

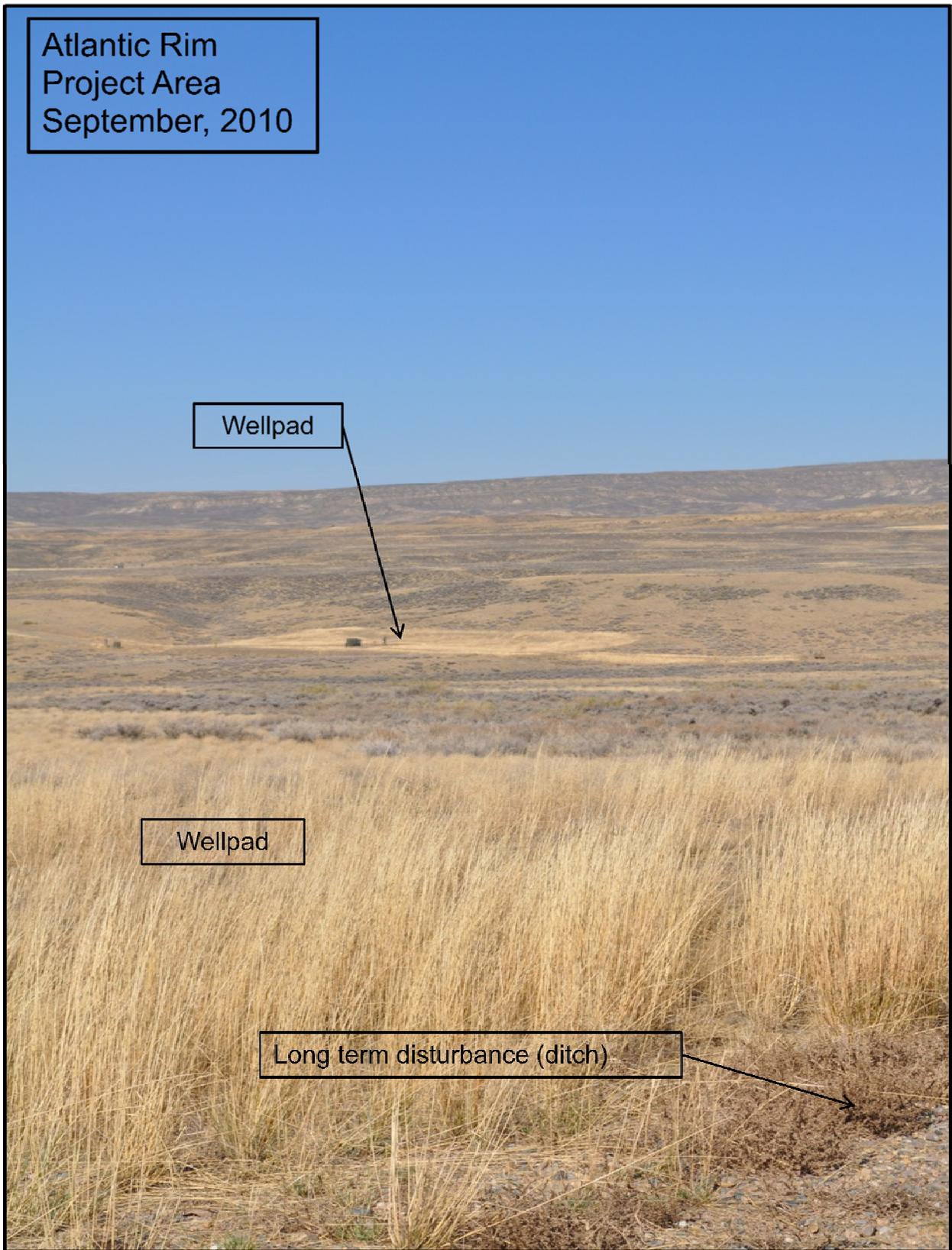
Atlantic Rim Implementation Project

Atlantic Rim  
Project Area  
September, 2010

Wellpad

Wellpad

Long term disturbance (ditch)

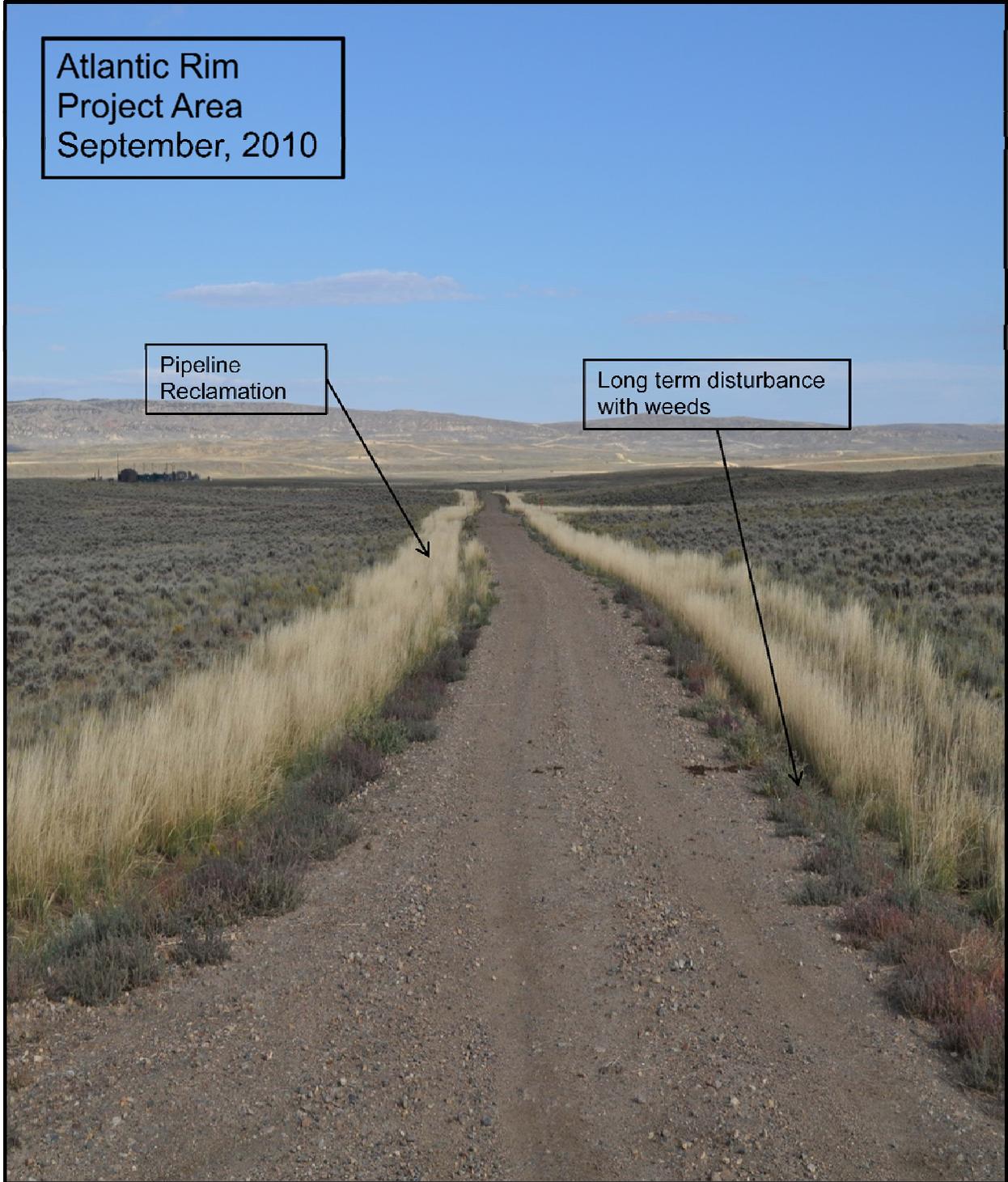


Atlantic Rim Implementation Project

Atlantic Rim  
Project Area  
September, 2010

Pipeline  
Reclamation

Long term disturbance  
with weeds



## Adaptive Management for Reclamation

### Ideas and observations from the 2010 field year

Best news: no visible erosion, other than a couple areas of subsidence were found this year in reviewing rollover proposals and site reviews.

Reclaiming pits and pads as soon as possible

- Maintains soil and seed viability at optimum levels

- Has its own set of expenses and performance challenges

Top soil salvaged from pad construction in one of the best sources of site adapted seed

- Best source of locally adapted seed and species

Long term disturbance sites fill up with weeds

- Sites immediately adjacent to heavy weed infestations with even light populations of plants are essentially weed free.

- Halogeton and Russian thistle are wimps when they have competition but thrive in a vegetation vacuum.

Planting non-native species to impede weed growth in long term disturbance areas

- Does the benefits from not having to spray out weight the cost and risk of planting?

There are important distinctions between weeds, invasive weeds and noxious weeds

- Can we tolerate weeds in a successfully regenerating area?

- Invasive / noxious weeds: should we avoid area spraying as opposed to spot spraying light infestations?

Spraying weeds reduces / eliminates species diversity within reclamation areas

- Can we tolerate fair infestations of weeds in reclamation areas?

Where natural water features exist reclamation can be problematic from livestock / big game grazing impacts

- Include provisions in the reclamation plan to use produced water to draw livestock away from natural features for reclamation establishment?

Using non-native plants as an organic mulch to stabilize sites from erosion and to moderate growing conditions for incoming desirable plants.

- If you generate too much canopy cover / site occupation with the non-native seed it impedes re-establishment of the site adapted seed in the soil.

- It is crucial to stabilize sites from erosion.

Including seed in the seed mix that is not locally adapted.

- The seed is not necessarily adapted to the conditions on the site.

- The seed is very expensive

- Planting seed that is not locally adapted may have the same effect as Slender Wheat Grass, more of a cover crop than a viable reclamation target.