

A Four-Point Reclamation Manifesto

Reclamation-Site Design Principles

While this booklet specifically serves the purposes of defining a conceptual landscape plan for French Gulch, it is more generally a guide to understanding the unique qualities of mined landscapes and new design processes and planning principles specially tailored for the complexities they pose. Several site design principles emerge from the constraints of post-mined or altered landscapes. The factors of time management and project cost often far outweigh the historical forces that altered a site's conditions in the first place². Produced in merely a few years or decades, an altered landscape may require extensive funds and a century or more before it is reclaimed with a renewed use. Four principles are therefore developed here, in order for readers to grasp the uniqueness of reclamation design and the inherent benefits of approaching this type of practice using the proposed simulation work flow and interface. These four principles formulate the reclamation manifesto.

² Power, T. Lost Landscapes and Failed Economies. Washington, D.C.: Island Press, 1996, p. 129

1. The Conservation of Energy and Mass in Site Transformation

The sheer scale of alteration in mined landscapes requires planning and design solutions that result in better landscape performance from minimal maintenance input. To achieve this, careful site assessment should be done to evaluate what can be recycled in-situ and reused for post-mine land use construction. Creatively reusing materials on-site results in conservation of energy and mass in site transformation. The beneficial and transformative properties of the actual site materials leftover from mining should be evaluated for integration in the new site design. This assessment may reveal unique or beneficial uses of local waste materials, enhancing the character of the landscape while reducing transportation and procurement costs for its removal.

MATERIAL MOVEMENTS SHOULD APPROACH EQUILIBRIUM.

This basic operation should leave little extra material on-site and require minimal hauling off-site. Extra fill volumes should be incorporated in-situ as new topographies for landscape programming or enhancing the performance and health of drainage systems.

CONTAMINATED SOILS SHOULD BE CONSOLIDATED FOR IN-SITU INTEGRATION.

On-site storage of waste material should be integrated in the overall topographic plan, but placed in a manner to reduce human risk exposure. Furthermore, placement should maximize isolation from natural systems flowing through the site.

2. The Adaptive Use of Site Conditions

The human and natural processes that shaped the surface of a mined landscape offer evidence for designers to learn from the site prior to reclamation design: what does or does not survive in the post-mined landscape may reveal essential ecological gradients to attach to or modify in the reclamation strategy.

THE DESIGNER MUST ADAPT BY DISTURBING THE DISTURBANCE.

These approaches work by “disturbing the disturbance” or reintroducing ecological diversity to the site. For example, instead of replacing the site’s problematic soil, a more adaptive approach might include scarifying the surface to catch water, ameliorating the soil through existing natural processes.

The designer must attempt to use “alteration” adaptively to guide a series of time-based processes of landscape evolution, rather than imposing a single solution that requires heavy initial investment and perpetual active maintenance in order to survive.

3. Plant Ecology and Vegetation Strategy

Soil conditions are usually the prime determinant of the vegetative strategy and planting design in mine reclamation. Disturbance-adapted plant species have a greater chance of survival, which triggers the next design principle.

THE DESIGNER MUST ASSESS WHETHER ANY DISTURBANCE-ADAPTED PLANT SPECIES HAVE LOCAL POPULATIONS.

Many of these types of plants have pioneering functions, such as nitrogen fixation, or other soil and water stabilization and cleansing properties. In scenarios where no vegetation exists, an entirely adaptive approach to planting may prove useful. For example, if budgets allow for experimentation, seedlings may be mass-planted across a site to evaluate which species and varieties can best survive under harsh conditions.

4. Interactive Landscape Circulation and Infrastructure

Reclamation does not happen overnight; it takes time to plan, design, and construct post-mine projects. Whenever feasible and safe, any reclamation site near populated areas should consider how circulation systems could be integrated into the design. This is especially true for sites proposing recreational post-mine land uses. All forms of mobility (walkers, bikers, hikers, runners, skiers, etc.) should be considered within the context of the project.

DESIGN TO AVOID HAZARD AND RISK EXPOSURE.

The planning and design of new pathways, as well as of accessibility and circulation infrastructures, should be done in such a manner as to reduce the potential for direct engagement with hazards, such as deteriorating structures, physical hazards, or toxic materials.

Circulation infrastructures may also double in function by creating a narrative experience of the alterations that have taken place. Such a circulation system may link the site's history with its post-mine land use, forging a productive educational experience for users.

Bridges, paths, trails, roads, and other circulation infrastructures should be designed to assist a site's ecological functions. For instance, paths should also be used for erosion control and drainage; parking lots and other impermeable surfaces should be designed to detain storm water.

If designed comprehensively, the circulation network becomes an infrastructure that assists ecological recovery while providing clear access to users.

Booklet Two *provides a case study for the use of these design principles on the French Gulch Mine Reclamation Project, Breckenridge, Colorado.*



French Gulch pre-reclamation condition,
Breckenridge, Colorado