RECLAMATION PLANNING

Pete Stahl

WYOMING RECLAMATION AND RESTORATION CENTER

NATURAL RESOURCE DEVELOPMENT PROCESS

1. LOCATE THE RESOURCE

2. Obtain lease from rights holder
   - Land Owner
   - Government (state or federal)

3. Apply for Resource Development Permit
   - Baseline studies of environmental conditions
   - Approval of resource development plan
     (including reclamation plan)
   - Post Reclamation Bond (surface mining)

4. Begin resource extraction followed by reclamation
   - periodic regulatory inspections

5. Reclamation management, monitoring, and evaluation period
   - approval and bond release

RECLAMATION PLANNING CONSISTS OF 2 MAIN ASPECTS:

1) Pre-disturbance Site Assessment
2) Development of a scheme for site remediation

PREDISTURBANCE SITE ASSESSMENT

- Get to know what you are dealing with
- Reclamation Plan should be site specific
- Limitations to site reclamation?

RECLAMATION PLAN

- Maximize efficiency, Minimize problems and costs
- Good scheduling, Proper equipment, Necessary materials, Appropriate methods
- Successful outcome

BLM Wyoming Reclamation Policy:

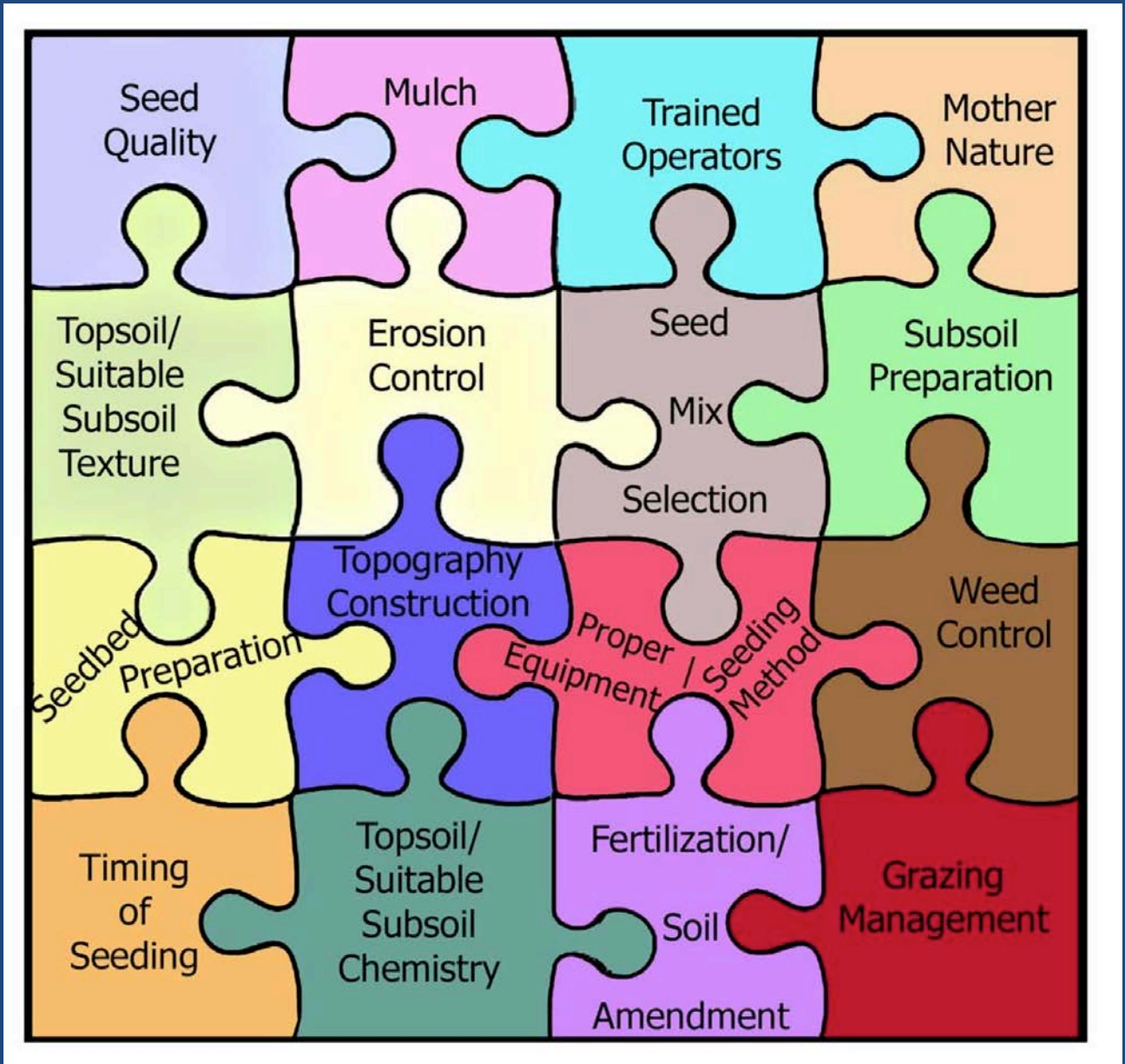
A reclamation plan shall be developed for all surface disturbing activities and will become part of the proposed action in the NEPA document.

The reclamation plan shall address short term stabilization to facilitate long Term reclamation.

Reclamation Goals:

1. Short term goal: Immediately stabilize disturbed area and provide conditions necessary to achieve long term goals.

2. Long Term Goals: Facilitate eventual ecosystem reconstruction to maintain a safe and stable landscape and meet the desired outcomes of the land use plan.



Successful Reclamation Puzzle

Reclaimed/Restored landscape in central Wyoming

Not Good Reclamation

PRE-DISTURBANCE SITE ASSESSMENT

PREDISTURBANCE SITE ASSESSMENT

Location

Land and Mineral Ownership

Land Use Status

Climate (i.e., precipitation, growing season)

History, Archeology, etc.

Geology

Air Quality

Hydrology (surface and subsurface)

Soils Inventory

- distribution of soil types
- identification of potentials problems

Vegetation Inventory

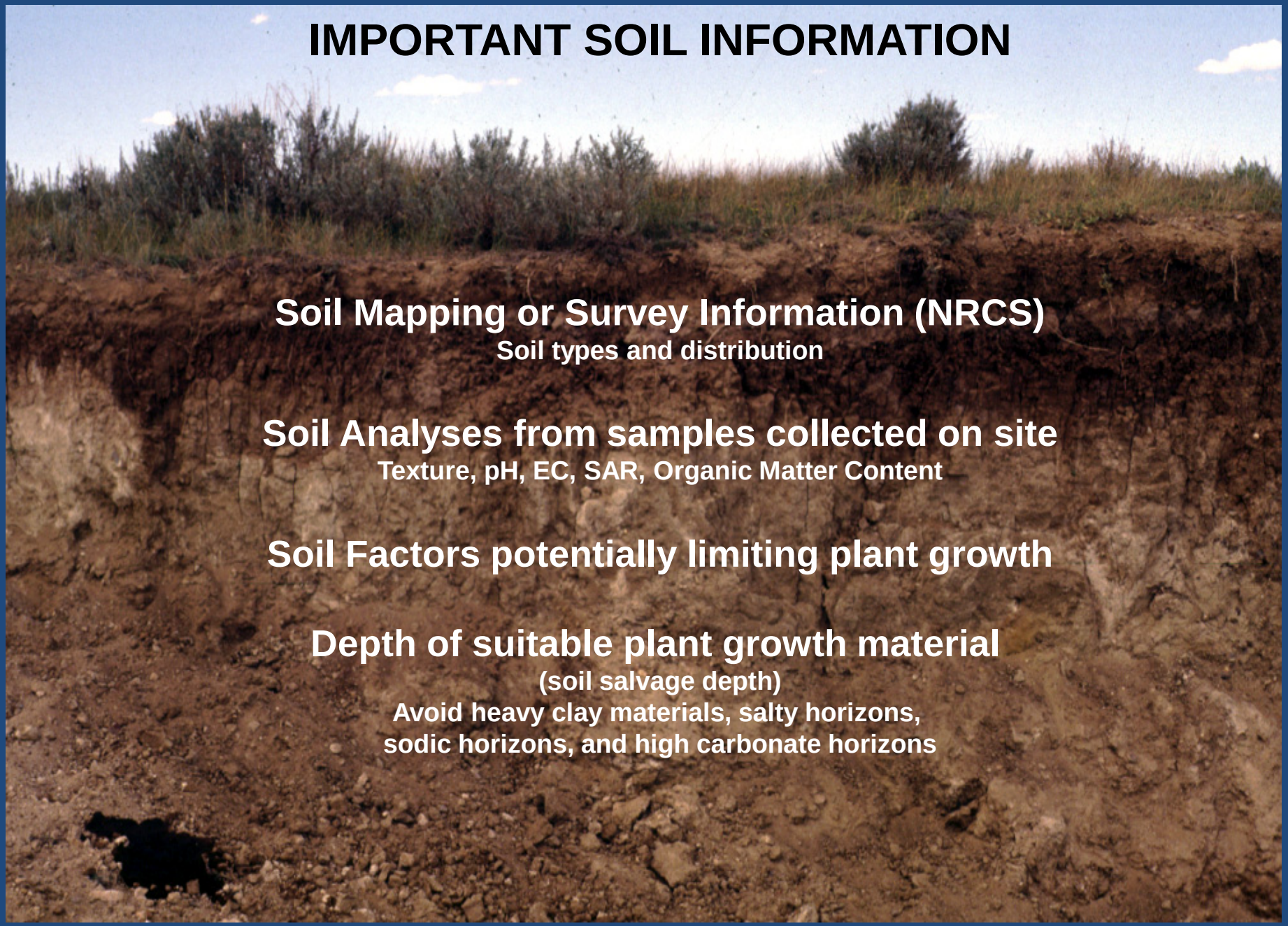
- characterization of vegetation types
- production, cover, density
- species composition, diversity

Wildlife and Habitat

OBJECTIVES OF SITE ASSESSMENT

- Characterize site for future reference
- Estimate costs of site development and reclamation
- Determine site reclamation potential
-Selection of reference area
-Characterize the vegetation
-Determine soil salvage depth
-Identification of areas with Limited Reclamation Potential
- Identification of potential problems
-shallow soils
-critical wildlife habitat
-weed problems
-threatened or endangered species

IMPORTANT SOIL INFORMATION



Soil Mapping or Survey Information (NRCS)

Soil types and distribution

Soil Analyses from samples collected on site

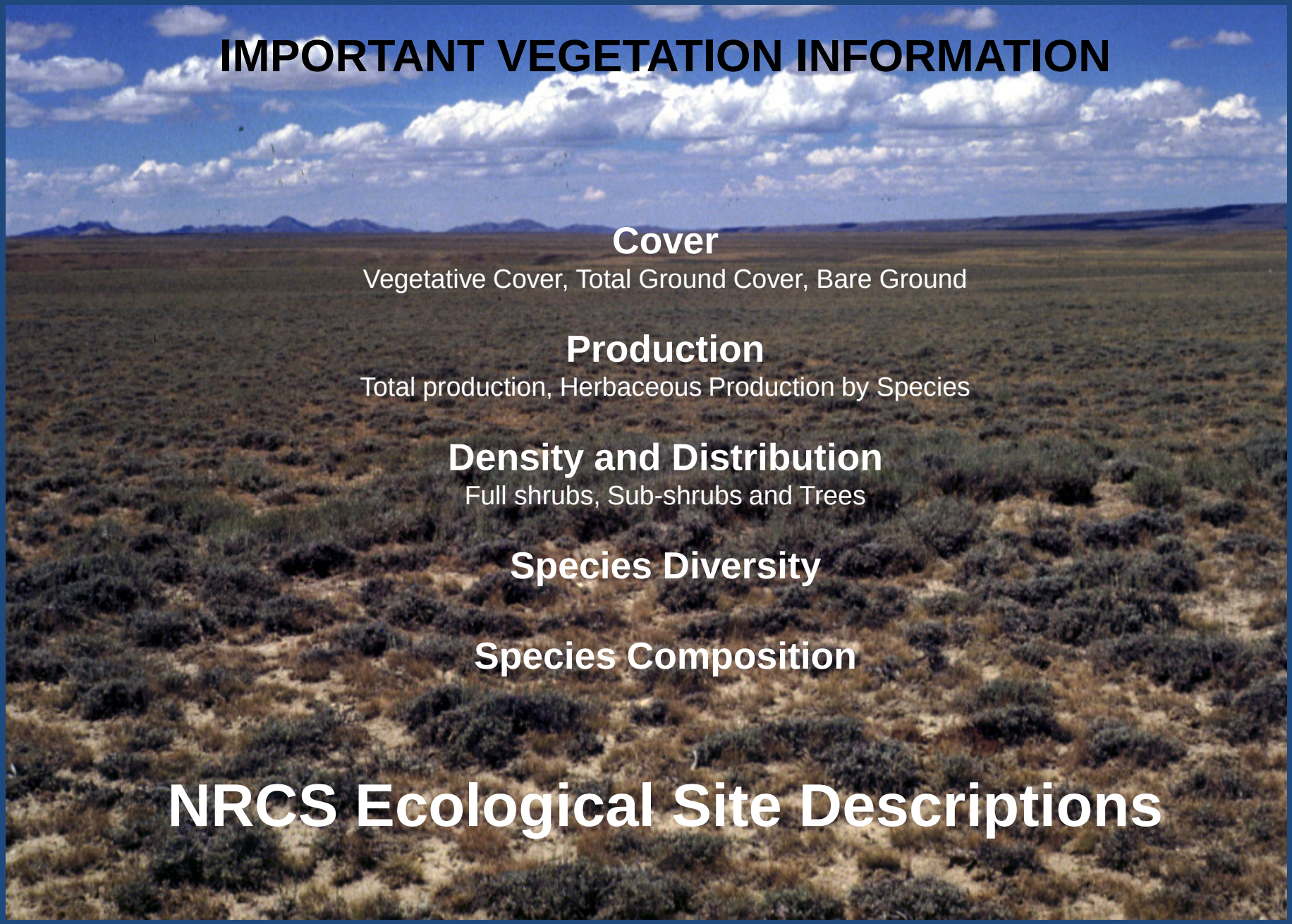
Texture, pH, EC, SAR, Organic Matter Content

Soil Factors potentially limiting plant growth

Depth of suitable plant growth material

(soil salvage depth)

Avoid heavy clay materials, salty horizons,
sodic horizons, and high carbonate horizons



IMPORTANT VEGETATION INFORMATION

Cover

Vegetative Cover, Total Ground Cover, Bare Ground

Production

Total production, Herbaceous Production by Species

Density and Distribution

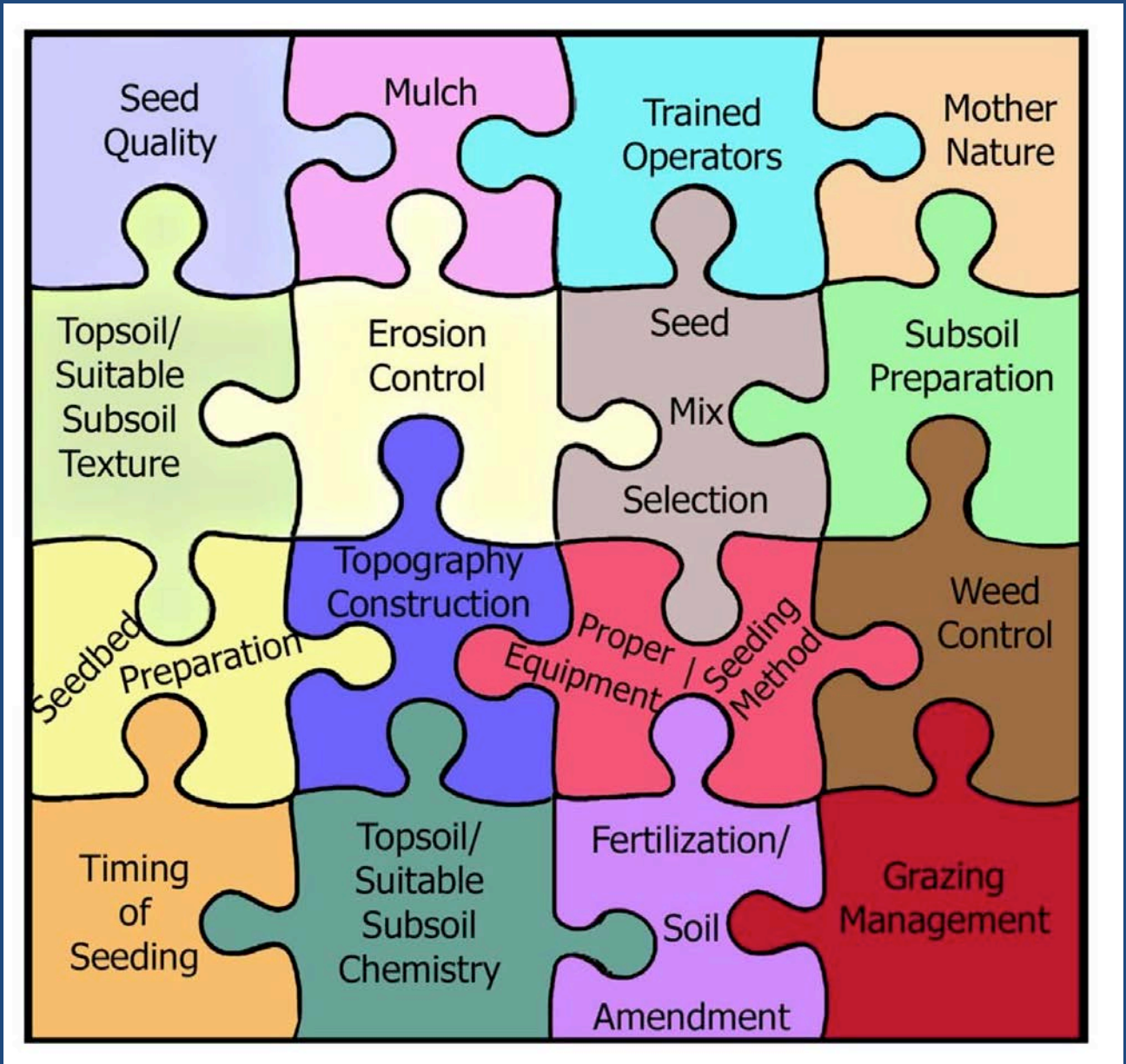
Full shrubs, Sub-shrubs and Trees

Species Diversity

Species Composition

NRCS Ecological Site Descriptions

RECLAMATION PLAN



RECLAMATION PLAN

Topography Reconstruction

Topography, stream channels, drainages, impoundments

Topsoil Salvage, Storage and Replacement

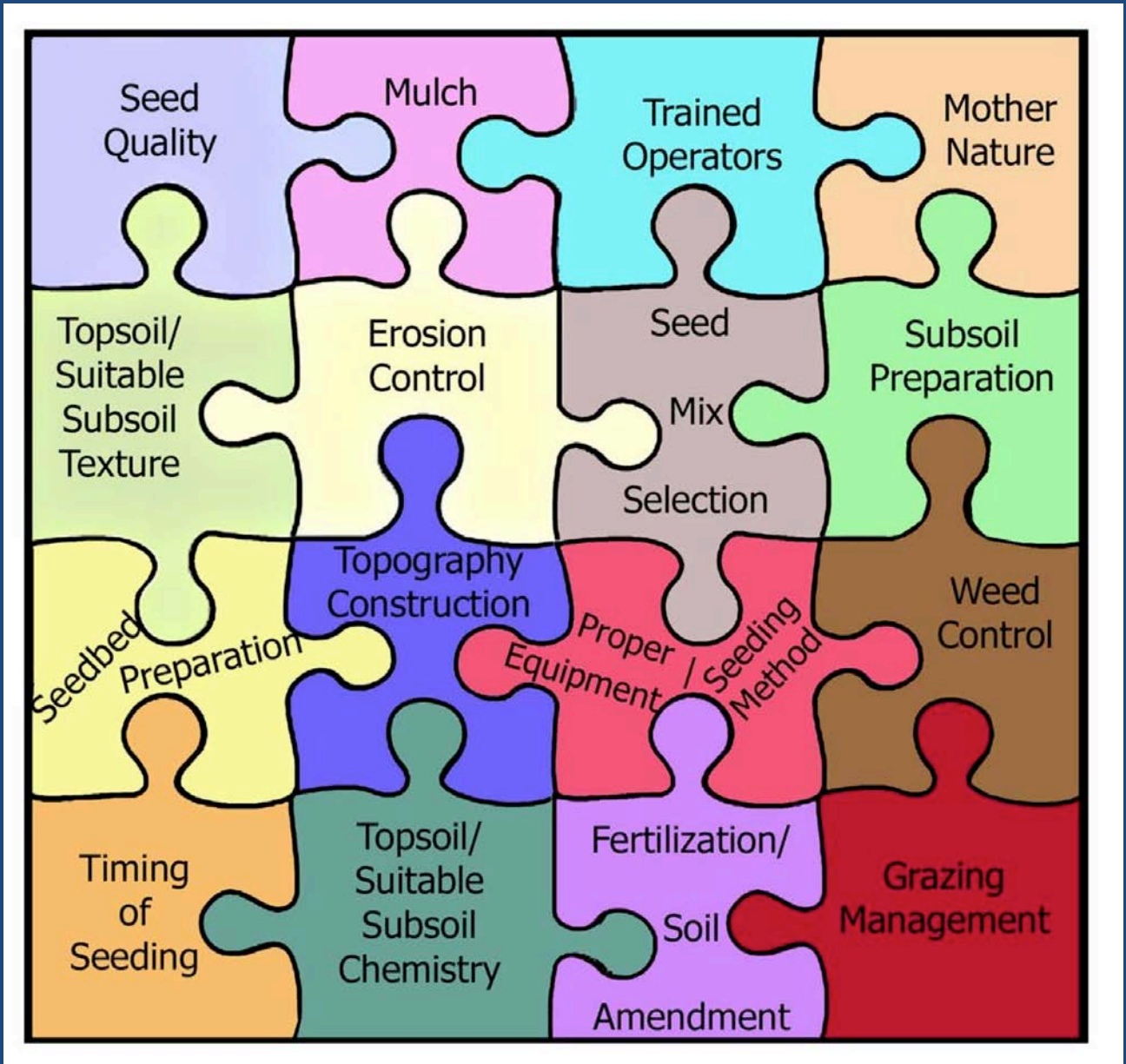
approach and schedule
depth of salvage
stockpiling method
Tillage
equipment
soil amendments

Revegetation

approach and schedule
plant species selection (seed mix)
seedbed preparation
Seed sources
seeding methods

Erosion Control Practices
Weed Control Plan
Site Monitoring Schedule

RECLAMATION PLAN



Seed Quality:

Cultivars or locally adapted ecotypes?

From whom should they be purchased?

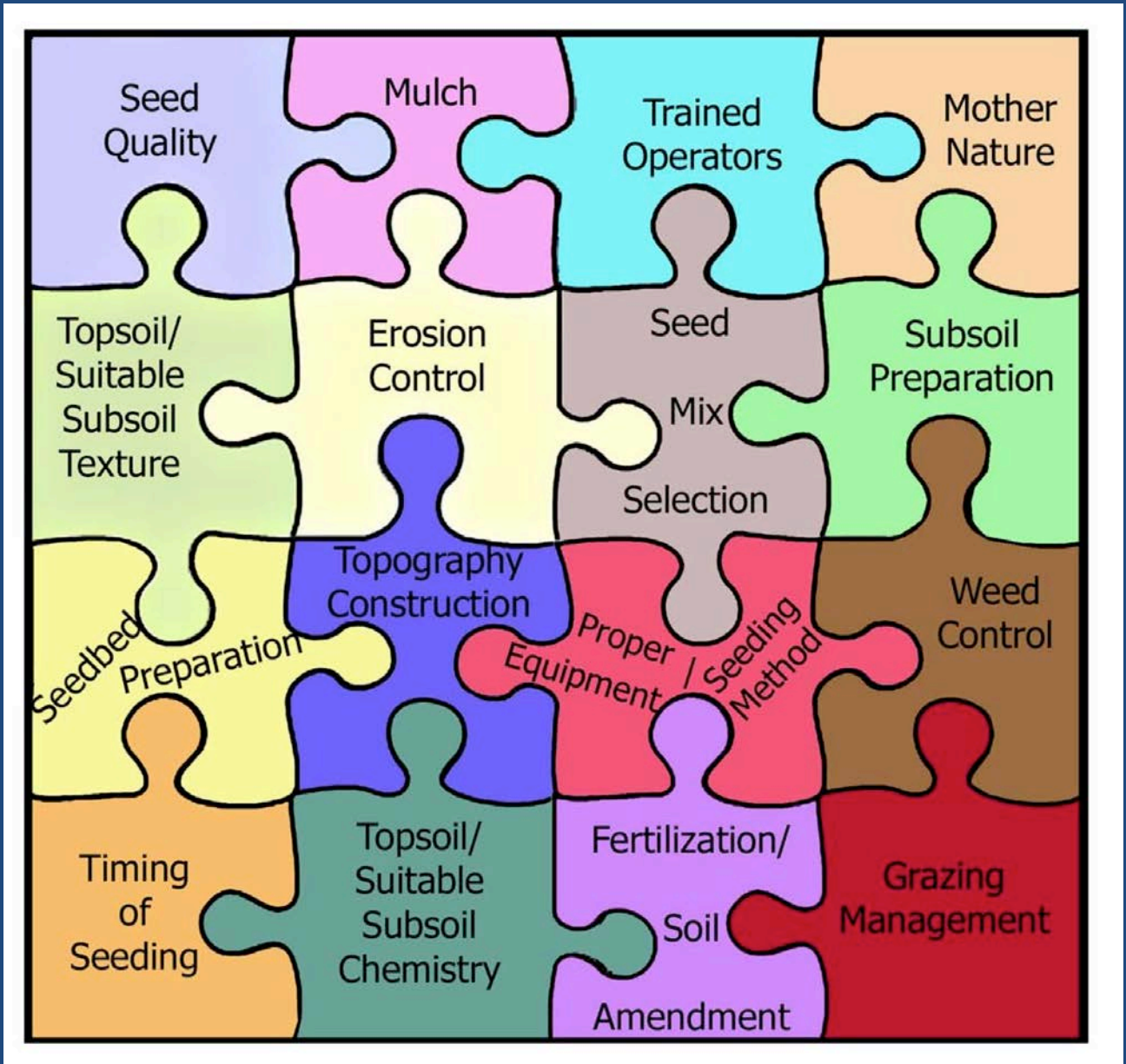
When should they be purchased?

Date of harvest?

Weed content?

Contingency?

RECLAMATION PLAN



Soil Amendments:

Are they needed?

What kind?

Fertilizer?

How much?

How applied? When?

Specialized handling or treatments?

Reclaimed surface coal mine site east of Rawlins