



U.S. Department of the Interior
Bureau of Land Management



Visual Resource Management

Reduce Unnecessary Disturbance

Part 3

Best Management Practices for Fluid Minerals

VRM BMP Principles

- The VRM system provides us with many basic principles and techniques to help reduce contrast. As they relate to Fluid Minerals and similar development, the 4 most critical are:
 1. Proper Site Selection (Part 2)
 - 2. Reduce Unnecessary Disturbance (This Slideshow)**
 3. Choice of Color (Part 4)
 4. Final Reclamation (Part 5)

REDUCE UNNECESSARY DISTURBANCE

The second step to minimizing visual contrast is through the reduction of soil and vegetative disturbance.



Questions to Ask:

- Is each road and each well location necessary?
- Do we need a large well pad and road or can our needs be met with a smaller pad and road?
- Can we place the road and pad in a location, such as a flat area, that minimizes surface disturbance?
- Can we reclaim all areas that are not needed for future operations?

Avoid locating roads and pipelines on steep slopes

Follow the contours of the land to reduce earthwork/disturbance.



The visual scar created by this cut is visible for great distances. An example of bad “line.”

Straight lines contrast with the many “lines” and contours found in the natural landscape. In this case, the linear road is highly visible because of the large cuts and fills which result from constructing a road on a steep, exposed slope.

Similarly, Avoid Locating Well Pads on Steep Slopes

Well pads on steep slopes can create large cut and fill slopes which are more expensive to reclaim and are highly visible from long distances.

If you must locate on a steep slope, avoid the sidecast of materials.



If this well location could be moved to flatter ground, it would result in less cut, fill, and surface disturbance.

Large well locations constructed on steep slopes are difficult to reclaim and can be highly visible.

Avoid Locating Well Pads on Steep Slopes

Moving this well farther back from the edge of the hill would have eliminated the excessive fill material placed over the steep side-slope. Long, side-cast fill slopes like this are nearly impossible to reclaim and will be permanently visible against the natural landscape.



Construct the Minimum Road Necessary

Consider using two-track roads for: Exploration wells that could become dry holes or production wells with very low vehicle use during production.

The BLM 9113 Roads Manual states – “*Bureau roads must be designed to an appropriate standard no higher than necessary to accommodate their intended functions...*”



This two-track road follows the natural contour of the land and leads to a drilling operation conducted during the dry season.

If the well is productive, the road could be upgraded, if necessary, for the anticipated traffic and use.

Interim Reclamation

Short-term reclamation that occurs as the well is beginning initial production of oil and/or gas. Includes partially reshaping and revegetating roads, and well pads to reduce the amount of bare ground created during construction and drilling activity.

Once the road cross-section is constructed, revegetate all disturbed areas to reduce the visual size of the road.

Initiate “**interim reclamation**” of roads immediately after construction by returning topsoil to cuts, fills, and borrow ditches and reseeding.



Revegetated borrow ditches have the additional benefits of being more stable from erosion, providing more forage and habitat, and reducing maintenance costs.

Share Rights-of-Way

To minimize surface disturbance, roads and utilities should share common rights-of-way.

Also, consider burying power lines in areas that are visually sensitive.



Utilities and flowlines are buried within this two-track road to a coalbed natural gas well.

Note the lack of vehicle traffic due to the use of offsite production facilities and remote monitoring.

Bury Flowlines & Pipelines

To reduce contrast in visually sensitive areas, flowlines and pipelines should be buried, preferably in or adjacent to the roadway, particularly if the lines are long-term.



These surface pipelines and flowlines contrast with the landscape and create an “industrial” appearance.



Housekeeping

Keep a clean well location. The purpose of a well location is to produce energy resources, not store unused equipment and materials that may or may not be needed in the future.

Poor housekeeping is unnecessary and creates a poor image of the program.



Geothermal Well Location, ownership unknown.

Consider moving the well location to a better site

When possible, choose a flat area hidden from view of key observation points.



This very large, well location was moved to the only area flat and large enough to accommodate its size. This allowed the operator to minimize cuts and fills and avoid construction in the viewshed.

Minimize Topsoil Removal

In flat areas, consider brush-beating, mowing the well location, and/or parking on the grass for drilling and production operations.

Only excavate topsoil and subsoil where it is absolutely necessary, such as for the reserve and mud pits or for leveling the drill rig.



This proposed well pad was mowed in preparation for drilling.

Only the ground under the drilling rig and the reserve pit will be stripped of topsoil.

Reduce the Pad Size

Work with the operator to reduce the pad size to the minimum that is needed, without compromising safety.

This operator constructed a small well pad in order to minimize loss of important sage-grouse habitat and reduce reclamation costs.



Centralize Tank Batteries Out of Sight

Tank batteries are typically the largest production facility structures. Centralize tank batteries for several wells in a place that is less visible from key observation points.



Centralized tank batteries located away from producing wells allow the operator to perform full interim reclamation of producing well locations and to construct lower standard roads to individual wells.

Low Structures

Low profile structures are less visible than higher profile structures.



← Submersible Pump

Low-Profile
Tanks in a low
area,
(not on the
ridgeline) →



Ultra-Low Structures

In some cases, the solution may be to bury the well head.



Steel lid keeps out animals, people, and vehicles.

← View beneath the lid.



If combined with proper painting and interim reclamation, this operating well could be nearly invisible from a distance.

Co-locate Wells

Where practical, co-locate wells to reduce road, pad, and utility surface disturbance.

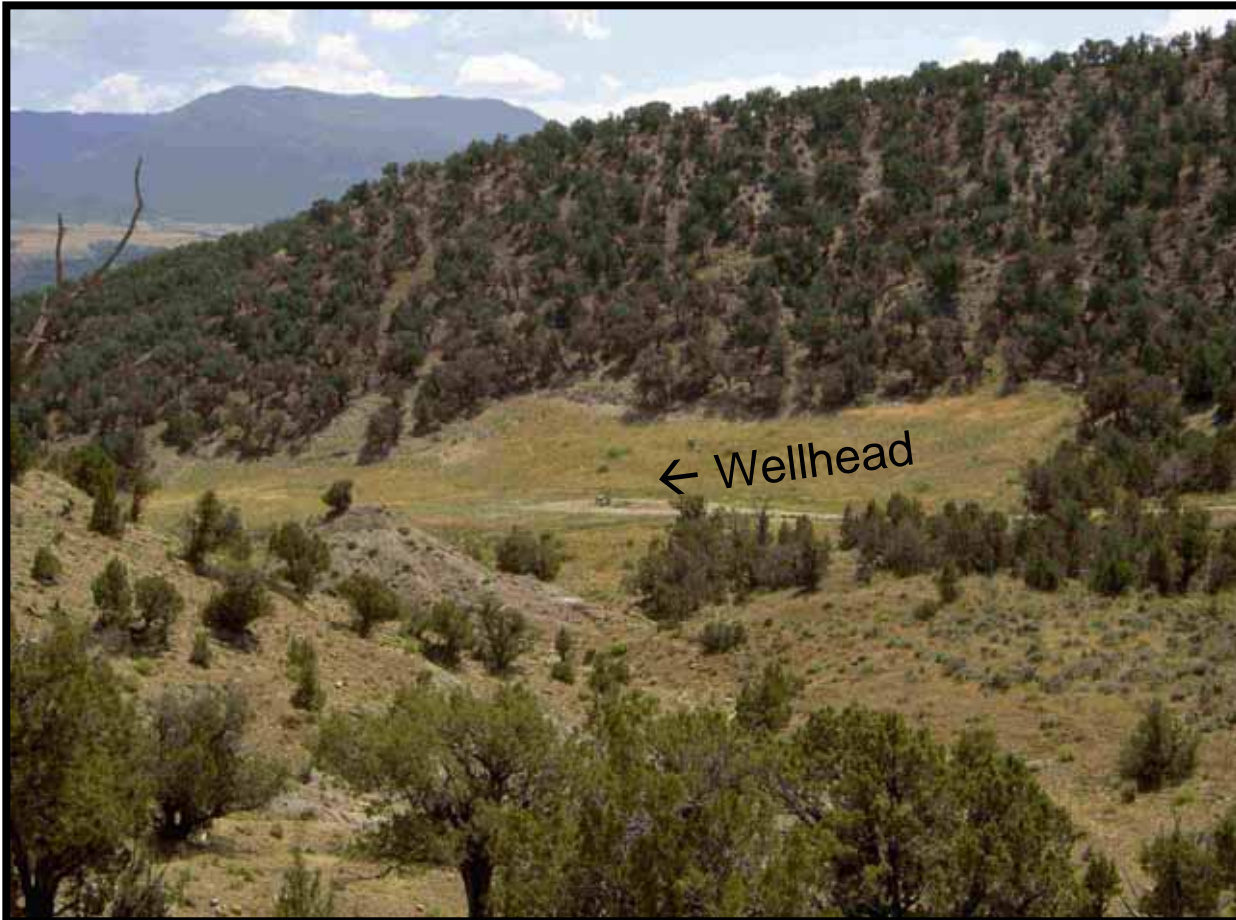


The 6 wells located on this pad result in 5 fewer well pads, access roads, and utility corridors.

← 6 Wells

Interim Reclamation of Well Locations

Minimize the disturbed area of producing well locations through interim reclamation. Interim reclamation is critical to reducing the visual impact of well production, which can run from several to many years.



Note how this well location blends with the surrounding topography, vegetation, and open areas in the landscape by repeating the “form” and “line” of the landscape and surrounding vegetation.

Interim Reclamation

Interim reclamation that is done well will greatly reduce visual contrast.

Paradigm shift: It is **OK** to drive, park, and set up a workover rig on restored vegetation. Just fix it up when you leave.



Note how the entire well location is revegetated, right up to the well box.

Plan for Interim Reclamation

Place production facilities on the well location correctly so that you allow the maximum room for recontouring of the well location. Production facilities should typically be placed near the center of the well location.



Because these production facilities were placed against the highwall, not the center of the pad, the pad could not be adequately recontoured (reshaped) to blend with the surrounding landscape.

Steps to Interim Reclamation

1. Leave enough flat area to enable setting up the workover rig.
2. Where possible, recontour **everything else** to the original, natural contour.
3. Respread stockpiled topsoil so that vegetation extends up to, or within 10 to 15 feet of the production facilities. Respreading and seeding topsoil allows it to maintain its long-term viability for future use. The rapid reapplication of topsoil that has only been stored only a short period of time, encourages the re-establishment of native plants from viable seed in the soil.
4. Gravel a drive-around or load-out area, only if necessary. Consider seeding the drive-around and access spur road.



Encourage the Re-establishment of Native Vegetation

Proper interim reclamation can lead to the re-establishment of local, native vegetation resulting in the “restoration” of the landscape to nearly its original character.



This photo shows an oil field, water injection well with the well location nearly fully “restored” to a native vegetative community.

**Barren Areas =
Mud + Weeds + Maintenance \$ + Lost Forage + Visual Contrast**

Leaving large, barren well locations during the life of the well will increase visual contrast and other impacts including soil and forage loss, noxious weeds, and maintenance costs. Topsoil that is stockpiled will also lose much of its viability over time.



This barren well location could have been reclaimed right up to the pumping unit, making the location very difficult to see in the landscape.

BOTTOM LINE

To minimize adverse visual impacts, work with affected parties to ensure unnecessary disturbance will be reduced prior to the submission and approval of the permit application. This can create a win-win-win situation for the operator, the public, and the BLM.

If we did a good job of Interim Reclamation, then the task of Final Reclamation and associated costs will be greatly reduced.



Great interim reclamation minimizes visual contrast. Over time, sagebrush will return to the site.

**Continue on with
VRM Part 4**