

- When developing a weed management plan, consider how much time, money, and land is involved. If you want to do non-chemical control, you may not need a lot of money, but you will need a lot of time and energy. If you want fast action, herbicides can be the most efficient use of money and time. Annual weeds may be as effectively controlled with tillage or hoeing as spraying if done properly and at the right time.

B2 Control of Annuals & Biennials

Target: Prevent seed production. Many seeds lay dormant in the soil for 3-10 years.

- Hand grubbing (pulling), hoeing, tillage, solarization, cultivation in rosette stage and before flowering or seed maturity.

- Chop roots at least 2” below soil level.

- Post emergent herbicide treatment in the rosette or bolting stage, before flowering.

- Pre-emergent herbicide treatment is effective on most annual weeds. Apply in the early spring before spring annual weeds emerge and in the late summer for winter annuals. Pre-emergent treatments can be effective for up to 3 months. Watering into the soil may be necessary to get the herbicide into the germination zone. **Follow label instructions carefully.**

- Mow biennials after bolting stage and before seed set; be aware that mowing annuals may not prevent the plants from flowering and setting seed.

B3 Control of Perennials

Target: Deplete nutrient reserves in root system, prevent seed production. Seeds of many species lay dormant in the soil for 10 or more years. Root systems may reach 40 feet depth.

- It is very important to know what perennial weed you have before deciding on a control tactic. Perennials vary widely in their response to mechanical control.

- Allow plants to expend as much energy from root system as possible; do not treat when first emerging in spring but allow them to grow to bud to bloom stage.

- Herbicide treatment at bud to bloom stage or in the fall. Spraying in the fall will kill the following year's shoots, which are formed in the fall. If the weed patch has been there a long time, another season of seed production is not as important as getting the herbicide into the root system.

- Mowing is not recommended for all perennials because some of them will flower at the mowed height; seed production may be reduced, however. Herbicides alone may be more effective than mowing followed by herbicide treatment. However, a combination of repeated mowing to prevent flowering followed by herbicide treatment in the fall is effective for some perennial weeds such as Canada thistle. The effect of mowing is species dependent so know what weed you are working with and consult the experts.

- Tillage may or may not be effective. Most perennial roots can sprout from pieces only ½" - 1" long. Repeated tillage over the course of a summer may destroy soil structure and be more detrimental than an herbicide treatment. Clean machinery thoroughly before leaving the weed patch.

B4 Integrated Pest Management Practices

No single method of weed control will provide 100% control. A combination of two or more of the following methods should be used. The following practices can be applied to all species of weeds.

B4.1 Prevention

An ounce of prevention is worth a gallon of sweat, 100 gallons of herbicide spray, several shovels, several pounds of grass seeds, and a ton of money. Weed problems can be avoided by using simple precautions.

Hay for mulch or erosion control should be certified weed seed free. Using weed seed free hay is mandatory for feeding pack animals in the National Forest. A List of certified growers can be obtained from National Forest Ranger Districts or the Colorado Department of Agriculture.

When disturbing weed infested land for development (e.g. blading) or agriculture (e.g. tillage) clean machinery and equipment before moving between sites. Equipment should be thoroughly cleaned before coming into a new site and before moving out of a weed infested area. In industrial situations, power washing is a good way to clean equipment. DO NOT MOVE soil from construction sites with known weed patches. Soil should be banked and used at the site. Emerging weeds should be treated accordingly.

Buy and plant noxious weed free seed. Laws require that containers (lots) of seed State the kind and percentage of noxious and other weed seed, and there are restrictions on the amount

and kinds of weed seeds that are allowed in a lot. Over half of the weeds on the Colorado Noxious Weed List are escaped ornamentals. Do not buy ornamental seed mixes that do not give the scientific name of all the species in the mix. Check the scientific names against the List of noxious weeds. If the package just says "toadflax" you don't know whether or not you are buying a noxious species.

Eliminating single plants or small patches of weeds as soon as possible prevents their spread. In areas where the weeds are not yet present or are not very abundant, proper land management is necessary to keep the weeds out.

B4.2 Cultural Practices

Cultural methods work on all species of weeds and are simply described as methods of sensible land management. Methods include improved land management practices, dense seeding with competitive species, crop rotation, careful irrigation practices, fertilization, and sensible grazing regimes.

New landowners should have their property assessed by a specialist. Growing conditions and land management practices in Western Colorado are very different from other regions of the country. Obviously, pasture and rangelands are treated differently from lawn and garden areas. The intended use of the property will determine the best management practices for weed control. Even if you have owned your property for a long time, improvements probably can be made. Technical assistance is available from NRCS or the CSU Extension.

Competition with desirable plants can keep weeds suppressed and prevent weeds from becoming a problem. Plants compete for light, moisture and nutrients. Some weed species emerge early in the season to take advantage of these resources before natives or desirables. The choice of species used to provide competition for weeds depends on the intended use of the land, the types of weeds present, availability of irrigation water, soil types, and accessibility to the property. Native or non-native species can be used. In general, use a combination of species that will provide the best competition for the weeds that are present. It is generally better to plant grasses in broadleaf weed infestations so that a broadleaf herbicide can be used to treat the weeds if necessary. Some species of desirable plants are tolerant to herbicides. If irrigation water is not available, dryland species must be used. Seeding must be timed to take advantage of natural rain patterns to improve seed germination. Weed control will take much longer in dryland situations.

Proper water and fertility regimens are necessary to keep weeds from taking over. Over watering as well as under watering can lead to weed problems. Appropriate levels of fertilizer must be applied at optimal times in order to enhance desirable plant growth. Some species of weeds, such as Russian knapweed, diminish when water and fertilizer are properly managed.

Other management practices currently used on the property, such as grazing, may need to be adjusted to allow the desirable species to gain a foothold. Avoid overgrazing by livestock, including horses. When land is stripped of all plants by overgrazing, weeds are given the opportunity to move in. Because weeds are often undesirable as feed, they are sometimes the only plants left after livestock have overgrazed an area. Overgrazing gives them the light, space, water and nutrients they need to give them a competitive edge over desirable species. Do not allow overgrazing to happen. Be sure you have enough land for the number of grazing animals. Move livestock frequently to fresh pastures and allow pastures enough time to recover from grazing. Dividing up a pasture into three sections and moving animals between the sections can greatly improve conditions in an overgrazed pasture. Use a combination of perennial and annual, and warm and cool season pasture grasses to provide a diversity of plant types. Plant broadleaf pasture species only after broadleaf weeds are under control.

B4.3 Mechanical Control

Mechanical control is the physical removal of a weed and includes methods such as

digging, hoeing, tilling, hand grubbing or pulling, mulching, burning, grazing, and mowing. Labor costs can be considerable for large weed patches, therefore; mechanical methods may be more practical for small patches or scattered plants.

Mechanical control may work effectively to manage annual and biennial weeds, but is much less effective on perennial species, unless they are in the seedling stage. Mechanical control is most effective when done before the plants have flowered. Annuals and biennials can be removed by severing the root at least 2 inches below the soil level. If flowers and seeds are mature, cut off flower heads and carefully place them in contractor's heavy duty black plastic bags. Setting bags in the hot sun for several hours will help destroy seeds. Burning the cut material works if the fire is hot enough to totally destroy the seeds. Check the ashes for intact seeds. For perennial species, mechanical means are not very effective unless you are sure that the plant is a young seedling and all the root system can be removed. Digging up perennial plants may cut the roots into small pieces that can sprout new plants.

When using machinery to till the land, till within the weed patch and then clean the equipment before moving to uninfested areas. Avoid tilling when the soil is wet. Mud sticking to the machinery will make cleaning difficult and will likely carry weed seeds to other areas.

Mulching works by killing seeds or smothering emerging weeds. Grass clipping, leaves, hay, seed hulls from industrial applications, plastic and many other materials can be used as mulch. Organic (carbon based) mulch must be weed seed free. Apply and maintain organic mulch several inches deep. Solarization, the application of clear plastic to damp ground and left for several weeks, can kill weed seeds and roots and some plant pathogens to 3 inches depth. This method also kills soil micro-organisms and insects that may be beneficial. Solarization works best on annual and biennial weeds. Reseeding with competitive species must follow mulching and solarization, regardless of the material or method used.

Burning standing dead weeds generally does not totally destroy weed seeds and may actually benefit some weed species. Burning newly emerging annual weeds may be effective but the flame must be hot enough and applied long enough to cause the plant cells to burst. Some species may recover from burning by putting out new shoots. Burning is not effective on perennial species because the root system is not affected. Avoid breathing fumes from burning weeds because some species contain compounds that are toxic when burned and can cause severe respiratory distress.

Grazing and mowing can be used successfully with some noxious weed species, primarily to reduce seed production. Mowing usually must be done several times per season. Both grazing and mowing should be combined with other methods, usually herbicide application. However, some species will flower at the grazed or mowed height. Grazing must be carefully timed for best results. Sheep, goats, and cattle can be used. Grazing is also considered a biological control method. Consult with an expert if you intend to use these methods.

B4.4 Biological Control

Biocontrol agents, such as herbivorous insects, vertebrate predators, and plant diseases, are not available for every weed species, nor are they effective in every situation. Generally, the weed patch must be large enough to sustain multiple generations of the agent. Effects may not be seen for several years, so the presence of the weed must be tolerated. Seed prevention methods may need to be combined with biocontrol to keep the weed from reproducing.

Biocontrol agents can be obtained from mail order sources or the Palisade Insectary under the CDA. You should consult with a biocontrol or weed specialist before buying or releasing biocontrol agents.

Sheep and goats are used to manage some weed species and can be quite effective when used properly. Animals can be trained or conditioned to eat specific weeds and often leave desirable grasses alone. There are several grazing regimes that can be used, each with varying

levels of intensity and duration. Grazing animals remove above ground growth and do not directly affect roots. However, repeated grazing will stress the root system of perennials. Grazing in combination with herbicide application can be very effective. In areas where dense weed infestations prohibit the entry of spray equipment, grazing can open up the area to allow equipment in after some regrowth of the weeds has occurred.

B4.5 Chemical Control

Herbicides must be used with extreme caution. They are poisons and should be treated with respect. Most herbicides can be purchased without an applicator license. The label is a legal document that outlines the uses and restrictions of the chemical.

Read the label:

- before buying to determine if the herbicide is the right one for your situation, if it is labeled for the weeds you are trying to control, for information on the addition of adjuvant or surfactants, and for other restrictions, such as for grazing and planting;
- before applying to get the correct rate to use, how to mix and apply the product, what personal protection you may need while mixing and applying the herbicide, and for information on how to dispose of left over mix;
- after applying to check reentry intervals, to check planting and grazing restrictions, and for disposal and clean-up information.

Never use more than the recommended rate on the label. Not only is this practice illegal, but it may be ineffective. Higher rates may cause the tops of the plants to burn down quickly so that the herbicide may not have the chance to move into the root zone and the weed may sprout again.

Pre-emergent herbicides prevent the germination of seeds and do not work on established perennial weeds. Application timing of a pre-emergent herbicide is critical; they are usually applied in the spring. Precipitation or irrigation may be needed to move the chemical into the germination zone (the top 3-5 inches of soil).

Post-emergent herbicides work on the growing parts of the weed, including roots. Therefore post-emergent herbicides work on annuals, biennials, and perennials. Drought and heat may reduce the effectiveness of these herbicides.

The herbicide label may require the addition of a surfactant (surface active ingredient) to the spray tank. Surfactants make the herbicide more effective by breaking down waxes on the leaf surface, helping the spray spread on or stick to the plant, or aid in penetration of the spray into the leaf. Read the label to determine if a surfactant is needed and what type to purchase. These products are usually inexpensive and result in better weed control.

The use of herbicides may be the only effective control method for some species. However, herbicides should be used in conjunction with other methods to achieve the highest level of control.

Herbicide use is determined by restrictions and instructions on the product label. Online resources may provide updated herbicide label and SDS information (Appendix D).

Appendix C

Cost-Share Program

C1 Introduction

In years when funding is available, a cost-share program may be implemented and administered by the Mesa County Noxious Weed & Pest Management program ("Program") to assist landowners within unincorporated Mesa County with the cost of managing noxious weeds.

Funds will be allocated for prioritized species of Mesa County and State Listed noxious weeds as determined by the Program and described in the Mesa County Noxious Weed Management Plan (Plan). Applications will be reviewed and approved by the Mesa County Weed Advisory Board (WAB) according to the stipulations explained below. Final payment to participants will be awarded at the discretion of the WAB and the Program upon successful completion of the planned treatment, and as the cost-share fund balance allows.

Specific information regarding applications for available funding will be published separately from this document when a cost-share program is in effect.

C2 Application Process

An application may be acquired from the Mesa County website or by contacting the Program; and must be complete and accurate to be considered for funding. The application must be accompanied by a weed management plan (Appendix B) that has been approved by the Program and a map of the property delineating the weed infestations, land use and any sensitive areas such as water, crops, etc. The Program will be available to assist landowners with weed identification and development of a weed management plan.

Applications will be considered at designated time periods and prioritized according to the Mesa County and State Noxious Weed Lists.

Opportunities may arise wherein a cost-share program is available only for designated species or designated areas of the county in order to most effectively manage a noxious weed population before it spreads throughout the county. Affected landowners will be given the opportunity to voluntarily participate in such program and may be personally notified of such an opportunity by the Program.

C3 Eligibility

Landowners with noxious weeds who own or manage property(ies) on the Mesa County tax rolls are eligible to apply for an available cost-share program. Lessees and other property managers must submit written approval from the landowner to participate in the cost-share program. Only one application per parcel per season may be awarded.

C4 Reimbursement

Noxious weed treatment must be completed and appropriate documentation submitted to the WAB for approval before reimbursement is awarded. Landowners/lessees may choose to conduct treatment themselves or utilize an employee or licensed commercial pesticide applicator for the job.

The following items will be considered eligible for partial or full reimbursement:

- herbicide bought directly by the applicant and used on the designated cost-share project;
- labor and material costs for herbicide application when conducted by licensed private or commercial pesticide applicator;
- labor and material costs for other appropriate mechanical methods of treatment (pulling/removal) when conducted by a licensed private or commercial pesticide applicator;
- items other than those Listed as determined appropriate by the WAB.

Labor for herbicide application or mechanical treatment is not eligible for reimbursement if it is conducted by someone other than a licensed pesticide applicator.

All herbicides must be applied according to the product label. Cost-share funds may be withheld if it is found that treatment was not done in accordance with the approved weed management plan or the product label. Percentages of reimbursement and cap-per-parcel/per applicant will be determined by the WAB and the Program and published at the beginning of any available cost-share program.

C5 Reasons for Disqualification or Denial

A cost-share application or reimbursement may be denied in the following circumstances:

- if failure to manage weeds or cooperate with the Program has lead to the Program issuing an inspection warrant (Section 3.5.3.3.1);
- attempts by the applicant to defraud the Program in any manner;
- application of herbicide inconsistent with the product label;
- use of specified cost-share materials outside of the cost-share program guidelines;
- failure to follow weed control recommendations as described in the approved weed management plan in the application;
- use of cost-share funds to control weeds other than those eligible except where such weeds exist in conjunction with the eligible weed;
- the budget of the cost share program is exhausted.

Appendix D

Resources

Colorado Department of Agriculture
305 Interlocken Parkway, Broomfield, CO 80021
weeds@state.co.us
(303)869-9030
https://www.colorado.gov/pacific/agconservation

Colorado Department of Agriculture: Palisade Insectary
750 37 8/10 Road / Palisade, CO 81526
(970)464-7916

CSU Cooperative Extension: Tri River Area
2775 Highway 50 / Grand Junction, CO 81503
(970)244-1834
http://tra.extension.colostate.edu/

Mesa County Animal Control Services
971 Coffman Road Building A / Whitewater, CO 81527
(970)242-4646

Mesa County Noxious Weed & Pest Management
Location: 971 Coffman Road, Building B / Whitewater, CO 81527
Mailing address: PO Box 20,000 Department 5087 / Grand Junction, CO 81502
weed.pest@mesacounty.us
(970)255-7121
www.mesacounty.us/pest

Natural Resources Conservation Services
2738 Crossroads Blvd / Grand Junction, CO 81506
(970)243-5068
https://www.nrcs.usda.gov/wps/portal/nrcs/site/co/home/

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Agrian herbicide label lookup
https://home.agrian.com/