



**RANGELAND
MANAGEMENT PLAN
WORKBOOK**



Directions and Tips for Developing a Management Plan

High Desert Youth Range Camp

1. You can work with the “land manager/ land owner” (counselor) for the site your team will be creating a management plan. You can use the land owner to bounce ideas off of as you develop the plan. If there are financial concerns about a management practice your team is considering you can include those concerns in the management plan to justify why or why not the team chose one practice over another.
2. Each team member must present a part of the plan during the 15 min. presentation.
3. Plans will be presented at your sites so you can utilize the area for show and tell but each team will have a flip chart to create visuals for your management plan. Your group will have 15 minutes to present a plan.
4. Everyone will receive a copy of the scorecard so they know what they will be judged on.
5. Management plans are not usually completed in a few hours, the main purpose of this activity is for your team to recognize that management is best achieved when the entire ecosystem is considered and that one practice is going to affect multiple components of the system.
6. We want you to have some fun and learn some stuff at the same time!



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Implementing a Rangeland Management Plan

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The Process for Developing a Rangeland Management Plan

1. The high desert rangelands are dynamic and complex ecosystems that support many goods and services. Land management is an important aspect of keeping these lands in healthy and productive.
2. Use this guideline along with the information from each of the presenters to develop your final team site plan.
3. To create a great plan the team will want to collect assessment information but the team is expected to provide detailed management recommendations with justifications.
4. As part of this plan your team will be:
 - A. Inventorying and assessing a site for current condition.
 - B. Suggesting management actions based on the goals the team sets for the site.
4. Use this outline to guide your team to developing a final plan. This template has been designed for our management competition but also to potentially be useful in your future work in rangeland management. A real management plan is not developed in 2 hours and the expectations are that your team will only use this as a guide.



Overall Vegetation Goals and Objectives:

What to do:

Developing goals for any given landscape can be as involved or as simple as land managers want to make the goals but they should be useful in guiding your plan. For a private ranch the goal might be as simple as to maximize productivity and maximize diversity in order to have a functioning healthy plant communities. On public lands with multiple stakeholders developing goals can be more involved.

Goals: What needs to be achieved or sustained?

Objectives: How will we reach the goals?

Include people that will be involved with the management of the site: Goals:

What does the group want to achieve for the landscape?

Objectives:

What does the group want to sustain on this site? What are the good things?

Inventory & Assessment:

Soils Mapping & Ecological Site Descriptions

What to do: Use this space to summarize your soils and ecological site.

The ecological site description will have some important information such as approximate precipitation for this site. You will have an indication of the typical plant species you can expect to find on the site. List those species.

Inventory & Assessment:

Soils

What to do: Use this space to summarize information such as soil texture and structure, soil pH, slope and aspect and infiltration rates. Is there evidence of erosion at this site and what is this evidence? Sketch out potential concerns for erosion on the site. You can use the worksheet on the next page to help determine the level of erosion occurring at your site.

Inventory & Assessment:

Soils

Rangeland Health Evaluation Summary Worksheet

Attribute	Indicators	Departure from Ecological Site Description				
		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
	1. Rills					
Comments						
	2. Water Flow Patterns					
Comments						
	3. Pedestals and/or Terracettes					
Comments - <i>Several plants along flowpaths have roots exposed, but site is not prone to frost heaving</i>						
	4. Bare Ground					
Comments						
	5. Gullies					
Comments						
	6. Wind Scoured Blowouts and/or Deposition Areas					
Comments						
	7. Litter Movement					
Comments						
	8. Soil Surface Resistance to Erosion					
Comments - <i>The majority of soil samples from under canopies of plants tending to fall apart when placed in water</i>						
	9. Soil Surface Loss or Degradation					
Comments - <i>A-horizon missing in interspaces; present under shrubs or larger grasses</i>						
	10. Plant Community Composition & Distribution Relative to Infiltration & Runoff					
Comments						
	11. Compaction Layer0					
Comments - <i>Interspaces with platy structure at 2-3 cm depth & roots tending to grow horizontally at this point; No evidence under shrubs</i>						
	12. Litter Amount					

Inventory & Assessment: Plant Inventory

What to do: Complete transects and use the table below to fill in the summary of the plant inventory.

	Transect #1	Transect #2	Transect #3
GPS Location :			

Total Shrub	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Wyoming big sagebrush	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
green/grey rabbitbrush	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Large Per. Grasses	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Sandberg's Bluegrass	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Annual Grass	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Perennial Forbs	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Annual Forbs	Transect #1	Transect #2	Transect #3	Site Average
%Cover				
Density (m ²)				
Bare Ground	Transect #1	Transect #2	Transect #3	Site Average
%Cover				

Inventory & Assessment: Plant Identification

What to do: Use the form to summarize information about the ecological state of this site.

Management Unit _____ Date _____

Preliminary Ecological State Designation _____

Ecological State Confirmed by Ocular Assessment _____

Vegetation Type _____ Habitat Function _____ Acreage _____

Transect Coordinates: Start _____ End _____

Rep. Landscape Photo _____

Dominant Plant Species List:

Grasses	Forbs	Shrubs

Estimated average density of mature, large perennial bunchgrasses (individuals/m²): _____

Sagebrush present? NO YES; if yes, species _____ Estimate of sagebrush cover _____

Juniper present? N/A NO YES; if yes, Estimate of juniper cover: _____ Phase of encroachment: _____

Exotic annual grass present? NO YES; if yes, species _____ Phase of Invasion¹: _____;

Infestations mapped? NO YES; if yes, date mapped _____

Other weeds present? NO YES; if yes, species _____;

Infestations mapped? NO YES; if yes, date mapped _____

Key area(s) identified in ecological state stratum? NO YES; if yes, location(s): _____

Potential Threats (check those present):

Threat	Present	Threat	Present	Threat	Present	Threat	Present
Fragmentation		Livestock Grazing		Flooding		Feral Horses	
Wildfire		Invasive Vegetation		Recreation		Insecticide	
Vegetation Treatment		Lack of Fire		Predation			
Juniper Encroachment		Drought		WNv			

Notes:

¹ **Phase I:** Interspaces primarily bare ground (≥90% interspaces bare ground) and multiple bunchgrass age classes represented; generally associated with Ecological States A & B. **Phase II:** Exotic annual grasses present at intermediate levels in interspaces (≤50% interspaces occupied by exotic annual grasses) and multiple bunchgrass age classes represented; generally associated with Ecological States A & B that are at risk of conversion to Ecological States C & D. **Phase III:** Interspaces primarily occupied by exotic annual grasses (>50% interspaces occupied by exotic annual grasses) and ≤ 1 bunchgrass age class represented; generally associated with Ecological States C & D.

Inventory & Assessment: Invasive Plants

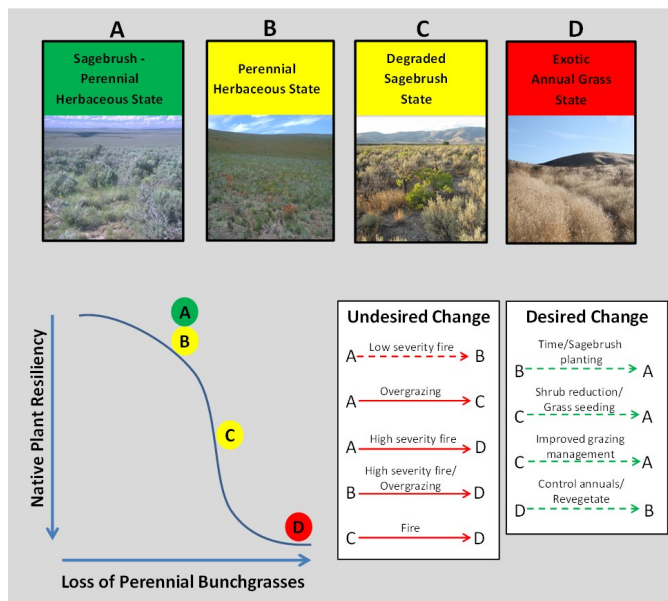
What to do: Follow the steps outlined in the worksheet Dr. Smith to complete this portion of your plan. You will want to include to include the map of the invasive plants inventoried on your site. In the space below draw a map of your site and then draw infestations of annual grasses on your site based on your visual survey.

- Are there any other invasive plants on your site? List these below. Evaluate your site—are there sites available for invasive plants? For desirable species?
- Are there species available for invasive plants? For desirable species?
- Are all the conditions present for a plant to be successful at your site? Invasives? Desirable species?

Inventory & Assessment: Evidence of Succession

What to do: Describe from the demonstration the different successional states (remember this is plant community change).

- Can you determine the current state is your team's site in?
- Using the diagram below for an example can you determine how practices can transition your site to different states?



Inventory & Assessment: Wildlife Habitat Requirements

What to do: Land that has a management component for wildlife includes considering the impacts of that practice on the vegetation. Habitat requirements also vary seasonally.

- You can use the simple “football technique” at your site to determine cover that would be adequate for upland game birds such as sage grouse.
- Use this space to list what wildlife was observed at your site from the Trail Camera’s photos.

Inventory & Assessment: Livestock Production

What to do: Sustainable livestock production is an integral part of sagebrush steppe ecosystems. Livestock can also be a valuable tool to improve lands that may be degraded. Is your site currently productive for livestock grazing? The following factors are all important when developing a grazing plan that is best for the livestock and productivity of the land.

1) **Timing:** Plan grazing by plant state, not dates.

2) **Intensity:** Increase intensity for increase removal of biomass.

3) **Frequency:** Protect those you care about.

4) **Preference and Palatability:** If it is green they will eat it.

5) **Stocking Rate:** High stocking rates when invasives are present.

6) **Class of Livestock:** Use the animals you have to graze.

You can use the following form (which is being used by land managers for Conservation Agreements) to summarize.

Use the AUM analyzer to determine the amount of feed at your site and list below.

Annual Grazing and Habitat Summary Form

ANNUAL GRAZING AND HABITAT SUMMARY

_____ **GRAZING SEASON**

Ranch Name (tract # will be assigned for file retention)_____

Pasture Name (tract # will be assigned for file retention)_____

Yield Index_____ Weather Station _____

Was there effective precipitation for early growth or regrowth? Yes No

Indicators of Resource Conditions (check relevant indicators):

- Fire Riparian Insects Weeds Nutrient Cycling Wildlife Habitat
- Trespass Drought Watershed Function Utilization Wolf Plants
- Livestock Distribution Range Improvements Deviation in system or Season of use

Summary of field notes, observations and data that describe range, livestock, and habitat conditions at the end of the year.

Description of actions, events, or activities that may have caused resource objectives to be met, not met, or moved toward or away from. Recommended changes for next grazing season.

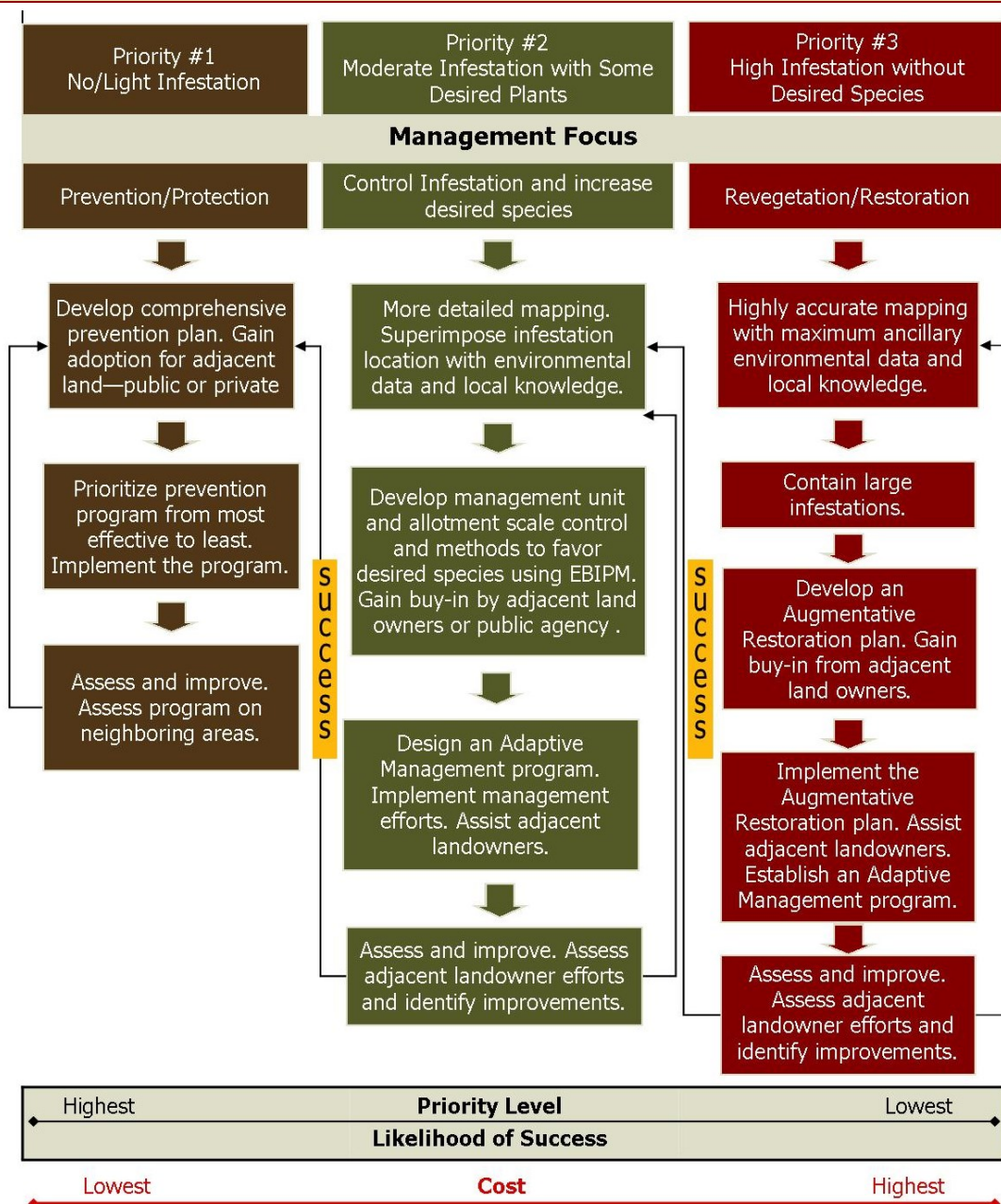
Individuals providing input or review: _____, _____,

_____, _____, _____, _____,

_____. DATE: _____

Developing a Management Plan

What to do: All land is not created equal and within each management unit there will be land that has different needs. Prioritizing land into areas that are in good condition for first priority, areas that still have desirable plants that with management practices can be improved as second priority and any areas that are in poor condition as the last priority in a management plan.



What to do: Sketch a map of your site and label priority areas for different parts of the site.

Developing a Management Plan

Potential Strategies and Practices to Apply

What to do: What type of practices might be applied for different priority areas that your team defined for this site?

This is a good place to do some brainstorming and determine different practices if any under the prioritization. Work with the land owner here to understand how successful the practices will be in reaching the goal. Make notes of whether these practices are going to be feasible by talking with your landowner. Even if they may not be economically feasible doesn't preclude using a practice in your plan.

Priority 1 Areas

Keeping Good land in Good Shape

What to do: Typically land that is in good condition is the highest priority in a management plan. Developing a prevention program to keep invasive plants from infesting these areas will be important.

- What species do you want to keep in good condition in this area?
- What species do you want to keep out of this area?
- Practices you might implement?
- If you have roads or trails near your site, do a visual survey for invasives and if found how can you limit the spread?

Develop a Prevention Plan for potential invasive plants

What to do: Make a map of your site and identify these zones. Use information from esd and soils and plants state and transition to mark your zones.

In this section the prevention planning focuses on identifying protection, action and sacrifice zones and drawing “do not cross” lines for movement of invasive species.

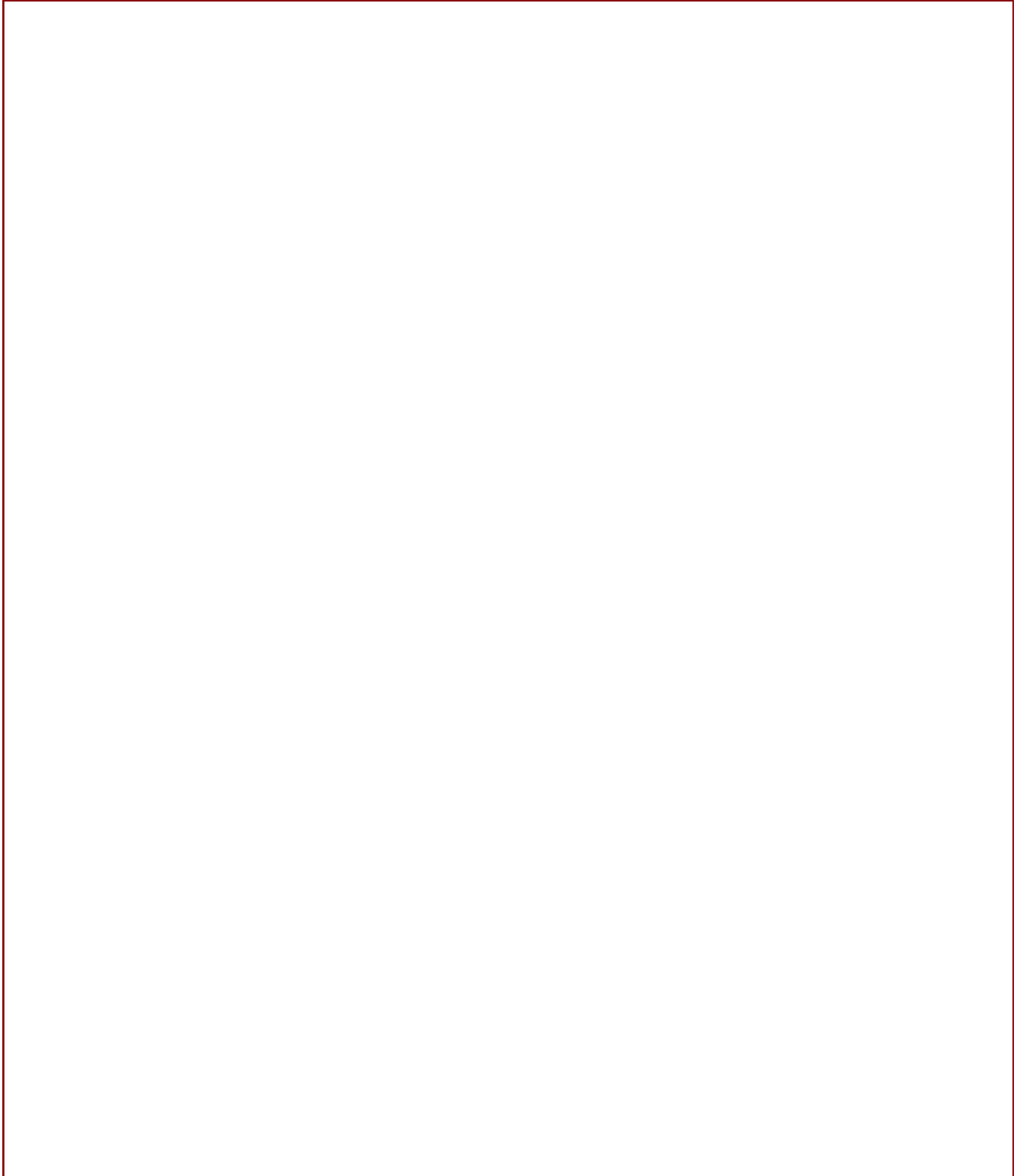
Protection zones are areas free of weeds of concern but are at risk of future infestations.

Action zones are areas identified on maps as bordering existing infestations and are “active” treatment zones.

Containment zones are areas with larger well established infestations of invasive plants and are areas where infestations are not to spread from.

Priority 2 Areas— Practices to Apply

What to do: Consider the practices that can be applied to areas in your site that can improve the health and productivity of the desired species that are on the land.



Priority 3 Areas

Is revegetation needed? What practices could you apply?

What to do: This section is similar to the previous section, but in this case practices may be developed to revegetate areas with desired plant species. You can use the Granite seed catalog to develop a seed mix if that becomes part of the plan. Revegetation efforts are designated as the last priority is not because they are not important, but when resources are limited this land is expensive to revegetate and the likelihood of success is small. It is useful to fully develop this part of the plan to recognize that something needs to be done to improve the land

Potential Strategies and Practices to Apply

Processes	Principles	Strategies and Practices
Disturbance	<ul style="list-style-type: none"> • Desired species will be favored when disturbances are less frequent • Desired species will be favored when disturbances are less intense • Smaller-scale disturbances over time are less likely to promote growth of invasive plants • Disturbance is usually needed to create safe sites in plant communities in late-stage succession 	<ul style="list-style-type: none"> • Frequency and intensity of fires can be managed by managing fuels needed to carry the flames. Fuels can be managed by using controlled fires, mowing, herbicides and grazing. • Frequency and intensity of fires can be lowered by establishing later maturing species. • Minimize scale by disturbing only specific areas where seeds are to be placed. • Small disturbances should be contained by immediately seeding disturbed soils.
Propagule Dispersal	<ul style="list-style-type: none"> • Increasing dispersal frequency of desired species and limiting dispersal frequency of invasive species can shift to a more desirable plant community • Early arrival of less-competitive desired species can increase their competitiveness 	<p>Seed native species multiple times at a site.</p> <p>Reduce propagule production of non-native species</p> <p>Manage dispersal vectors of invasive species</p> <p>Plan timing of seeding of native species to arrive at safe sites earlier than native species.</p>
Propagule Pressure	<ul style="list-style-type: none"> • Increasing amount of seeds of desired species and decreasing seed production of undesired species can improve the plant community • Controlling seed production of invasive species is required to establish desired seedlings • Seed production of desired species is reduced more than invasive species when vegetation is damaged 	<ul style="list-style-type: none"> • Increase seeding rates of native species. • Decrease seed production and seedbank of invasive species. • Minimize damage to native species to maximize seed production

Processes	Principles	Strategies and Practices
Resource Acquisition	<ul style="list-style-type: none"> • Manage environments for low resource availability to favor desired species • Vigorous plants producing high amounts of biomass will limit resource availability and choose desired species with variability in growth traits to maximize resource use • Species with similar resource use increase success in establishing desired species 	Develop a seeding mix in restoration scenarios.
Response to Environment	<ul style="list-style-type: none"> • Manage environments for resource conservation to favor desired species • Inhibit performance of invasive species in low-nutrient environments by using appropriately-timed stresses 	<ul style="list-style-type: none"> • Implement grazing to benefit desired species.
Life Strategy	<ul style="list-style-type: none"> • Use infrequent and less-intense disturbances to favor slower-establishing and growing desired species • Establish species with diverse growth patterns to enhance stability of plant communities 	<ul style="list-style-type: none"> • Implement grazing to favor the desired species seed production.
Stress	<ul style="list-style-type: none"> • Use moderate, prolonged stress to favor desired species over short duration, intense stress, which favors invasive plants • Choose desired species with plant tissue characteristics that resist stress . 	<ul style="list-style-type: none"> • Repeated interruption of a plants capacity to store energy such as mowing or timed grazing of invasive plants. • Biocontrol options may stress a plant population over a prolonged time • Develop a seeding mix.
Interference	<ul style="list-style-type: none"> • Desired species that take up resources similar to invasive species will increase competitive ability 	<ul style="list-style-type: none"> • Reduce competition by controlling invasive plants for at least 2 years. Using timed grazing, selective herbicides. Minimize negative effects on desired plants

Use this space to outline the presentation and who will present what

Adaptive Management

Finalizing the management plan

What to do: Adaptive management is easy to say but not so easy to do. The main purpose of adaptive management is to create a feedback loop so you can know or the land owner can know if the plan that is implemented is actually working or not. If not, adjustments can be made and learn as you go. Your team will want to think about data that you can collect that will be scientific and if called into court they will withstand legal scrutiny as to the scientific basis of your plan. Include in this section:

- How you plan to monitor to collect valid data?
- How the treatments and strategies will be evaluated and how to make necessary changes?
- Consider how you can replicate management strategies and have a “control” plot to compare management alternatives.
- List management practices recommendations and how will you use adaptive management to know if the plan is working?

Use this page to make sure you have all the parts of your Management Plan developed?
Rangeland Management Plan Scorecard and Checksheet

Judging Criteria	Total points available	Points Earned	Comments
Part 1 -Goal setting			
Goals and objectives were set?	5		
Part 2 – Inventory and Assessment			
Soils and Ecological site description determined?	5		
Plant inventory conducted?	5		
Functional groups determined?	5		
Current state the site is in?	5		
Wildlife habitat requirements considered?	5		
Livestock production requirements assessed?	5		
Map developed?	10		
Part 3 – Management Practices			
Prioritized areas for management?	5		
Considered prevention for invasive plants?	5		
Used a framework from which to make best decisions?	5		
Is a clear plan developed?	10		
Part 4 – How to know if the plan is working?			
Developed adaptive management protocol?	10		
Did each team member present?	10		
Overall impression of the plan and the team's understanding of the site?	10		
Total score	100		

