CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	10/10/2008
PRACTICE: Brush Management 314		Baseline Setting:			
		Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Substantial Improvement	Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment.
Wind	Slight to Substantial Improvement	Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment.
Ephemeral Gully	Slight to Substantial Improvement	Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment.
Classic Gully	Slight to Substantial Improvement	Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment.
Streambank	Slight Improvement	Removal of undesirable brush species improves water availability and encourages streambank stabilization by encouraging growth of native plant communities and when applied with supporting practices.
Shoreline	Slight Improvement	Removal of undesirable brush species improves water

		availability and encourages shoreline stabilization by encouraging growth of native plant communities and when applied with supporting practices.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight to Moderate Worsening	The worsening is due to increased soil moisture and decreased root binding of brush removed on soils prone to slippage depending on soils and slopes.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight to Substantial Improvement	Removing competition promotes a more vigorous plant community with increased productivity.
Rangeland Site Stability	Slight to Substantial Improvement	Reduction of brush canopy will increase herbaceous ground cover resulting in improved surface organic matter that will increase soil surface stability. There may be a temporary increase in exposure of the soil surface following mechanical treatment.
Compaction	Slight Worsening	Use of heavy equipment to control vegetation may cause compaction.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Moderate Improvement	Selected species released from competition may take up excess salts or other chemicals.
• Animal Waste and other Organics - N	Not Applicable	Not applicable.
• Animal Waste and other Organics - P	Not Applicable	Not applicable.
• Animal Waste and other Organics - K	Not Applicable	Not applicable.
• Commercial Fertilizer - N	Not Applicable	Not applicable.
• Commercial Fertilizer – P	Not Applicable	Not applicable.
• Commercial Fertilizer – K	Not Applicable	Not applicable.
• Residual Pesticides	Slight Worsening	Residues of some pesticides may remain in the soil following their use.
Damage from Sediment Deposition	Slight to Moderate Improvement	Improved vegetative cover will reduce runoff and increase infiltration.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Improved vegetative cover will

		reduce runoff and increase infiltration.
Excessive Seepage	Slight to Moderate Worsening	There will be increased infiltration and decreased evapotranspiration.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Runoff is reduced by increased ground cover.
Excessive Subsurface Water	Slight to Moderate Worsening	There will be increased infiltration and decreased evapotranspiration.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	There will be improved health and vigor of plant community and infiltration, reducing overland flow.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	There will be increased moisture availability and plant use efficiency caused by decrease in undesirable species.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Substantial Improvement	There will be decreased sediment loads due to improved plant community and ground cover.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	There will be decreased sediment loads due to improved plant community and ground cover.
Aquifer Overdraft	Slight Improvement	The decrease is due to increased infiltration.
Insufficient Flows in Water Courses	Slight to Substantial Improvement	There will be greater infiltration rates and reduced uptake by undesirable brush species.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	Pesticides may be used to control brush.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Slight Worsening	The action may promote infiltration of surface water and any associated contaminant.
• Harmful Levels of Heavy Metals	Neutral	The action promotes infiltration of surface water but increases vegetative growth and uptake of metals.
• Harmful Levels of Pathogens	Neutral	The action promotes infiltration of surface water but increases vegetative growth and microbial activity, increasing pathogen mortality.
• Harmful Levels of Petroleum	Neutral	Some herbicides require a petroleum-based carrier. Use of heavy equipment may lead to fuel or lubricant spills.

In Surface Water:		
• Harmful Levels of Pesticides	Slight Worsening	Pesticides may be used to control brush.
• Excessive Nutrients and Organics	Neutral	There may be no effect or a slight improvement due to improved health and vigor of plant community and ground cover reducing overland flow.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	The decrease is due to improved plant cover and increased infiltration, reducing overland flow and runoff.
• Excessive Salinity	Slight Improvement	Improved plant cover will increase infiltration, reducing overland flow and the potential for transport of salts to surface water.
• Harmful Levels of Heavy Metals	Slight Improvement	Improved plant community and increased infiltration reduces overland flow.
• Harmful Temperatures	Neutral	Increased plant cover and infiltration reduces surface runoff.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Not Applicable	Not applicable.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Not Applicable	Not applicable.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced incidence of wildfire.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Slight to Moderate Worsening	Herbicides used to control brush may drift from the site.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Moderate Worsening	Removal of tall vegetation eliminates shade and increases temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Undesirable brush species will be removed by physical, chemical, or biological means to make it suitable for the desired plant community.
PLANTS - CONDITION		

Productivity, Health, and Vigor	Slight to Substantial Improvement	The removal of competition increases desirable plant community health, vigor, and biodiversity.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.
• Declining Species, Species of Concern	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.
Noxious and Invasive Plants	Moderate to Substantial Improvement	There will be a removal of competition to increase desirable plant community health, vigor, and biodiversity.
Forage Quality and Palatability	Moderate to Substantial Improvement	The removal of competition increases desirable plant community health, vigor, and biodiversity, thereby improving nutrititive value and palatability.
Wildfire Hazard	Moderate to Substantial Improvement	Management reduces fuel loadings.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	There will be an improvement in composition, structure, amount, and availability of plants for food.
Inadequate Cover/Shelter	Slight to Substantial Improvement	The degree will depend on the amount of brush removed and the enhancement of stand composition and structure. There may be a slight to significant initial short-term loss of cover.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight to Substantial Improvement	Removal or control of brush increases usable space.
Habitat Fragmentation	Slight to Substantial Improvement	Removal or control of brush increases connectivity to and with adjacent desired plant communities.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Habitat management is implemented to remove limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
• Declining Species, Species of Concern	Neutral	Activities are designed, installed, and mitigated to an

		extent to maintain or enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	The reduction of undesirable brush species increases production of forage that meets nutritional and productive needs for livestock.
Inadequate Shelter	Slight to Moderate Worsening	Shelter from brush is diminished.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Slight to Substantial Improvement	There will be a reduction of harmful plant and animal pest populations, such as flies and ticks, and noxious and invasive brush species.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Moderate increase	Negligible except for mechanical. Mechanical brush treatment: moderate increase.
Capital - Total Investment Cost	Slight to substantial.	
Capital – Annual Cost	Negligible to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible to moderate increase	Negligible for biological and chemical to moderate increase for burning and mechanical.
Labor – Change in Management Level	Negligible to slight increase.	
Risk - Yield	Moderate to Substantial Decrease	Moderate to substantial decrease due to restoration of natural plant community balance.
Risk - Flexibility	Moderate to Substantial Decrease	Moderate to substantial decrease due to restoration of natural plant community balance.
Risk - Timing	Substantial Increase	Substantial increase except for biological.
Risk – Cash Flow	Slight to substantial increase.	
Profitability – Change in Profitability	Slight to moderate increase.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Mechanical removal impacts; TCP important plant species.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	This practice uses energy. Energy use depends on the method of practice implemention.
Underutilization of Non-Fossil Energy Resources	Slight Decrease	Potential for using biomass from this practice for non-fossil fuel energy (for example, firewood) exists.

Human Considerations Explanation

Considerations	Physical effects indicate:
Land - Change in Land Use	The degree to which implementing the conservation practice is expected to cause a change from one land use to another.
Land - Land in Production	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.
Capital - Change in Equipment	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of capital equipment required for farm or ranch operations.
Capital - Total Investment Cost	A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.
Capital - Annual Cost	A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice.
Capital - Credit & Farm Program Eligibility	Included to make conservation planners aware of the potential availability of funding for implementing conservation practices.
Labor – Labor	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of overall farm or ranch labor required for operations.
Labor - Change in Management Level	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of required active management on a farm or ranch.
Risk – Yield	The degree to which risk, as related to crop or livestock yields, is expected to increase or decrease as a result of implementing the conservation practice.
Risk – Flexibility	The degree to which risk, as related to the flexibility of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice. For example, converting from flood irrigation to a sprinkler system gives a farmer an increase in flexibility of irrigation, which results in a decrease in the level of risk associated with inflexibility of operations.
Risk – Timing	The degree to which risk, as related to the timing of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
Risk - Cash Flow	The degree to which risk, as related to cash flow in farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
Profitability - Change in Profitability	The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.
Cultural Resources and/or Historic Properties Present or Suspected to be Present	The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.
Depletion of Fossil Fuel Resources	Inefficient use of fossil-originated energy sources (diesel, gasoline, propane, natural gas, coal), lubricants, and other materials.
Underutilization of Non-Fossil Energy Sources	Available and cost-effective alternative energy sources (solar, wind, biofuel, hydroelectric, geothermal) are not being used or are being used inefficiently.