

**APPENDIX C:**  
RECLAMATION PLAN

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The following reclamation plan is designed to rehabilitate the West Tavaputs Plateau Pipeline Project so that VRM II objectives will be met within three years to five years. Reclamation practices in Nine Mile Canyon will be designed to achieve visual compatibility with surrounding undisturbed areas. That portion of the pipeline which is observable from the Nine Mile Canyon Road (Scenic Byway), in particular will require enhanced reclamation practices so that the pipeline corridor will not dominate the view after the first two to three years.

The reclamation plan will also reestablish a desirable and diverse vegetative cover that will provide wildlife habitat, grazing, and other land uses comparable to those available prior to disturbance as soon as is practicable after construction is completed.

## **PROJECT PLANNING**

In order to minimize reclamation requirements and achieve visual goals, it is important to conduct as much activity as possible (such as staging of equipment and pipe storage) on areas that are currently disturbed. Examples are road area, agriculture lands, etc. This will minimize total area of new disturbance and facilitate a more rapid recovery of the native vegetation.

Prior to any ground disturbing activity, a certified landscape architect will survey the pipeline corridor to plan and prescribe reclamation and other work practices to mitigate the visual impacts of pipeline construction. Practices such as feathering, clump transplants, bareroot and containerized seedling planting and other efforts as described below will be prescribed for specific pipeline corridor reaches. The landscape architect will again be onsite at critical points during implementation of these practices and final reclamation to insure that prescriptions are implemented as intended and visual goals are achieved.

## **SURFACE PREPARATION**

Areas to be reclaimed would be recontoured to create topography similar to that occurring prior to disturbance. Natural channels would be reconstructed and riprap would be used as appropriate to minimize the potential for erosion. Once the pre-existing contours were reestablished and drainage patterns were in place, the entire disturbed area would be ripped perpendicular to the slope direction to a depth of 6-10 inches to facilitate root penetration. Following the ripping, the stored topsoil (growth media) would be spread to a uniform depth over the entire area.

The reclaimed surface would not be smoothed out, but rather left rough, uneven, and pock-marked that would create an uneven surface to diminish the likelihood of erosion (gullies and rills), capture precipitation, and enhance the success of revegetation.

Several measures will be employed within this corridor to achieve conformity with the surrounding landscape. The margins of the 60 ft. area of the proposed right-of-way will be uneven with fingers of undisturbed vegetation alternating into the margins along both sides of the disturbed area. (See Figure 1). This is done to diminish a straight line of contrast between disturbed and undisturbed land areas.

In addition, a large track hoe will be used to excavate clumps of surrounding vegetation, approximately 3' x 3' x 3') from random locations adjacent to the corridor within 150 ft. of center line and plant these clumps randomly over the disturbed area. (See Figure 2). Riparian areas be cleared using a 'brush hog' rather than blading so that the root mass intact is left intact and to accommodate rapid reestablishment of the crowns.

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Any pre-existing vegetation, dead trees, large rocks, etc., would be put back on the recontoured surface to further enhance water retention, reduce erosion, provide shade, and make the site more aesthetically compatible with adjacent undisturbed areas.

## **REVEGETATION**

Following surface preparation, the site would be reseeded with a drill seeder in areas that are relatively flat (less and 30% slopes). In areas with slopes in excess of 30% greater than a lateral distance of 50 feet, wood fiber mulch in combination with a tackifier and fertilizer would be applied with a hydro seeder.

### **Drill Seeding**

A drill seeder would be the most effective method to establish vegetation on all areas which are accessible to seed equipment. If a rangeland drill was used, the seed mix would be incorporated into the drill using correct depth and density of stocking for the various native species. If a conventional grain drill was used, the large seeds (primarily shrubs and some forbs) would need to be hand broadcast prior to drilling because the larger seeds tend to plug the drill and frequently result in poor distribution.

In areas where the goal is to simulate a natural appearance, the site should be drilled in multiple, cross, overlapping patterns. This will eliminate the row crop appearance of the site. Depending on time of year when drill seeding is implemented, an application of approximately 200 lb./acre of a broad based, slow release fertilizer such as 16-16-8 will enhance establishment. If seeding is implemented in spring (March through May), the fertilizer would be spread concurrently with ripping the site. If planting is scheduled for fall, fertilizer would be spread the following spring after germination and when the plants have hardened off. The fertilizer would facilitate establishment of vegetation and increase survivability for the first 2-3 growing seasons.

### **Methodology-Seeding and Mulching**

A hydro-seeder, capable of applying material at a minimum of 150 feet, would be used on steeper terrain to minimize damage to the prepared seedbed. The hydro-seeder would spray the majority of the site from the adjacent road or ROW. In areas too distant to spray from the ROW, a hose line may be required. Only as a last resort would the hydro-seeder drive over a scarified site.

Due to the semi-arid conditions in the project area, a two-phase application is recommended. The first phase would overspray the disturbed site with the recommended seed mix (Table 1 & 2) in combination with 100 lb of wood fiber mulch, 40 lb of organic tackifier, and 300 gallons of water/acre. This application would ensure seed/ground contact. The mulch provides a visual marker to ensure even coverage and consistent seed distribution. The organic tackifier binds the uppermost ¼ inch of soil in place to minimize erosion, and keeps the mulch and fertilizer in place on the steeper slopes.

The second phase would overspray 1,500-2,000 lb of wood fiber mulch in combination with 200 lb of 16-16-8 fertilizer/acre. On slopes greater than 50% an additional 40 lb of organic tackifier would be added. The mulch overspray should follow the seed application within 24 hours to minimize depredation of seeds by birds and rodents.

The reseeded and mulched areas would be allowed to dry for at least 12-24 hours, depending on weather conditions, before the site is walked on.

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Final reclamation may require a supplemental planting of containerized or bare root stock to reestablish trees and shrubs. This determination would be made at the third season following the seeding. Normally, a simple ocular estimate of success of the reclamation would compare the disturbed site to adjacent undisturbed areas. If woody plants in the reclaimed area do not occur at a similar density to undisturbed areas, a supplemental planting may be required.

### **Seedling Planting**

Bare root or containerized seedlings would normally be planted at a rate of approximately 200 /acre (Table C-Proposed Species). The species composition would be determined by the BLM authorized officer in coordination with the landscape architect.

Planting should occur as late as possible in the fall prior to the first snow, or as soon as the site is accessible in the spring. Fall planting normally produces better results and is not as vulnerable to weather conditions. At either season, plant survival will increase if the planting stock is dormant when planted.

The root mass should be kept moist at all times--during transport, handling and planting. This is somewhat easier with containerized stock, but can be accomplished with bare root stock if a few simple procedures are followed. A good procedure to insure moist roots on bare root stock is to mix slurry of vermiculite and/or potting soil in a 30 gallon water-filled barrel. Cut pieces of burlap approximately 18 x 24 inches and soak them in the slurry overnight. Wrap the root mass loosely in a roll of saturated burlap prior to planting. Each roll should contain 50-100 seedlings loosely rolled within the burlap and placed in a planting bucket or bag for field use. During the day the rolls can be wet down periodically in the event they start to dry.

It is imperative to have holes dug and ready for planting prior to removing the seedlings from the container or burlap roll. In warm or windy conditions a seedling's root hairs can dry out quickly and kill the plant.

When selecting the location for a seedling, maximize the potential for moisture and shade, select "depressions" over "humps," and shaded areas adjacent to rocks, dead trees, etc. to provide solar protection. In depressions, the seedling should be placed approximately one-third the way up from the bottom to allow the roots to extend into the moist soil and avoid having the seedling covered by sloughing or siltation.

It is imperative that the root mass is placed in the hole in a straight, near natural configuration. The soil should be firmly pressed around the roots using your hand rather than your foot or a stick. The planter must make sure there are no air pockets in the hole, and ensure the seedling is planted to the correct depth. This is accomplished by showing each planter the location of the root crown, which should be covered by 0.5-1 inch of soil at the time of planting. This allows the soil to settle without exposing the root crown.

Following planting all trash would be removed from the site.

### **Seed Mix**

The majority of the area is comprised of a vegetation type referred to as grass/shrub. The primary objective of the reclamation effort is visual conformity, a visually compatible yet desirable species composition would be reestablished.

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The following seed mixes were designed to create a diverse vegetative cover while maximizing the benefits to both wildlife and domestic stock and ensuring compatibility with the surrounding landscape.

Seed Mixes A and B are based on current technology. Future reclamation is anticipated 30 years from now for final abandonment, and more efficient seed mixes may be developed by that time. The most advantageous methods for success at the time of final reclamation, as prescribed by the BLM, would logically be used.

**Table A**  
**Seed Mix**

**Reclamation**  
**(For Buried Pipelines)**

<b><u>Forbes</u></b>	<b><u>*Lbs</u></b>
Palmer Penstemon	0.5 lbs/acre
Golden Cryptantha	0.25 lbs/acre
Utah Sweet Vetch	0.5 lbs/acre
Yellow Sweet Clover <sup>1</sup>	2.0 lbs/acre
Lewis Flax	1.0 lbs/acre
<b><u>Grasses</u></b>	<b><u>Lbs</u></b>
Indian Rice Grass	1.0 lbs/acre
Needle & Thread Grass	0.0 lbs/acre
Intermediate Wheat Grass	2.0 lbs/acre
Blue Gramma	0.5 lbs/acre
Galletta	0.5 lbs/acre
Great Basin Wild Rye	2.0 lbs/acre
<b><u>Woody Plants</u></b>	<b><u>Lbs</u></b>
(4) Wing Salt Brush	2.0 lbs/acre
Winter Fat	0.5 lbs/acre
Wyoming Big Sage	0.25 lbs/acre
Utah Service Berry	1.0 lbs/acre
Blue Elderberry (Raw Seeds)	1.0 lbs/acre

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**Total** 16.0 lbs/acre

\* Rates are pure live seed for all seeding mixtures

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<sup>1</sup> Yellow Sweet Clover is planted as a nurse crop to provide solar protection, soil binding and nitrogen fixing. It will normally be crowded out in 2 to 3 years.

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**Table B**  
**Riparian Area Associated With Pipelines**

**Forbes**

Ladak Alfalfa	0.25 lbs/pls/acre
Narrow Leaf Aster	0.1 lbs/pls/acre
Cicer Milk Vetch	0.25 lbs/pls/acre
Globe Mallow	0.1 lbs/pls/acre
Lewis Flax	0.1 lbs/pls/acre
Palmer Penstimen	0.1 lbs/pls/acre

**Grasses**

Great Basin Wild Rye	2.0 lbs/acre
Stream Bank Wheat Grass	2.0 lbs/acre
Mountain Brome	2.0 lbs/acre

**Woody Plants**

Woods Rose	0.1 lbs/acre
Choke Cherry	2.0 lbs/acre
Mountain Maple	0.25 lbs/acre

**Table C**  
**Bare Root / Containerized Seedlings**  
**(Optional)**

**Woody Plants**

Mountain Maple  
Cottonwood Sp.  
Utah Service Berry  
Choke Cherry  
Willow Sp.<sup>1</sup>

<sup>2</sup> Willows can be established by utilizing cutting (native willow cutting) – 3/8 to 3/4 inch diameter limbs with lateral branches removed – cut 18 to 24 inches can be pushed into damp soils to a depth of 8 to 12 inches (ideally in late fall to early spring). The root mass of willows removed will be buried in the upper 12” to 18” of the recontoured disturbed area.

