

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Terrace 600</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>SOIL - EROSION</b>					
Sheet and Rill	Substantial Improvement	Terrace shortens slope length and reduces erosion by water.			
Wind	Slight Improvement	Vegetative terraces may shorten the unsheltered distance and trap saltating soil particles when orientation is across the prevailing wind erosion direction.			
Ephemeral Gully	Moderate to Substantial Improvement	The slope length of the concentrated flow channel is shortened.			
Classic Gully	Slight to Moderate Improvement	Changes hydrology of the land unit			
Streambank	Slight Improvement	Reduces concentrated flow from the land unit. May increase sediment carrying capacity of runoff water entering stream.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Slight Improvement	Reduced slope length reduces erosion.			
Mass Movement	Slight Worsening	Infiltration of trapped runoff may add to soil saturation causing mass movement.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight Improvement	Reduced erosion will reduce losses of organic matter.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight Worsening	Construction activities cause compaction in the terrace channel and embankment.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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<b>PRACTICE: Terrace 600</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Residual Pesticides</li> </ul>	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Slight to Moderate Improvement	The action reduces erosion and traps sediment.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Slight to Moderate Worsening	Because of increased infiltration			
Excessive Runoff, Flooding, or Ponding	Moderate to Substantial Improvement	Water storage is increased and runoff is reduced.			
Excessive Subsurface Water	Slight to Moderate Worsening	Because of increased infiltration			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight to Moderate Improvement	Amount of runoff is regulated and controlled to reduce impact on outlets.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	The action reduces erosion and runoff and improves water efficiency.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Sediment trapped before it is transported to conveyance ways.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Sediment trapped before it is transported to conveyance ways.			
Aquifer Overdraft	Slight Improvement	Increases infiltration for aquifer recharge			
Insufficient Flows in Water Courses	Slight Worsening	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.			
<b>WATER – QUALITY</b>					
In Groundwater:					
<ul style="list-style-type: none"> <li>Harmful Levels of Pesticides</li> </ul>	Slight to Moderate Worsening	this practice increases infiltration			
<ul style="list-style-type: none"> <li>Excessive Nutrients and Organics</li> </ul>	Slight to Moderate Worsening	The action increases infiltration which may provide transport for nutrients.			
<ul style="list-style-type: none"> <li>Excessive Salinity</li> </ul>	Slight to Moderate Worsening	The action increases infiltration of water and soluble contaminants.			
<ul style="list-style-type: none"> <li>Harmful Levels of Heavy Metals</li> </ul>	Slight Worsening	The action increases infiltration of water and soluble contaminants.			
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Slight Worsening	The action increases infiltration of water and contaminants, including pathogens.			
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable	Not applicable.			

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<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
In Surface Water:					
• Harmful Levels of Pesticides	Slight to Substantial Improvement	The action reduces runoff and erosion.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Reduced erosion and increased infiltration can result in fewer dissolved and sediment-attached nutrients leaving the field.			
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Terraces slow water and allow sediment deposition.			
• Excessive Salinity	Slight to Moderate Improvement	The action can increase infiltration, which will reduce runoff of salts from a field.			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action traps sediment, reduces ephemeral gully erosion and increases infiltration of surface runoff.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Increases infiltration and reduces runoff.			
• Harmful Levels of Petroleum	Slight to Moderate Improvement	Increases infiltration and reduces runoff.			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Neutral	Terracing promotes vegetative growth that removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Terrace 600</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Productivity, Health, and Vigor	Slight to Moderate Improvement	Conserving moisture and reduced erosion will improve plant productivity and health.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Slight Improvement	Vegetation-backed terraces provide limited cover.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
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.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	Not applicable.	Not applicable.			
Land – Land in Production	Not applicable.	Negligible to slight increase.			
Capital – Change in Equipment	0	Slight to moderate.			
Capital - Total Investment Cost	0	Slight to moderate increase.			
Capital – Annual Cost	0	Situational.			

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<b>PRACTICE: Terrace 600</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate increase			
Labor - Labor	Situational. Slight to moderate increase, depending on volume of treatment and equipment used.	Negligible			
Labor – Change in Management Level	0	Not applicable.			
Risk - Yield	Not applicable.	Slight Decrease			
Risk - Flexibility	Negligible to slight decrease due to environmental and manure-handling benefits.	Not applicable.			
Risk - Timing	Not applicable.	Slight Increase			
Risk – Cash Flow	Slight increase due to implementation cost.	Slight to Moderate Increase			
Profitability – Change in Profitability	Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	0	0			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	0	0			
Underutilization of Non-Fossil Energy Resources	0	0			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Tree/Shrub Pruning 660	Baseline Setting:				
	Appropriate Land Use(s): All Land Uses				
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
<b>SOIL - EROSION</b>					
Sheet and Rill	Slight Improvement	Removal of overstory canopy increases amounts and vigor of erosion-controlling ground cover.			
Wind	Neutral	Residual vegetation and debris maintain non-erosive conditions.			
Ephemeral Gully	Neutral	Residual vegetation and debris maintain non-erosive conditions.			
Classic Gully	Neutral	Residual vegetation and debris maintain non-erosive conditions.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight Worsening	Removal of woody material from a site removes organic material that could have become soil organic matter.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• Animal Waste and other Organics - N	Slight Improvement	Woody materials that have assimilated N from organic materials are removed or harvested from the site.			
• Animal Waste and other Organics - P	Slight Improvement	Woody materials that have assimilated P from organic materials are removed or harvested from the site.			
• Animal Waste and other Organics - K	Slight Improvement	Woody materials that have assimilated K from organic materials are removed or harvested from the site.			
• Commercial Fertilizer - N	Slight Improvement	Woody materials that have assimilated N from organic materials are removed or harvested from the site.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Pruning 660</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Commercial Fertilizer – P	Slight Improvement	Woody materials that have assimilated P from organic materials are removed or harvested from the site.			
• Commercial Fertilizer – K	Slight Improvement	Woody materials that have assimilated K from organic materials are removed or harvested from the site.			
• Residual Pesticides	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Neutral	The action has a negligible effect.			
Excessive Runoff, Flooding, or Ponding	Neutral	The action has a negligible effect.			
Excessive Subsurface Water	Neutral	The action has a negligible effect.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Neutral	The action has a negligible effect.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Neutral	The action has a negligible effect.			
Reduced Storage of Water Bodies by Sediment Accumulation	Neutral	The action has a negligible effect.			
Aquifer Overdraft	Neutral	Reduction in leaf surface area reduces soil moisture depletion due to evapotranspiration.			
Insufficient Flows in Water Courses	Neutral	Reduction in leaf surface area reduces soil moisture depletion due to evapo-transpiration.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Improvement	Managing for desirable plant vigor reduces the need for pesticide applications.			
• Excessive Nutrients and Organics	Slight Improvement	The action stimulates plants to take up and assimilate nutrients and organics more efficiently.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			

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<b>PRACTICE: Tree/Shrub Pruning 660</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight Improvement	Managing for desirable plant vigor reduces runoff, erosion, and the need for pesticide applications.			
• Excessive Nutrients and Organics	Slight Improvement	The action stimulates plants to take up and assimilate nutrients and organics more efficiently.			
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
PLANTS – SUITABILITY					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
PLANTS - CONDITION					
Productivity, Health, and Vigor	Substantial Improvement	Pruning increases health and vigor of selected tree/shrub species as well as desired understory vegetation.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			

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STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Pruning 660</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Slight to Moderate Improvement	Activities are carried out to reduce ladder fuels.			
ANIMALS - FISH AND WILDLIFE					
Inadequate Food	Slight Improvement	Growth of herbaceous and shrubby plants are enhanced and available as food for wildlife.			
Inadequate Cover/Shelter	Slight Improvement	Growth of herbaceous and shrubby plants are enhanced and available as cover/shelter for wildlife.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	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	Slight to Moderate Improvement	Not applicable.			
Inadequate Shelter	Moderate Worsening	Removing branches from lower portion of trees reduces available shelter.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
HUMAN – ECONOMICS					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			

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STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Pruning 660</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Enhancement 659</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable		Not applicable.		
Wind	Not Applicable		Not applicable.		
Ephemeral Gully	Not Applicable		Not applicable.		
Classic Gully	Not Applicable		Not applicable.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Slight to Substantial Improvement		Wetland vegetation would protect shorelines from wind and wave action.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight Improvement		Water ponding promotes growth of wetland vegetation and reduces decomposition of soil organic matter.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Not Applicable		Not applicable.		
Subsidence	Not Applicable		Not applicable.		
<b>Contaminants:</b>					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• Animal Waste and other Organics - N	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Animal Waste and other Organics - P	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Animal Waste and other Organics - K	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer - N	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer – P	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer – K	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Residual Pesticides	Neutral		Increased organic matter may tie up pesticides.		
Damage from Sediment Deposition	Not Applicable		Not applicable.		
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable		Not applicable.		
Excessive Seepage	Not Applicable		Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Enhancement 659</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement		Provides temporary flood storage reducing flooding and ponding.		
Excessive Subsurface Water	Not Applicable		Not applicable.		
Drifted Snow	Not Applicable		Not applicable.		
Inadequate Outlets	Slight to Substantial Improvement		Provides temporary flood storage reducing needed outlet capacity.		
Inefficient Water use on Irrigated Land	Not Applicable		Not applicable.		
Inefficient Water use on Non-Irrigated Land	Not Applicable		Not applicable.		
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable		Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement		Wetlands trap sediment.		
Aquifer Overdraft	Not Applicable		Not applicable.		
Insufficient Flows in Water Courses	Not Applicable		Not applicable.		
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Improvement		The action captures pesticide residues and facilitates their degradation.		
• Excessive Nutrients and Organics	Slight Improvement		The action traps nutrients and organics which are broken down and used by wetland plants.		
• Excessive Salinity	Not Applicable		Not applicable.		
• Harmful Levels of Heavy Metals	Not Applicable		Not applicable.		
• Harmful Levels of Pathogens	Not Applicable		Not applicable.		
• Harmful Levels of Petroleum	Not Applicable		Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides	Slight Improvement		The action captures pesticide residues and facilitates their degradation.		
• Excessive Nutrients and Organics	Slight to Substantial Improvement		Wetland systems will utilize dissolved nutrients and trap sediment-attached nutrients and organics.		
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement		System traps sediment.		
• Excessive Salinity	Slight Improvement		Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.		
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement		Vegetation and anaerobic conditions trap heavy metals.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Enhancement 659</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
• Harmful Temperatures	Neutral		Improved hydrological conditions are likely.		
• Harmful Levels of Pathogens	Slight Improvement		Pathogens are trapped in the wetland.		
• Harmful Levels of Petroleum	Not Applicable		Not applicable.		
<b>AIR – QUALITY</b>					
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 surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Slight to Moderate Improvement		The accumulation of organic matter and sediments sequester carbon.		
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable		Not applicable.		
• CH <sub>4</sub> (Methane)	Slight Worsening		Anaerobic conditions in wetlands would increase production and release of methane.		
Ammonia (NH <sub>3</sub> )	Neutral		Not applicable.		
Chemical Drift	Not Applicable		Not applicable.		
Objectionable Odors	Slight Worsening		Methane production and transport, as well as other odors, will be objectionable to some people.		
Reduced Visibility	Not Applicable		Not applicable.		
Undesirable Air Movement	Not Applicable		Not applicable.		
Adverse Air Temperature	Slight to Substantial Improvement		Tall vegetation provides shade and moderates temperatures.		
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Moderate to Substantial Improvement		Plants selected are adapted and suited.		
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Moderate to Substantial Improvement		Plants are selected and managed to maintain optimal productivity and health for their intended use.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Enhancement 659</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	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	Vegetation is installed and managed to control undesired species.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Substantial Improvement	Existing areas for food are enhanced.			
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover/shelter are enhanced.			
Inadequate Water	Slight to Moderate Improvement	Enhancement of wetlands will improve habitat and water quality for many species; the number and types of species that will benefit is dependent on the degree to which hydrological conditions are improved.			
Inadequate Space	Moderate to Substantial Improvement	Additional wetland space is enhanced.			
Habitat Fragmentation	Moderate to Substantial Improvement	Multiple wetlands are enhanced to maintain the number and connectivity of this kind of habitat.			
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Habitat management is implemented to remove limiting factors.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Enhancement 659</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Enhancement 659</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>			<b>RATIONALE</b>	
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass			No	
Underutilization of Non-Fossil Energy Resources	Not Applicable			No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Creation 658</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
SOIL - EROSION					
Sheet and Rill		Not Applicable	Not applicable.		
Wind		Not Applicable	Not applicable.		
Ephemeral Gully		Not Applicable	Not applicable.		
Classic Gully		Not Applicable	Not applicable.		
Streambank		Not Applicable	Not applicable.		
Shoreline		Slight to Substantial Improvement	Wetland vegetation would protect shorelines from wind and wave action.		
Irrigation Induced		Not Applicable	Not applicable.		
Mass Movement		Not Applicable	Not applicable.		
Road, Roadsides, and Construction Sites		Not Applicable	Not applicable.		
SOIL – CONDITION					
Organic Matter Depletion		Slight to Moderate Improvement	Water ponding promotes growth of wetland vegetation and reduces decomposition of soil organic matter.		
Rangeland Site Stability		Not Applicable	Not applicable.		
Compaction		Not Applicable	Not applicable.		
Subsidence		Not Applicable	Not applicable.		
Contaminants:					
• Salts and other Chemicals		Not Applicable	Not applicable.		
• Animal Waste and other Organics - N		Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.		
• Animal Waste and other Organics - P		Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.		
• Animal Waste and other Organics - K		Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer - N		Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer – P		Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer – K		Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.		
• Residual Pesticides		Not Applicable	Not applicable.		
Damage from Sediment Deposition		Not Applicable	Not applicable.		
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable	Not applicable.		
Excessive Seepage		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Creation 658</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Provides temporary flood storage reducing flooding and ponding.			
Excessive Subsurface Water	Slight Worsening	Increases infiltration to subsurface water.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight to Substantial Improvement	Provides temporary flood storage reducing needed outlet capacity.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	Wetlands trap sediment.			
Aquifer Overdraft	Slight Improvement	Increases infiltration for aquifer recharge.			
Insufficient Flows in Water Courses	Slight Worsening	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Improvement	The action captures pesticide residues and facilitates their degradation.			
• Excessive Nutrients and Organics	Slight Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight Improvement	The action captures pesticide residues and facilitates their degradation.			
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Wetland systems will utilize dissolved nutrients and trap sediment-attached nutrients and organics.			
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	System traps sediment.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Creation 658</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
• Excessive Salinity		Slight Improvement	Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.		
• Harmful Levels of Heavy Metals		Slight to Moderate Improvement	Vegetation and anaerobic conditions trap heavy metals.		
• Harmful Temperatures		Neutral	Improved hydrological conditions are likely.		
• Harmful Levels of Pathogens		Slight Improvement	Pathogens are trapped in the wetland.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
<b>AIR – QUALITY</b>					
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 surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Slight to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.		
• N <sub>2</sub> O (Nitrous Oxide)		Not Applicable	Not applicable.		
• CH <sub>4</sub> (Methane)		Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.		
Ammonia (NH <sub>3</sub> )		Neutral	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.		
Reduced Visibility		Slight Improvement	Reduction of particulates due to reduction in wind speed and increased soil cover.		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.		
<b>PLANTS – SUITABILITY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Creation 658</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Plants not Adapted or Suited		Moderate to Substantial Improvement		Plants selected are adapted and suited.	
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor		Moderate to Substantial Improvement		Plants are selected and managed to maintain optimal productivity and health for their intended use.	
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral		When threatened or endangered plants are present, protection and recovery are addressed in the planning process.	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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		Vegetation is installed and managed to control undesired species.	
Forage Quality and Palatability		Not Applicable		Not applicable.	
Wildfire Hazard		Not Applicable		Not applicable.	
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Substantial Improvement		Areas for food are created.	
Inadequate Cover/Shelter		Substantial Improvement		Areas for cover/shelter are created.	
Inadequate Water		Slight to Moderate Improvement		Created wetlands will benefit some species, but their creation can alter hydrology of the area.	
Inadequate Space		Moderate to Substantial Improvement		Additional wetland space is created.	
Habitat Fragmentation		Moderate to Substantial Improvement		Multiple wetlands can restore the number and connectivity of this kind of habitat.	
Imbalance Among and Within Populations		Moderate to Substantial Improvement		Habitat management is implemented to remove limiting factors.	
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Moderate to Substantial Improvement		Activities are designed, installed, and mitigated to an extent to enhance species of concern.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Creation 658</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Moderate to Substantial Improvement		Activities are designed, installed, and mitigated to an extent to enhance species of concern.	
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage		Slight to Moderate Improvement		These sites may be used as feed and forage by livestock if the intended purpose is maintained.	
Inadequate Shelter		Not Applicable		Not applicable.	
Inadequate Stock Water		Not Applicable		Not applicable.	
Stress and Mortality		Not Applicable		Not applicable.	
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use		0		Slight to substantial.	
Land – Land in Production		0		Slight Increase.	
Capital – Change in Equipment		0		Not applicable.	
Capital - Total Investment Cost		Not applicable.		Negligible	
Capital – Annual Cost		0		Situational.	
Capital – Credit and Farm Program Eligibility		0		Slight to moderate.	
Labor - Labor		0		Slight to moderate increase.	
Labor – Change in Management Level		0		Slight to Moderate Decrease	
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.		Slight Increase	
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.		Moderate to Substantial Increase	
Risk - Timing		Moderate to substantial increase, depending on level of concentration.		Slight Increase	
Risk – Cash Flow		Slight increase due to establishment costs.		Situational	
Profitability – Change in Profitability		Moderate decrease to slight increase.		0	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Creation 658</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No		
Underutilization of Non-Fossil Energy Resources		Not Applicable	No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Restoration 657</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable		Not applicable.		
Wind	Not Applicable		Not applicable.		
Ephemeral Gully	Not Applicable		Not applicable.		
Classic Gully	Not Applicable		Not applicable.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Slight to Substantial Improvement		Wetland vegetation would protect shorelines from wind and wave action.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight Improvement		Water ponding promotes growth of wetland vegetation and reduces decomposition of soil organic matter.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Not Applicable		Not applicable.		
Subsidence	Not Applicable		Not applicable.		
<b>Contaminants:</b>					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• Animal Waste and other Organics - N	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Animal Waste and other Organics - P	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Animal Waste and other Organics - K	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer - N	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer – P	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Commercial Fertilizer – K	Slight Improvement		Enhanced wetland vegetation may increase nutrient uptake.		
• Residual Pesticides	Neutral		Increased organic matter may tie up pesticides.		
Damage from Sediment Deposition	Not Applicable		Not applicable.		
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable		Not applicable.		
Excessive Seepage	Not Applicable		Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Restoration 657</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
Excessive Runoff, Flooding, or Ponding		Slight to Substantial Improvement	Provides temporary flood storage reducing flooding and ponding.		
Excessive Subsurface Water		Not Applicable	Not applicable.		
Drifted Snow		Not Applicable	Not applicable.		
Inadequate Outlets		Slight to Substantial Improvement	Provides temporary flood storage reducing needed outlet capacity.		
Inefficient Water use on Irrigated Land		Not Applicable	Not applicable.		
Inefficient Water use on Non-Irrigated Land		Not Applicable	Not applicable.		
Reduced Capacity of Conveyances by Sediment Deposition		Not Applicable	Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation		Slight to Substantial Improvement	Wetlands trap sediment.		
Aquifer Overdraft		Not Applicable	Not applicable.		
Insufficient Flows in Water Courses		Not Applicable	Not applicable.		
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides		Slight Improvement	The action captures pesticide residues and facilitates their degradation.		
• Excessive Nutrients and Organics		Slight Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Levels of Pathogens		Not Applicable	Not applicable.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides		Slight Improvement	The action captures pesticide residues and facilitates their degradation.		
• Excessive Nutrients and Organics		Slight to Substantial Improvement	Wetland systems will utilize dissolved nutrients and trap sediment-attached nutrients and organics.		
• Excessive Suspended Sediment and Turbidity		Slight to Moderate Improvement	System traps sediment.		
• Excessive Salinity		Slight Improvement	Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.		
• Harmful Levels of Heavy Metals		Slight to Moderate Improvement	Vegetation and anaerobic conditions trap heavy metals.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Restoration 657</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• Harmful Temperatures		Neutral	Improved hydrological conditions are likely.		
• Harmful Levels of Pathogens		Slight Improvement	Pathogens are trapped in the wetland.		
• 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 surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Slight to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.		
• N <sub>2</sub> O (Nitrous Oxide)		Not Applicable	Not applicable.		
• CH <sub>4</sub> (Methane)		Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.		
Ammonia (NH <sub>3</sub> )		Neutral	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.		
Reduced Visibility		Slight Improvement	Reduce wind erosion and intercepting fine particulates and precursors		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	Plants selected are adapted and suited.		
PLANTS - CONDITION					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Restoration 657</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>			<b>RATIONALE</b>	
Productivity, Health, and Vigor	Moderate to Substantial Improvement			Plants are selected and managed to maintain optimal productivity and health for their intended use.	
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral			When threatened or endangered plants are present, protection and recovery are addressed in the planning process.	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	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			Vegetation is installed and managed to control undesired species.	
Forage Quality and Palatability	Not Applicable			Not applicable.	
Wildfire Hazard	Not Applicable			Not applicable.	
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Substantial Improvement			Areas for food are restored.	
Inadequate Cover/Shelter	Substantial Improvement			Areas for cover/shelter are restored.	
Inadequate Water	Slight to Moderate Improvement			Restoration of degraded wetlands will improve habitat and water quality for many species; the number and types of species (for example nesting waterfowl or juvenile fish) that will benefit is dependent on the degree to which hydrological conditions and connections in the floodplain are improved.	
Inadequate Space	Moderate to Substantial Improvement			Additional wetland space is restored.	
Habitat Fragmentation	Moderate to Substantial Improvement			Multiple wetlands can restore the number and connectivity of this kind of habitat.	
Imbalance Among and Within Populations	Moderate to Substantial Improvement			Habitat management is implemented to remove limiting factors.	
Threatened and Endangered Fish and Wildlife Species:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Restoration 657</b>	Baseline Setting:				
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Restoration 657</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No		
Underutilization of Non-Fossil Energy Resources		Not Applicable	No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Constructed Wetland 656</b>		Baseline Setting: The planning unit contains runoff and/or wastewater from agricultural lands that needs treatment.			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Not Applicable	Not applicable.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Provide temporary flood storage.			
Excessive Subsurface Water	Neutral	Not applicable.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight Improvement	Provide temporary flood storage.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Wetlands will capture runoff and sediments.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Constructed Wetland 656</b>		Baseline Setting: The planning unit contains runoff and/or wastewater from agricultural lands that needs treatment.			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	Wetlands trap sediment.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Improvement	The action captures pesticide residues and facilitates their degradation.			
• Excessive Nutrients and Organics	Slight Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.			
• Excessive Salinity	Slight Improvement	Any salinity in runoff or wastewater will be assimilated in the wetland rather than infiltrating to groundwater.			
• Harmful Levels of Heavy Metals	Slight Improvement	Heavy metals attached to sediment can be trapped in wetlands.			
• Harmful Levels of Pathogens	Slight to Substantial Improvement	Microbial activity in wetlands can reduce pathogen levels.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action captures pesticide residues and facilitates their degradation.			
• Excessive Nutrients and Organics	Slight to Substantial Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.			
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	System traps and holds suspended materials from entering surface waters.			
• Excessive Salinity	Slight Improvement	Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Vegetation and anaerobic conditions trap heavy metals.			
• Harmful Temperatures	Neutral	Effluent is discharged to storage facilities for land application.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Pathogens are trapped in the wetland.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
AIR – QUALITY					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Constructed Wetland 656</b>		Baseline Setting: The planning unit contains runoff and/or wastewater from agricultural lands that needs treatment.			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
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 surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>		Slight to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.		
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>		Slight Worsening	Anaerobic conditions are conducive to the formation of CH <sub>4</sub>		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.		
Reduced Visibility		Not Applicable	Not applicable.		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Not Applicable	Not applicable.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	Plants selected are adapted and suited.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Slight to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Not Applicable	Not applicable.		
Noxious and Invasive Plants		Moderate to Substantial Improvement	Construction of wetland and desirable plants will compete with and control noxious and invasive plants.		
Forage Quality and Palatability		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Constructed Wetland 656</b>		Baseline Setting: The planning unit contains runoff and/or wastewater from agricultural lands that needs treatment.			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Wildfire Hazard		Not Applicable	Not applicable.		
ANIMALS - FISH AND WILDLIFE					
Inadequate Food		Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food for wildlife.		
Inadequate Cover/Shelter		Moderate to Substantial Improvement	Increased quality and quantity of vegetation provides more cover for wildlife.		
Inadequate Water		Neutral	The wetland provides additional water but it will likely be chemical-laden and unfit for fish and wildlife use.		
Inadequate Space		Slight to Substantial Improvement	Additional wetland space is created.		
Habitat Fragmentation		Slight to Substantial Improvement	Multiple wetlands can restore the number and connectivity of this kind of habitat.		
Imbalance Among and Within Populations		Substantial Improvement	Habitat management is implemented to remove limiting factors.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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		Not Applicable	Not applicable.		
Inadequate Shelter		Not Applicable	Not applicable.		
Inadequate Stock Water		Not Applicable	Not applicable.		
Stress and Mortality		Not Applicable	Not applicable.		
HUMAN – ECONOMICS					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Constructed Wetland 656</b>		Baseline Setting: The planning unit contains runoff and/or wastewater from agricultural lands that needs treatment.			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Labor – Change in Management Level		0		Slight to Moderate Decrease	
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.		Slight Increase	
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.		Moderate to Substantial Increase	
Risk - Timing		Moderate to substantial increase, depending on level of concentration.		Slight Increase	
Risk – Cash Flow		Slight increase due to establishment costs.		Situational	
Profitability – Change in Profitability		Moderate decrease to slight increase.		0	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Forest Trails and Landings 655</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>SOIL - EROSION</b>					
Sheet and Rill		Slight Worsening		Travel-ways and cleared areas are treated to minimize soil detachment by water.	
Wind		Neutral		Disturbed areas are not extensive enough for wind erosion.	
Ephemeral Gully		Slight Worsening		Travel-ways and cleared areas are treated to minimize soil detachment by water.	
Classic Gully		Slight Improvement		Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources.	
Streambank		Neutral		Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources including streambanks.	
Shoreline		Neutral		Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Neutral		Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
<b>SOIL – CONDITION</b>					
Organic Matter Depletion		Neutral		Removal of woody vegetation from a site removes organic material that could have become soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Moderate to Substantial Worsening		Equipment used to harvest or remove forest products can compact soils. Reusing trails can limit compaction to designated areas.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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		Appropriate Land Use(s): Forest, Grazed Forest, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• Salts and other Chemicals		Neutral	The chemical make up of the soil is not altered by disturbance or short term manipulation of vegetative cover.		
• Animal Waste and other Organics - N		Neutral	N in organics, if applied, can volatilize if exposed to the atmosphere by soil disturbance activities.		
• Animal Waste and other Organics - P		Neutral	P in organics, if applied, can volatilize if exposed to the atmosphere by soil disturbance activities.		
• Animal Waste and other Organics - K		Neutral	K in organics, if applied, can volatilize if exposed to the atmosphere by soil disturbance activities.		
• Commercial Fertilizer - N		Neutral	N in organics, if applied, can volatilize if exposed to the atmosphere by soil disturbance activities.		
• Commercial Fertilizer – P		Neutral	P in organics, if applied, can volatilize if exposed to the atmosphere by soil disturbance activities.		
• Commercial Fertilizer – K		Neutral	K in organics, if applied, can volatilize if exposed to the atmosphere by soil disturbance activities.		
• Residual Pesticides		Not Applicable	Not applicable.		
Damage from Sediment Deposition		Slight Improvement	Temporary removal of surface litter and alteration of vegetative structure alters entrapment capabilities.		
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable	Not applicable.		
Excessive Seepage		Not Applicable	Not applicable.		
Excessive Runoff, Flooding, or Ponding		Neutral	Wet and flood prone areas are avoided.		
Excessive Subsurface Water		Neutral	Wet and flood prone areas are avoided.		
Drifted Snow		Not Applicable	Not applicable.		
Inadequate Outlets		Neutral	Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Inefficient Water use on Irrigated Land		Not Applicable		Not applicable.	
Inefficient Water use on Non-Irrigated Land		Not Applicable		Not applicable.	
Reduced Capacity of Conveyances by Sediment Deposition		Neutral		Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources.	
Reduced Storage of Water Bodies by Sediment Accumulation		Neutral		Trails and landings are designed, located and maintained to minimize on site and off site impacts to resources.	
Aquifer Overdraft		Not Applicable		Not applicable.	
Insufficient Flows in Water Courses		Not Applicable		Not applicable.	
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides		Not Applicable		Not applicable.	
• Excessive Nutrients and Organics		Not Applicable		Not applicable.	
• Excessive Salinity		Not Applicable		Not applicable.	
• Harmful Levels of Heavy Metals		Not Applicable		Not applicable.	
• Harmful Levels of Pathogens		Not Applicable		Not applicable.	
• Harmful Levels of Petroleum		Slight Worsening		Increased vehicular traffic may increase fuel and/or lubricant spills.	
In Surface Water:					
• Harmful Levels of Pesticides		Not Applicable		Not applicable.	
• Excessive Nutrients and Organics		Slight Improvement		Proper design, location, and maintenance will minimize off-site delivery of sediment and nutrients from areas disturbed during logging.	
• Excessive Suspended Sediment and Turbidity		Neutral		Trails will be designed to minimize erosion.	
• Excessive Salinity		Not Applicable		Not applicable.	
• Harmful Levels of Heavy Metals		Not Applicable		Not applicable.	
• Harmful Temperatures		Not Applicable		Not applicable.	
• Harmful Levels of Pathogens		Not Applicable		Not applicable.	
• Harmful Levels of Petroleum		Not Applicable		Not applicable.	
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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<b>PRACTICE: Forest Trails and Landings 655</b>		Baseline Setting:			
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RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)		Not Applicable	Not applicable.		
Excessive Ozone		Not Applicable	Not applicable.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Not Applicable	Not applicable.		
• N <sub>2</sub> O (Nitrous Oxide)		Not Applicable	Not applicable.		
• CH <sub>4</sub> (Methane)		Not Applicable	Not applicable.		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Not Applicable	Not applicable.		
Reduced Visibility		Not Applicable	Not applicable.		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Not Applicable	Not applicable.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	When species are selected, they are adapted and suited.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Slight to Moderate Improvement	Trails and landings are located to avoid negative impacts on desirable plants as well as allow access for management activities to improve productivity, health and vigor.		
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	Trails and landings are managed to control undesirable vegetation.		
Forage Quality and Palatability		Not Applicable	Not applicable.		
Wildfire Hazard		Slight to Moderate Improvement	Trails provide firebreaks and access to sites for fuel reduction activities.		
ANIMALS - FISH AND WILDLIFE					
Inadequate Food		Slight Improvement	Disturbed areas are revegetated and provide some food for wildlife.		

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RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Inadequate Cover/Shelter		Slight to Moderate Improvement	Disturbed areas are revegetated and provide some cover for wildlife.		
Inadequate Water		Not Applicable	Not applicable.		
Inadequate Space		Slight Worsening	Breaks in canopy cover may interrupt continuity of habitat for certain wildlife species.		
Habitat Fragmentation		Slight Worsening	Breaks in canopy cover may interrupt connectivity of habitat for certain wildlife species.		
Imbalance Among and Within Populations		Not Applicable	Not applicable.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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		Slight to Moderate Improvement	Distribution of animals makes forage more readily available to livestock.		
Inadequate Shelter		Not Applicable	Not applicable.		
Inadequate Stock Water		Not Applicable	Not applicable.		
Stress and Mortality		Not Applicable	Not applicable.		
HUMAN – ECONOMICS					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		
Labor – Change in Management Level		0	Slight to Moderate Decrease		
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.	Slight Increase		
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Risk - Timing		Moderate to substantial increase, depending on level of concentration.		Slight Increase	
Risk – Cash Flow		Slight increase due to establishment costs.		Situational	
Profitability – Change in Profitability		Moderate decrease to slight increase.		0	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Windbreak/Shelterbelt Renovation 650</b>	Baseline Setting:				
	Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>			<b>RATIONALE</b>	
<b>SOIL - EROSION</b>					
Sheet and Rill	Slight to Substantial Improvement			Vegetation restored across the slope and surface litter reduces erosive water energy.	
Wind	Substantial Improvement			Restoration of tall vegetation reestablishes a wind shadow, reduces erosive wind velocities and provides a stable area which stops saltating particles.	
Ephemeral Gully	Slight to Substantial Improvement			Vegetation restored across the slope reduces erosive energy of concentrated flows.	
Classic Gully	Not Applicable			Not applicable.	
Streambank	Not Applicable			Not applicable.	
Shoreline	Not Applicable			Not applicable.	
Irrigation Induced	Not Applicable			Not applicable.	
Mass Movement	Slight Improvement			Roots of restored vegetation binds the soil layers making the site resistant to gravity-induced movement.	
Road, Roadsides, and Construction Sites	Not Applicable			Not applicable.	
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Moderate to Substantial Improvement			Restored roots and vegetative matter and its breakdown increases organic matter.	
Rangeland Site Stability	Not Applicable			Not applicable.	
Compaction	Slight to Moderate Improvement			Restored root penetration and organic matter helps restore soil structure.	
Subsidence	Not Applicable			Not applicable.	
Contaminants:					
• Salts and other Chemicals	Slight Improvement			Most woody species take up limited quantities of salts.	
• Animal Waste and other Organics - N	Slight to Moderate Improvement			Vigorously growing woody vegetation increases nutrient uptake.	
• Animal Waste and other Organics - P	Slight to Moderate Improvement			Vigorously growing woody vegetation increases nutrient uptake.	
• Animal Waste and other Organics - K	Slight to Moderate Improvement			Vigorously growing woody vegetation increases nutrient uptake.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• Commercial Fertilizer - N		Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.		
• Commercial Fertilizer – P		Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.		
• Commercial Fertilizer – K		Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.		
• Residual Pesticides		Slight Improvement	Increased organic matter may tie up pesticides.		
Damage from Sediment Deposition		Slight to Moderate Worsening	Restored vegetation and surface litter traps sediment.		
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable	Not applicable.		
Excessive Seepage		Slight to Moderate Improvement	Restored plants uptake excess water.		
Excessive Runoff, Flooding, or Ponding		Slight Worsening	Vegetation will slow runoff and create ponding.		
Excessive Subsurface Water		Slight to Moderate Improvement	Restored plants uptake excess water.		
Drifted Snow		Substantial Improvement	Snow is captured within and down wind of restored tree/shrub rows.		
Inadequate Outlets		Not Applicable	Not applicable.		
Inefficient Water use on Irrigated Land		Substantial Improvement	Restored tall vegetation reduces wind speeds and evapotranspiration allowing more efficient use of available water.		
Inefficient Water use on Non-Irrigated Land		Slight to Moderate Improvement	Restored tall vegetation reduces wind speeds and evapotranspiration allowing more efficient use of available water.		
Reduced Capacity of Conveyances by Sediment Deposition		Slight Improvement	Restored vegetation collects sediment preventing it from being deposited elsewhere.		
Reduced Storage of Water Bodies by Sediment Accumulation		Slight Improvement	Restored vegetation collects sediment preventing it from being deposited elsewhere.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Aquifer Overdraft	Slight to Moderate Worsening		Restored deep rooted vegetation can draw water lowering the water table.		
Insufficient Flows in Water Courses	Slight to Moderate Worsening		Restored tall vegetation uses available water and restricts runoff.		
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable		Not applicable.		
• Excessive Nutrients and Organics	Substantial Improvement		Restored vegetation will uptake excess nutrients.		
• Excessive Salinity	Neutral		The action may increase vegetative uptake in the shelterbelt.		
• Harmful Levels of Heavy Metals	Not Applicable		Not applicable.		
• Harmful Levels of Pathogens	Not Applicable		Not applicable.		
• Harmful Levels of Petroleum	Not Applicable		Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides	Slight to Moderate Improvement		The action reduces soil erosion from wind and may intercept pesticide drift.		
• Excessive Nutrients and Organics	Substantial Improvement		Restored plants and soil organisms uptake nutrients.		
• Excessive Suspended Sediment and Turbidity	Slight Improvement		Restored vegetation traps sediment preventing it from being deposited elsewhere.		
• Excessive Salinity	Not Applicable		Not applicable.		
• Harmful Levels of Heavy Metals	Slight Improvement		The action reduces wind erosion, reducing transport of heavy metals attached to particulates. Some plants may take up heavy metals..		
• Harmful Temperatures	Not Applicable		Not applicable.		
• Harmful Levels of Pathogens	Not Applicable		Not applicable.		
• Harmful Levels of Petroleum	Slight Improvement		Increased microbial activity in the restored area breaks down petroleum contaminants.		
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement		When properly renovated, the practice reduces particulate emissions from the soil surface.		
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement		When properly renovated, the practice reduces particulate emissions from the soil surface.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Excessive Ozone		Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade and minimal biofiltering of ozone concentrations due to interception by tree and shrub foliage.		
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>		Slight Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.		
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>		Not Applicable	Not applicable.		
Ammonia (NH <sub>3</sub> )		Slight to Moderate Improvement	Interception of NH <sub>3</sub> by plants		
Chemical Drift		Slight to Substantial Improvement	Properly renovated windbreaks reduce surface air movement and intercept chemical drift.		
Objectionable Odors		Slight to Moderate Improvement	Vegetation will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.		
Reduced Visibility		Slight to Moderate Improvement	Reduce wind erosion and intercepting fine particulates and precursors		
Undesirable Air Movement		Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.		
Adverse Air Temperature		Moderate to Substantial Improvement	Temperatures in leeward areas are increased accelerating plant germination and growth.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Substantial Improvement	Renovation maintains adapted and suited plants.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Substantial Improvement	Plants are renovated and managed to maintain optimal productivity and health.		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Not Applicable		Not applicable.	
Noxious and Invasive Plants		Moderate to Substantial Improvement		Vegetation is installed and managed to control undesired species.	
Forage Quality and Palatability		Moderate to Substantial Improvement		Forage quality and palatability is improved in the protected area.	
Wildfire Hazard		Not Applicable		Not applicable.	
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Moderate to Substantial Improvement		Improved plant diversity and quality and quantity of vegetation provides food for wildlife.	
Inadequate Cover/Shelter		Moderate to Substantial Improvement		Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.	
Inadequate Water		Not Applicable		Not applicable.	
Inadequate Space		Moderate to Substantial Improvement		Renovated tall vegetation creates vertical habitat structure and enhanced space for wildlife.	
Habitat Fragmentation		Moderate to Substantial Improvement		Vegetation is renovated to connect habitats.	
Imbalance Among and Within Populations		Slight to Substantial Improvement		Habitat management is implemented to remove limiting factors.	
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.	
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage		Slight to Substantial Improvement		The quality and quantity of feed and forage plants is enhanced by improving the microclimate.	
Inadequate Shelter		Substantial Improvement		Restored tall vegetation provides shelter.	
Inadequate Stock Water		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Windbreak/Shelterbelt Renovation 650</b>	Baseline Setting:				
	Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife				
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Stress and Mortality	Substantial Improvement	Restored tall vegetation moderates temperatures and wind effects reducing stress caused by weather extremes.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Early Successional Habitat Development/Mgt. 647		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
<b>SOIL - EROSION</b>					
Sheet and Rill		Neutral		Disturbance of the site has short term but negligible effect on soil detachment by water.	
Wind		Neutral		Disturbance of the site has short term but negligible effect on soil detachment by wind.	
Ephemeral Gully		Neutral		Disturbance of the site has short term but negligible effect on soil detachment by water.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
<b>SOIL – CONDITION</b>					
Organic Matter Depletion		Neutral		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Neutral		Heavy equipment used to apply the practice may result in temporary compaction.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Not Applicable		Not applicable.	
• 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		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle		Not Applicable		Not Applicable	
Excessive Seepage		Not Applicable		Not applicable.	
Excessive Runoff, Flooding, or Ponding		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Early Successional Habitat Development/Mgt. 647</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Excessive Subsurface Water		Not Applicable	Not applicable.		
Drifted Snow		Not Applicable	Not applicable.		
Inadequate Outlets		Not Applicable	Not applicable.		
Inefficient Water use on Irrigated Land		Not Applicable	Not applicable.		
Inefficient Water use on Non-Irrigated Land		Not Applicable	Not applicable.		
Reduced Capacity of Conveyances by Sediment Deposition		Not Applicable	Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation		Not Applicable	Not applicable.		
Aquifer Overdraft		Not Applicable	Not applicable.		
Insufficient Flows in Water Courses		Not Applicable	Not applicable.		
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Levels of Pathogens		Not Applicable	Not applicable.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Suspended Sediment and Turbidity		Neutral	Although vegetation is manipulated, soil disturbance is minimal.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Temperatures		Slight to Moderate Worsening	Removal of shade-producing canopy along streams will lead to an increase in surface water temperature, especially during low flows.		
• 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		Not Applicable	Not applicable.		
Excessive Greenhouse Gas:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Early Successional Habitat Development/Mgt. 647</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• CO <sub>2</sub> (Carbon Dioxide)		Neutral	Total carbon content is maintained.		
• N <sub>2</sub> O (Nitrous Oxide)		Neutral	Not applicable.		
• CH <sub>4</sub> (Methane)		Neutral	Not applicable.		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Not Applicable	Not applicable.		
Reduced Visibility		Not Applicable	Not applicable.		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Not Applicable	Not applicable.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	Plants selected are adapted and suited.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.		
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	Vegetation is installed and managed to control undesired species.		
Forage Quality and Palatability		Not Applicable	Not applicable.		
Wildfire Hazard		Not Applicable	Not applicable.		
ANIMALS - FISH AND WILDLIFE					
Inadequate Food		Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for wildlife.		
Inadequate Cover/Shelter		Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.		
Inadequate Water		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Early Successional Habitat Development/Mgt. 647</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Inadequate Space		Moderate to Substantial Improvement	Additional early habitat/space is created.		
Habitat Fragmentation		Moderate to Substantial Improvement	Early habitat is designed to connect other habitats.		
Imbalance Among and Within Populations		Moderate to Substantial Improvement	Habitat management is implemented to remove limiting factors.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.		
ANIMALS – DOMESTIC					
Inadequate Quantities and Quality of Feed and Forage		Slight Improvement	Established vegetation may add forage for domestic animals.		
Inadequate Shelter		Not Applicable	Not applicable.		
Inadequate Stock Water		Not Applicable	Not applicable.		
Stress and Mortality		Not Applicable	Not applicable.		
HUMAN – ECONOMICS					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		
Labor – Change in Management Level		0	Slight to Moderate Decrease		
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.	Slight Increase		
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase		
Risk - Timing		Moderate to substantial increase, depending on level of concentration.	Slight Increase		
Risk – Cash Flow		Slight increase due to establishment costs.	Situational		
Profitability – Change in Profitability		Moderate decrease to slight increase.	0		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Early Successional Habitat Development/Mgt. 647		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Shallow Water Development and Management 646</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Slight to Substantial Improvement	Wetland vegetation would protect shorelines from wind and wave action.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL - CONDITION					
Organic Matter Depletion	Slight Improvement	Organic matter oxidation is reduced in flooded areas. Where soil moisture is enhanced vegetative growth will be increased.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Slight Worsening	Sediment will collect in depressions.			
WATER - QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Provide temporary flood storage.			
Excessive Subsurface Water	Not Applicable	Not applicable.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Shallow Water Development and Management 646</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Inefficient Water use on Irrigated Land	Not Applicable		Not applicable.		
Inefficient Water use on Non-Irrigated Land	Not Applicable		Not applicable.		
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable		Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement		Shallow water areas trap sediment.		
Aquifer Overdraft	Not Applicable		Not applicable.		
Insufficient Flows in Water Courses	Not Applicable		Not applicable.		
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable		Not applicable.		
• Excessive Nutrients and Organics	Slight Improvement		The action traps nutrients and organics which are broken down and used by wetland plants.		
• Excessive Salinity	Slight Worsening		The action requires ponding water which will increase infiltration in ponded areas, which may carry soluble salts to groundwater.		
• Harmful Levels of Heavy Metals	Slight Improvement		The action requires ponding water which will increase infiltration in ponded areas. Infiltrating waters may leach heavy metals.		
• Harmful Levels of Pathogens	Slight Worsening		The action requires ponding water, which will increase infiltration in ponded areas. Infiltrating waters may leach pathogens.		
• Harmful Levels of Petroleum	Not Applicable		Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable		Not applicable.		
• Excessive Nutrients and Organics	Slight Improvement		The action traps nutrients and organics which are broken down and used by wetland plants.		
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement		Ponding slows water velocity, allowing sediment to settle.		
• Excessive Salinity	Not Applicable		Not applicable.		
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement		Vegetation and anaerobic conditions trap heavy metals.		
• Harmful Temperatures	Neutral		Water released from impoundments may be warmer or cooler than receiving waters, depending on site conditions.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Shallow Water Development and Management 646</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	vegetation, microbes, and sediments may trap			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Neutral	There is short term carbon storage, however, periodic maintenance practices (tillage, burning) can release stored carbon.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Slight Worsening	Anaerobic conditions are conducive to the formation of CH <sub>4</sub>			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Moderate to Substantial Improvement	Moist soil management creates or maintains the desired plant community.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Slight to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health for their intended use.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Slight Improvement	Management of water to establish vegetation desirable for wildlife is expected to retard invasive plants.			
Forage Quality and Palatability	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Shallow Water Development and Management 646</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Moderate to Substantial Improvement	Improved availability of wildlife food is created by water and moist soil management.			
Inadequate Cover/Shelter	Slight to Substantial Improvement	Improved availability of wildlife food is created by water and moist soil management.			
Inadequate Water	Slight to Moderate Improvement	Fish and wildlife habitat is a management objective.			
Inadequate Space	Moderate to Substantial Improvement	Shallow water habitat/space is created and/or managed.			
Habitat Fragmentation	Slight to Moderate Improvement	Multiple shallow water areas can restore the number and connectivity of this kind of habitat.			
Imbalance Among and Within Populations	Substantial Improvement	Management is designed to minimize limiting factors.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Shallow Water Development and Management 646</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Upland Wildlife Habitat Management 645</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>SOIL - EROSION</b>					
Sheet and Rill	Slight to Substantial Improvement	Establishment of permanent vegetation reduces erosion by water.			
Wind	Slight to Substantial Improvement	Establishment of permanent vegetation reduces erosion by wind.			
Ephemeral Gully	Slight to Substantial Improvement	Establishment of permanent vegetation reduces erosion by water.			
Classic Gully	Slight to Moderate Improvement	There will be decreased overland flow, enhanced vegetation cover.			
Streambank	Slight Improvement	There will be decreased overland flow, enhanced vegetation cover.			
Shoreline	Slight Improvement	There will be decreased overland flow, enhanced vegetation cover.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Slight Improvement	Roots of vegetation binds the soil layers making the site resistant to gravity-induced movement.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Neutral	New vegetation may be established.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Upland Wildlife Habitat Management 645</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Moderate Worsening	Vegetation causes flooding and ponding.			
Excessive Subsurface Water	Slight to Moderate Improvement	Deep rooted plants uptake excess water.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Improved vegetative cover will decrease sedimentation concerns.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Improved vegetative cover will decrease sedimentation concerns.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Slight Improvement	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Temperatures	Neutral	Sound management of upland vegetation tends to improve watershed conditions.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Upland Wildlife Habitat Management 645</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Vegetative cover reduces wind erosion and fugitive dust generation.			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Vegetative cover reduces wind erosion and fugitive dust generation.			
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Slight Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Slight Improvement	Reduction in wind erosion potential and fugitive dust			
Undesirable Air Movement	Slight to Moderate Improvement	Creation of tall vegetation creates turbulence and slows undesired, leeward winds.			
Adverse Air Temperature	Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Moderate to Substantial Improvement	Management and improvement measures create or maintain the desired plant communities.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.			
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.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Upland Wildlife Habitat Management 645</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	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	Vegetation is installed and managed to control undesired species.			
Forage Quality and Palatability	Moderate to Substantial Improvement	Selected plant species will have adequate nutritive value and palatability for the intended use.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Substantial Improvement	Areas for food are created, restored, or enhanced.			
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover are created, restored, or enhanced.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Substantial Improvement	Improved plant diversity and quantity and quality of vegetation provides habitat/space for wildlife.			
Habitat Fragmentation	Moderate to Substantial Improvement	Vegetation will be established to maintain or enhance the plant community connectivity.			
Imbalance Among and Within Populations	Substantial Improvement	Habitat management is implemented to remove limiting factors.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Upland Wildlife Habitat Management 645</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
HUMAN - CULTURAL					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
HUMAN – ENERGY					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Wildlife Habitat Management 644</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Slight to Substantial Improvement		Wetland vegetation would protect shorelines from wind and wave action.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Not Applicable		Not applicable.	
• 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		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Not Applicable		Not applicable.	
Excessive Runoff, Flooding, or Ponding		Slight to Substantial Improvement		Provides temporary flood storage reducing flooding and ponding.	
Excessive Subsurface Water		Not Applicable		Not applicable.	
Drifted Snow		Not Applicable		Not applicable.	
Inadequate Outlets		Not Applicable		Not applicable.	
Inefficient Water use on Irrigated Land		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Wildlife Habitat Management 644</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Inefficient Water use on Non-Irrigated Land		Not Applicable	Not applicable.		
Reduced Capacity of Conveyances by Sediment Deposition		Not Applicable	Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation		Not Applicable	Not applicable.		
Aquifer Overdraft		Not Applicable	Not applicable.		
Insufficient Flows in Water Courses		Not Applicable	Not applicable.		
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Levels of Pathogens		Not Applicable	Not applicable.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Suspended Sediment and Turbidity		Slight to Substantial Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Temperatures		Neutral	Water released from impoundments may be warmer or cooler than receiving waters, depending on site conditions.		
• Harmful Levels of Pathogens		Slight Improvement	Pathogens are trapped in the wetland.		
• 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.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Wildlife Habitat Management 644</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Excessive Ozone		Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>• CO<sub>2</sub> (Carbon Dioxide)</li> </ul>		Slight to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.		
<ul style="list-style-type: none"> <li>• N<sub>2</sub>O (Nitrous Oxide)</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>• CH<sub>4</sub> (Methane)</li> </ul>		Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.		
Ammonia (NH <sub>3</sub> )		Neutral	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.		
Reduced Visibility		Neutral	Not applicable.		
Undesirable Air Movement		Slight to Moderate Improvement	Creation of tall vegetation creates turbulence and slows undesired, leeward winds.		
Adverse Air Temperature		Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	Plants selected are adapted and suited.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health for their intended use.		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>• Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Wildlife Habitat Management 644</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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	Vegetation is installed and managed to control undesired species.		
Forage Quality and Palatability		Not Applicable	Not applicable.		
Wildfire Hazard		Not Applicable	Not applicable.		
ANIMALS - FISH AND WILDLIFE					
Inadequate Food		Substantial Improvement	Areas for food are created, restored, or enhanced.		
Inadequate Cover/Shelter		Substantial Improvement	Areas for cover/shelter are created, restored, or enhanced.		
Inadequate Water		Slight to Substantial Improvement	Actively managing wetlands (e.g., water levels), improves habitat for some species, and adversely affects others that become entrapped (e.g., fish); the taxa that benefit depend on the degree to which hydrological conditions are conserved.		
Inadequate Space		Moderate to Substantial Improvement	Additional wetland space is maintained.		
Habitat Fragmentation		Moderate to Substantial Improvement	Multiple wetlands are managed to maintain the number and connectivity of this kind of habitat.		
Imbalance Among and Within Populations		Substantial Improvement	Habitat management is implemented to remove limiting factors.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.		
ANIMALS – DOMESTIC					
Inadequate Quantities and Quality of Feed and Forage		Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wetland Wildlife Habitat Management 644</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Inadequate Shelter		Not Applicable		Not applicable.	
Inadequate Stock Water		Not Applicable		Not applicable.	
Stress and Mortality		Not Applicable		Not applicable.	
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use		0		Slight to substantial.	
Land – Land in Production		0		Slight Increase.	
Capital – Change in Equipment		0		Not applicable.	
Capital - Total Investment Cost		Not applicable.		Negligible	
Capital – Annual Cost		0		Situational.	
Capital – Credit and Farm Program Eligibility		0		Slight to moderate.	
Labor - Labor		0		Slight to moderate increase.	
Labor – Change in Management Level		0		Slight to Moderate Decrease	
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.		Slight Increase	
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.		Moderate to Substantial Increase	
Risk - Timing		Moderate to substantial increase, depending on level of concentration.		Slight Increase	
Risk – Cash Flow		Slight increase due to establishment costs.		Situational	
Profitability – Change in Profitability		Moderate decrease to slight increase.		0	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Restoration and Management of Rare or Declining Habitats 643</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>SOIL - EROSION</b>					
Sheet and Rill		Slight to Moderate Improvement		Establishing or improving native vegetative cover will reduce erosion by water.	
Wind		Slight to Moderate Improvement		Establishing or improving native vegetative cover will reduce erosion by wind.	
Ephemeral Gully		Slight to Moderate Improvement		Establishing or improving native vegetative cover will reduce erosion by water.	
Classic Gully		Neutral		Effect will vary based upon initial land use.	
Streambank		Neutral		Effect will vary based upon initial land use.	
Shoreline		Neutral		Effect will vary based upon initial land use.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Neutral		Effect will vary based upon initial land use.	
<b>SOIL - CONDITION</b>					
Organic Matter Depletion		Neutral		Improved vegetative cover may increase soil organic matter. However, if prescribed burning is used, removal of vegetation and litter from a site temporarily removes organic material that could have become soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
<b>Contaminants:</b>					
<ul style="list-style-type: none"> <li>• Salts and other Chemicals</li> </ul>		Slight Worsening		When prescribed burning is used, organic materials are mineralized.	
<ul style="list-style-type: none"> <li>• Animal Waste and other Organics - N</li> </ul>		Not Applicable		Not applicable.	
<ul style="list-style-type: none"> <li>• Animal Waste and other Organics - P</li> </ul>		Not Applicable		Not applicable.	
<ul style="list-style-type: none"> <li>• Animal Waste and other Organics - K</li> </ul>		Not Applicable		Not applicable.	
<ul style="list-style-type: none"> <li>• Commercial Fertilizer - N</li> </ul>		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Restoration and Management of Rare or Declining Habitats 643</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
• Commercial Fertilizer – P		Not Applicable	Not applicable.		
• Commercial Fertilizer – K		Not Applicable	Not applicable.		
• Residual Pesticides		Not Applicable	Not applicable.		
Damage from Sediment Deposition		Neutral	If prescribed burning is used, temporary removal of surface litter and alteration of vegetative structure alters entrapment capabilities. The action may also temporarily increase erosion.		
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle		Not Applicable	Not Applicable		
Excessive Seepage		Not Applicable	Not applicable.		
Excessive Runoff, Flooding, or Ponding		Not Applicable	Not applicable.		
Excessive Subsurface Water		Not Applicable	Not applicable.		
Drifted Snow		Not Applicable	Not applicable.		
Inadequate Outlets		Not Applicable	Not applicable.		
Inefficient Water use on Irrigated Land		Not Applicable	Not applicable.		
Inefficient Water use on Non-Irrigated Land		Not Applicable	Not applicable.		
Reduced Capacity of Conveyances by Sediment Deposition		Not Applicable	Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation		Not Applicable	Not applicable.		
Aquifer Overdraft		Not Applicable	Not applicable.		
Insufficient Flows in Water Courses		Not Applicable	Not applicable.		
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Levels of Pathogens		Not Applicable	Not applicable.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Suspended Sediment and Turbidity		Slight to Moderate Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.		
• Excessive Salinity		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Restoration and Management of Rare or Declining Habitats 643</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Temperatures		Slight to Moderate Improvement	Restoration of habitat adjacent to streams or water bodies will moderate surface water temperatures.		
• 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	If vegetative cover is increased, there is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Slight Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.		
• N <sub>2</sub> O (Nitrous Oxide)		Not Applicable	Not applicable.		
• CH <sub>4</sub> (Methane)		Not Applicable	Not applicable.		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Not Applicable	Not applicable.		
Reduced Visibility		Not Applicable	Not applicable.		
Undesirable Air Movement		Slight to Moderate Improvement	Reestablishment of tall vegetation creates turbulence and slows undesired, leeward winds.		
Adverse Air Temperature		Not Applicable	Not applicable.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	Restoration and management creates or maintains the desired plant community.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Restoration and Management of Rare or Declining Habitats 643</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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	Vegetation is installed and managed to control undesired species.		
Forage Quality and Palatability		Moderate to Substantial Improvement	Selected plant species will have adequate nutritive value and palatability for the intended use.		
Wildfire Hazard		Not Applicable	Not applicable.		
ANIMALS - FISH AND WILDLIFE					
Inadequate Food		Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for wildlife.		
Inadequate Cover/Shelter		Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.		
Inadequate Water		Moderate to Substantial Improvement	Fish and wildlife habitat considerations are addressed in the design.		
Inadequate Space		Moderate to Substantial Improvement	Declining habitats/space are restored.		
Habitat Fragmentation		Moderate to Substantial Improvement	Declining habitats/space are restored and reconnected to adjacent habitats.		
Imbalance Among and Within Populations		Moderate to Substantial Improvement	Management is designed to minimize limiting factors.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Restoration and Management of Rare or Declining Habitats 643</b>		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.		
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage		Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.		
Inadequate Shelter		Not Applicable	Not applicable.		
Inadequate Stock Water		Not Applicable	Not applicable.		
Stress and Mortality		Not Applicable	Not applicable.		
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		
Labor – Change in Management Level		0	Slight to Moderate Decrease		
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.	Slight Increase		
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase		
Risk - Timing		Moderate to substantial increase, depending on level of concentration.	Slight Increase		
Risk – Cash Flow		Slight increase due to establishment costs.	Situational		
Profitability – Change in Profitability		Moderate decrease to slight increase.	0		
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.	No		
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

<b>STATE</b>	<b>WASHINGTON</b>	<b>FIELD OFFICE</b>	<b>ALL</b>	<b>DATE</b>	<b>9/2008</b>
<b>PRACTICE: Restoration and Management of Rare or Declining Habitats 643</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Water Well 642		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
<b>SOIL - EROSION</b>					
Sheet and Rill	Slight to Moderate Improvement	Increased vegetated cover due to better distribution of water reduces soil erosion.			
Wind	Slight to Moderate Improvement	Increased vegetated cover due to better distribution of water reduces soil erosion.			
Ephemeral Gully	Slight to Moderate Improvement	Increased vegetated cover due to better distribution of water reduces soil erosion.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Not Applicable	Not applicable.			
Rangeland Site Stability	Neutral	Not Applicable			
Compaction	Neutral	The action involves production rather than distribution of available water.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			
• Animal Waste and other Organics - N	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			
• Animal Waste and other Organics - P	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			
• Animal Waste and other Organics - K	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			
• Commercial Fertilizer - N	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			
• Commercial Fertilizer – P	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Well 642</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Commercial Fertilizer – K	Slight Improvement	Where well flows are used for irrigation, contaminants can be leached below the root zone.			
• Residual Pesticides	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Slight to Moderate Improvement	Increased water availability increases vegetative growth and cover decreasing erosion and sedimentation.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Neutral	Not Applicable			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.			
Excessive Subsurface Water	Slight to Moderate Improvement	Water is removed from subsurface water source.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Well development will provide a dependable supply of water allowing more concentrated management.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Slight to Moderate Worsening	Wells make it possible for water to be withdrawn from aquifer.			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Salinity	Neutral	In coastal areas pumping fresh groundwater may allow the intrusion of saltwater.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Well 642</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Excessive Salinity</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Harmful Levels of Heavy Metals</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Harmful Temperatures</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Slight Worsening	Use of wells to irrigate previously non irrigated land will increase the likelihood of soluble and sediment-attached contaminants moving of-site. Probable less contaminants on grazing lands			
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable	Not applicable.			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Slight Improvement	Increased availability and managed application of irrigation water enhances plant growth, health and vigor.			
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Well 642</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Slight to Moderate Improvement	Provides dependable water supply to livestock and wildlife in areas where surface water is scant.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Water helps remove limiting factors.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	Improved distribution of animals makes forage more readily available to livestock.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Substantial Improvement	Wells facilitate the availability and distribution of water.			
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Well 642</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waterspreading 640</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Slight Worsening	Because of higher concentration and velocities from water collection.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Slight Improvement	The action increases water infiltration and plant uptake, increasing biomass production.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Slight Improvement	Increased infiltration may permit leaching of some salts below the root zone.			
• Animal Waste and other Organics - N	Slight Improvement	Increased water availability will allow increased plant nutrient uptake.			
• Animal Waste and other Organics - P	Slight Improvement	Increased water availability will allow increased plant nutrient uptake.			
• Animal Waste and other Organics - K	Slight Improvement	Increased water availability will allow increased plant nutrient uptake.			
• Commercial Fertilizer - N	Slight Improvement	Increased water availability will allow increased plant nutrient uptake.			
• Commercial Fertilizer – P	Slight Improvement	Increased water availability will allow increased plant nutrient uptake.			
• Commercial Fertilizer – K	Slight Improvement	Increased water availability will allow increased plant nutrient uptake.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waterspreading 640</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Residual Pesticides</li> </ul>	Neutral	Increased soil water availability may increase organic matter tie-up and microbial degradation of pesticide residues.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Reduces runoff, ponding, and increase infiltration.			
Excessive Subsurface Water	Slight Worsening	Reduces runoff, ponding, and increase infiltration.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight Improvement	Reduces needed capacity of outlets due to less runoff.			
Inefficient Water use on Irrigated Land	Slight Improvement	Water is collected for more efficient use.			
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Water is distributed for more efficient use.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Slight Improvement	Increases infiltration for aquifer recharge.			
Insufficient Flows in Water Courses	Slight Worsening	Flow is diverted from water courses.			
<b>WATER – QUALITY</b>					
In Groundwater:					
<ul style="list-style-type: none"> <li>Harmful Levels of Pesticides</li> </ul>	Slight Worsening	The action increases infiltration			
<ul style="list-style-type: none"> <li>Excessive Nutrients and Organics</li> </ul>	Slight Worsening	The action impounds water which has the potential to transport nutrients to groundwater.			
<ul style="list-style-type: none"> <li>Excessive Salinity</li> </ul>	Slight Worsening	The action results in increased infiltration and potential for moving soluble salts to ground water.			
<ul style="list-style-type: none"> <li>Harmful Levels of Heavy Metals</li> </ul>	Slight Worsening	The action results in increased infiltration and potential for leaching soil contaminates.			
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Slight Worsening	The action results in increased infiltration and potential for leaching soil contaminates.			
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable	Not applicable.			
In Surface Water:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waterspreading 640</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>• Harmful Levels of Pesticides</li> </ul>	Slight Improvement	The action reduces runoff.			
<ul style="list-style-type: none"> <li>• Excessive Nutrients and Organics</li> </ul>	Slight to Moderate Improvement	The action impounds surface water which reduces the potential to transport nutrients and organics downstream.			
<ul style="list-style-type: none"> <li>• Excessive Suspended Sediment and Turbidity</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>• Excessive Salinity</li> </ul>	Slight Improvement	The action increases infiltration, increasing leaching potential and reducing the potential for moving salts to surface water.			
<ul style="list-style-type: none"> <li>• Harmful Levels of Heavy Metals</li> </ul>	Slight Improvement	The action increases infiltration and reduces surface runoff.			
<ul style="list-style-type: none"> <li>• Harmful Temperatures</li> </ul>	Neutral	Diverted water does not generally return to surface water source.			
<ul style="list-style-type: none"> <li>• Harmful Levels of Pathogens</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>• Harmful Levels of Petroleum</li> </ul>	Slight Improvement	Increases infiltration			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>• CO<sub>2</sub> (Carbon Dioxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>• N<sub>2</sub>O (Nitrous Oxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>• CH<sub>4</sub> (Methane)</li> </ul>	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Slight to Moderate Improvement	Site modification to improve irrigation application enhances the health and vigor of desired species.			
Threatened or Endangered Plant Species:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waterspreading 640</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Slight Improvement	Improved soil moisture facilitates improved health and vigor of desirable vegetation therefore reducing invasion of noxious weed.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Slight to Moderate Improvement	Improved soil moisture may increase plant diversity and production as food for wildlife.			
Inadequate Cover/Shelter	Slight to Moderate Improvement	Improved soil moisture may increase plant diversity and production used as cover for wildlife.			
Inadequate Water	Slight Improvement	Spreading temporarily concentrates natural precipitation.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS - DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	Production will be improved with uniform and consistent application of water.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN - ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waterspreading 640</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water and Sediment Control Basin 638</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable		Not applicable.		
Wind	Not Applicable		Not applicable.		
Ephemeral Gully	Slight to Moderate Improvement		Controlled flow will reduce gully erosion down slope of basin.		
Classic Gully	Slight to Substantial Improvement		Water diverted from gully and spread in a nonerosive manner.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Slight to Substantial Improvement		Runoff can be controlled or diverted from construction site.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Not Applicable		Not applicable.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Not Applicable		Not applicable.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• 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	Not Applicable		Not applicable.		
Damage from Sediment Deposition	Slight to Substantial Improvement		The action is designed to trap sediment.		
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable		Not applicable.		
Excessive Seepage	Slight to Moderate Worsening		Retarded water in basin will infiltrate causing seepage problems below basin.		
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement		Basin will retard flows reducing runoff.		
Excessive Subsurface Water	Slight to Moderate Worsening		Retarded water in basin will infiltrate causing increased subsurface water.		
Drifted Snow	Not Applicable		Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water and Sediment Control Basin 638</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Inadequate Outlets	Slight Improvement	Basin will retard flows reducing the runoff and controlling water releases.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Basin traps and retains sediment.			
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate to Substantial Improvement	Basin traps and retains sediment.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Slight Improvement	Basin will retard flows reducing the runoff and controlling water releases.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Worsening	Water containing pesticides may seep from the basin.			
• Excessive Nutrients and Organics	Slight Worsening	Nutrients impounded could contaminate groundwater.			
• Excessive Salinity	Slight Worsening	Infiltrating water in the basin can move soluble salts to the ground water			
• Harmful Levels of Heavy Metals	Slight Worsening	Infiltrating water in the basin will move soluble contaminants to the ground water.			
• Harmful Levels of Pathogens	Slight Worsening	Infiltrating water in the basin may leach pathogens.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action collects and stores adsorbed pesticides.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants.			
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Basin retains sediment and minimizes turbidity			
• Excessive Salinity	Slight Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water and Sediment Control Basin 638</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments.			
• Harmful Temperatures	Slight to Moderate Worsening	Water retained in basin is generally warmer than receiving waters to which outlets drain.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants			
• Harmful Levels of Petroleum	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Not Applicable	Not applicable.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water and Sediment Control Basin 638</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Wildfire Hazard	Not Applicable		Not applicable.		
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Slight Worsening		Any food species are eliminated in the area used for the basin.		
Inadequate Cover/Shelter	Slight Worsening		Any cover is eliminated in the area used for the basin.		
Inadequate Water	Slight to Moderate Improvement		Surface runoff retained will provide temporary water to wildlife as sediment is trapped, improving water quality in watershed.		
Inadequate Space	Not Applicable		Not applicable.		
Habitat Fragmentation	Not Applicable		Not applicable.		
Imbalance Among and Within Populations	Not Applicable		Not applicable.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Not Applicable		Not applicable.		
Inadequate Shelter	Not Applicable		Not applicable.		
Inadequate Stock Water	Slight Improvement		Captured water in basins can supplement stock water.		
Stress and Mortality	Not Applicable		Not applicable.		
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0		Slight to substantial.		
Land – Land in Production	0		Slight Increase.		
Capital – Change in Equipment	0		Not applicable.		
Capital - Total Investment Cost	Not applicable.		Negligible		
Capital – Annual Cost	0		Situational.		
Capital – Credit and Farm Program Eligibility	0		Slight to moderate.		
Labor - Labor	0		Slight to moderate increase.		
Labor – Change in Management Level	0		Slight to Moderate Decrease		
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.		Slight Increase		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water and Sediment Control Basin 638</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.		Moderate to Substantial Increase		
Risk - Timing	Moderate to substantial increase, depending on level of concentration.		Slight Increase		
Risk – Cash Flow	Slight increase due to establishment costs.		Situational		
Profitability – Change in Profitability	Moderate decrease to slight increase.		0		
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.		No		
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No		
Underutilization of Non-Fossil Energy Resources	Not Applicable		No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Harvesting Catchment 636</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Not Applicable		Not applicable.	
• 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		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight Improvement		Runoff is collected and given less infiltration time.	
Excessive Runoff, Flooding, or Ponding		Not Applicable		Not applicable.	
Excessive Subsurface Water		Not Applicable		Not applicable.	
Drifted Snow		Not Applicable		Not applicable.	
Inadequate Outlets		Not Applicable		Not applicable.	
Inefficient Water use on Irrigated Land		Not Applicable		Not applicable.	
Inefficient Water use on Non-Irrigated Land		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Harvesting Catchment 636</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Reduced Capacity of Conveyances by Sediment Deposition		Not Applicable	Not applicable.		
Reduced Storage of Water Bodies by Sediment Accumulation		Not Applicable	Not applicable.		
Aquifer Overdraft		Not Applicable	Not applicable.		
Insufficient Flows in Water Courses		Not Applicable	Not applicable.		
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Salinity		Neutral	The action collects and stores water preventing both infiltration and runoff.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Levels of Pathogens		Not Applicable	Not applicable.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Not Applicable	Not applicable.		
• Excessive Suspended Sediment and Turbidity		Not Applicable	Not applicable.		
• Excessive Salinity		Not Applicable	Not applicable.		
• Harmful Levels of Heavy Metals		Not Applicable	Not applicable.		
• Harmful Temperatures		Neutral	Catchment draining for seasonal protection is generally done during fall, when retained water is cooler.		
• 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		Not Applicable	Not applicable.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Not Applicable	Not applicable.		
• N <sub>2</sub> O (Nitrous Oxide)		Not Applicable	Not applicable.		
• CH <sub>4</sub> (Methane)		Not Applicable	Not applicable.		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Not Applicable	Not applicable.		
Reduced Visibility		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Harvesting Catchment 636</b>		Baseline Setting: Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Not Applicable	Not applicable.		
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited		Not Applicable	Not applicable.		
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor		Not Applicable	Not applicable.		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Not Applicable	Not applicable.		
Noxious and Invasive Plants		Not Applicable	Not applicable.		
Forage Quality and Palatability		Not Applicable	Not applicable.		
Wildfire Hazard		Not Applicable	Not applicable.		
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Not Applicable	Not applicable.		
Inadequate Cover/Shelter		Not Applicable	Not applicable.		
Inadequate Water		Moderate to Substantial Improvement	The action will enhance wet habitat for some species and diminish habitat for others, depending on location in a watershed.		
Inadequate Space		Slight to Moderate Improvement	Additional habitat/space is available once water is available.		
Habitat Fragmentation		Slight to Moderate Improvement	Multiple water sources can reconnect habitats.		
Imbalance Among and Within Populations		Not Applicable	Not applicable.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<b>ANIMALS – DOMESTIC</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Water Harvesting Catchment 636</b>		Baseline Setting: Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Inadequate Quantities and Quality of Feed and Forage		Not Applicable	Not applicable.		
Inadequate Shelter		Not Applicable	Not applicable.		
Inadequate Stock Water		Substantial Improvement	Collected water provides drinking for livestock.		
Stress and Mortality		Moderate to Substantial Improvement	Available water reduces stress and mortality.		
HUMAN – ECONOMICS					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		
Labor – Change in Management Level		0	Slight to Moderate Decrease		
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.	Slight Increase		
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase		
Risk - Timing		Moderate to substantial increase, depending on level of concentration.	Slight Increase		
Risk – Cash Flow		Slight increase due to establishment costs.	Situational		
Profitability – Change in Profitability		Moderate decrease to slight increase.	0		
HUMAN - CULTURAL					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.	No		
HUMAN – ENERGY					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No		
Underutilization of Non-Fossil Energy Resources		Not Applicable	No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wastewater Treatment Strip 635</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight to Moderate Improvement	Treatment process will add organic matter to the site.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			
• Animal Waste and other Organics - N	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			
• Animal Waste and other Organics - P	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			
• Animal Waste and other Organics - K	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			
• Commercial Fertilizer - N	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			
• Commercial Fertilizer – P	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wastewater Treatment Strip 635</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Commercial Fertilizer – K	Slight to Moderate Worsening	Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.			
• Residual Pesticides	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Slight to Moderate Worsening	Infiltration at strip has the potential to aggravate already saturated conditions.			
Excessive Runoff, Flooding, or Ponding	Neutral	Polluted runoff will be directed to treatment strip with no discharge allowed.			
Excessive Subsurface Water	Slight to Moderate Worsening	Infiltration in the treatment strip will add to subsurface water.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Permanent vegetation improves infiltration and water efficiency.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Neutral	Infiltrating water in the strip will increase groundwater.			
Insufficient Flows in Water Courses	Slight Worsening	Runoff diverted to treatment strip and allowed to infiltrate.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight to Moderate Worsening	The action entails the application of waste which increases the potential for groundwater contamination.			
• Excessive Salinity	Slight Worsening	Infiltrating water in treatment strip may increase soluble salts moving to groundwater.			
• Harmful Levels of Heavy Metals	Neutral	Heavy metals are rarely associated with manure, however, infiltrating water in treatment strip will increase soluble contaminants moving to groundwater.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wastewater Treatment Strip 635</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Slight Worsening		Infiltrating water in treatment strip will increase soluble contaminants moving to groundwater, however there will be die-off as pathogens are trapped in the vegetation and increased microbial activity enhances competition with pathogens.		
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable		Not applicable.		
In Surface Water:					
<ul style="list-style-type: none"> <li>Harmful Levels of Pesticides</li> </ul>	Not Applicable		Not applicable.		
<ul style="list-style-type: none"> <li>Excessive Nutrients and Organics</li> </ul>	Moderate to Substantial Improvement		Infiltration and plant uptake in the treatment strip will remove contaminants from polluted runoff and waste water.		
<ul style="list-style-type: none"> <li>Excessive Suspended Sediment and Turbidity</li> </ul>	Slight to Moderate Improvement		Vegetation protects soil surface and traps sediment, nutrients and other materials.		
<ul style="list-style-type: none"> <li>Excessive Salinity</li> </ul>	Slight Improvement		Infiltration in the treatment strip may remove some salts from polluted runoff and waste water.		
<ul style="list-style-type: none"> <li>Harmful Levels of Heavy Metals</li> </ul>	Neutral		Heavy metals are rarely associated with manure; however, infiltration and plant uptake in the treatment strip will remove contaminants from polluted runoff and waste water.		
<ul style="list-style-type: none"> <li>Harmful Temperatures</li> </ul>	Not Applicable		Not applicable.		
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Moderate to Substantial Improvement		Infiltration and plant uptake in the treatment strip will remove contaminants from polluted runoff and waste water.		
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable		Not applicable.		
<b>AIR – QUALITY</b>					
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 surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.		
Excessive Greenhouse Gas:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wastewater Treatment Strip 635</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• CO <sub>2</sub> (Carbon Dioxide)	Slight Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.			
• N <sub>2</sub> O (Nitrous Oxide)	Neutral	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Neutral	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Neutral	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Slight to Moderate Improvement	Treatment strip will receive excess nutrients which could be toxic and diminish plant health.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Moderate to Substantial Improvement	Vegetation is installed and managed to control undesired species.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Neutral	Strip provides only limited additional space for most species.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wastewater Treatment Strip 635</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight Improvement	There may be some use of the planting for feed and forage by livestock.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Wastewater Treatment Strip 635</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No		
Underutilization of Non-Fossil Energy Resources		Not Applicable	No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Manure Transfer 634</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by water.			
Wind	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by wind.			
Ephemeral Gully	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by water.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Not Applicable	Not applicable.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight Worsening	Manure application equipment will tend to compact the soil in the area of travel.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• Animal Waste and other Organics - N	Neutral	The action moves manure around, but does not increase or decrease total N.			
• Animal Waste and other Organics - P	Neutral	The action moves manure around, but does not increase or decrease total P.			
• Animal Waste and other Organics - K	Neutral	The action moves manure around, but does not increase or decrease total N.			
• Commercial Fertilizer - N	Neutral	The action moves manure around, but does not increase or decrease total N.			
• Commercial Fertilizer – P	Neutral	The action moves manure around, but does not increase or decrease total P.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Manure Transfer 634</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Commercial Fertilizer – K	Neutral	The action moves manure around, but does not increase or decrease total N.			
• Residual Pesticides	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Neutral	To the extent manure and wastewater application increase hydraulic loading of the soil, there is some potential for increasing seeps.			
Excessive Runoff, Flooding, or Ponding	Neutral	To the extent manure and wastewater application increase hydraulic loading of the soil, there is some potential for increasing runoff and ponding.			
Excessive Subsurface Water	Neutral	To the extent manure and wastewater application increase hydraulic loading of the soil, there is some potential for increasing subsurface water.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Neutral	Water content of manure applied from waste storage/treatment facilities can increase soil moisture.			
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Water content of manure from waste storage/treatment facilities can increase soil moisture when applied.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Neutral	Water content of manure from waste storage/treatment facilities can increase soil moisture when applied.			
Insufficient Flows in Water Courses	Neutral	Water content of manure from waste storage/treatment facilities can increase soil moisture and potential returns to water courses when applied.			
<b>WATER – QUALITY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Manure Transfer 634</b>	Baseline Setting:				
	Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife				
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action decreases the potential for ground water contamination in the animal production area.			
• Excessive Salinity	Slight to Moderate Improvement	The action insures manure is properly handled and contaminants are not available for infiltration.			
• Harmful Levels of Heavy Metals	Neutral	The action insures manure is properly handled and contaminants are not available for infiltration or runoff. Heavy metals are rarely associated with manure.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	The action insures manure is properly handled and pathogens are not available for infiltration or runoff.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Proper handling of manure will decrease the potential for surface water contamination in animal production areas.			
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.			
• Excessive Salinity	Slight to Moderate Improvement	The action insures manure is properly handled and reduces the potential for salt runoff.			
• Harmful Levels of Heavy Metals	Neutral	Excess heavy metals are rarely associated with manure. There is a decrease in potential surface water contamination in the animal production areas. There may be limited increase in surface water contamination in the areas where manure is land applied.			
• Harmful Temperatures	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Manure Transfer 634</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Slight to Substantial Improvement	Decrease in potential surface water contamination in the animal production areas. May be limited increase in surface water contamination in the areas where manure is land applied.			
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable	Not applicable.			
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Worsening	Loading and unloading dry manure can add particulates to the air.			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Worsening	Loading and unloading dry manure can add particulates to the air.			
Excessive Ozone	Neutral	There is an increase in potential ozone precursor emissions.			
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>	Slight to Moderate Worsening	Anaerobic conditions are conducive to the formation of CH <sub>4</sub>			
Ammonia (NH <sub>3</sub> )	Slight to Moderate Worsening	Emissions occur as manure is moved and land applied			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Slight Worsening	Movement and application of manure will increase particulates, VOCs, and can increase odors.			
Reduced Visibility	Slight Worsening	increased ammonia emissions can increase PM fines			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Not Applicable	Not applicable.			
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Manure Transfer 634</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Noxious and Invasive Plants	Slight Worsening	Manure may contain weed seeds and other contaminants as a result of livestock consuming feed containing weed seed.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Manure Transfer 634</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Risk - Timing	Moderate to substantial increase, depending on level of concentration.		Slight Increase		
Risk – Cash Flow	Slight increase due to establishment costs.		Situational		
Profitability – Change in Profitability	Moderate decrease to slight increase.		0		
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.		No		
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No		
Underutilization of Non-Fossil Energy Resources	Not Applicable		No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Waste Utilization 633		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
<b>SOIL - EROSION</b>					
Sheet and Rill		Slight to Moderate Improvement		Additional organic material adds nutrients and increases soil organic matter which reduces runoff and erosion.	
Wind		Slight Improvement		Additional organic material applied to the soil surface may reduce wind erosion potential.	
Ephemeral Gully		Slight Improvement		Additional organic material adds nutrients and increases soil organic matter which reduces runoff and erosion.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Slight to Moderate Improvement		Additional organic material adds nutrients and increases soil organic matter which reduces runoff and erosion.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Slight to Substantial Improvement		Composted organic material will aid in vegetation establishment that will provide adequate cover.	
<b>SOIL – CONDITION</b>					
Organic Matter Depletion		Slight to Substantial Improvement		Added organic material will increase biomass production and increase soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Neutral		Field operations on moist soils cause soil compaction. However, increased plant growth and root penetration will counterbalance this effect. When wastes are applied through irrigation systems compaction is avoided.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Neutral		Proper waste utilization will not result in salt build up.	
• Animal Waste and other Organics - N		Neutral		Proper application of animal waste or organics will not result in soil contamination.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Utilization 633</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Animal Waste and other Organics - P	Neutral	Proper application of animal waste or organics will not result in soil contamination.			
• Animal Waste and other Organics - K	Neutral	Proper application of animal waste or organics will not result in soil contamination.			
• Commercial Fertilizer - N	Neutral	Proper application of animal waste or organics will not result in soil contamination.			
• Commercial Fertilizer - P	Neutral	Proper application of animal waste or organics will not result in soil contamination.			
• Commercial Fertilizer - K	Neutral	Proper application of animal waste or organics will not result in soil contamination.			
• Residual Pesticides	Slight Improvement	Adding organic material to the soil may increase tie-up and biological degradation of pesticides.			
Damage from Sediment Deposition	Slight Improvement	Increased organic material promotes better vegetative growth that results in less erosion.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.			
Excessive Subsurface Water	Not Applicable	Not applicable.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Additional organic material and waste water adds nutrients, increases soil organic matter, and increases soil moisture.			
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	The action improves water use because of better plant vigor.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Utilization 633</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action increases soil organic matter and biological activity.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Proper nutrient application should minimize leaching losses.			
• Excessive Salinity	Slight to Moderate Improvement	Proper waste application should minimize leaching losses. Uses of manure for other than land application will decrease opportunity for water contamination.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Proper nutrient application should minimize leaching losses. Uses of manure for other than land application will decrease opportunity for water contamination.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Proper nutrient application should minimize losses due to runoff.			
• Excessive Suspended Sediment and Turbidity	Neutral	Proper nutrient application should minimize losses due to runoff.			
• Excessive Salinity	Slight to Moderate Improvement	Proper nutrient application should minimize runoff losses. Uses of manure for other than land application will decrease opportunity for water contamination.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Neutral	Proper nutrient application should minimize losses due to runoff.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
AIR – QUALITY					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)		Slight Worsening	Application of dry manure can result in particulate losses to the air.		
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)		Slight Worsening	Application of dry manure can result in particulate losses to the air.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Utilization 633</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Excessive Ozone	Slight to Moderate Improvement	Proper land application of manure will minimize emissions.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Slight to Moderate Improvement	Field management of nutrients optimizes the storage of soil carbon.			
• N <sub>2</sub> O (Nitrous Oxide)	Slight Improvement	Reduction in N in waste results in less N volatilization			
• CH <sub>4</sub> (Methane)	Neutral	Not applicable.			
Ammonia (NH <sub>3</sub> )	Slight to Moderate Improvement	Proper nutrient management reduces NH <sub>3</sub> production.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Moderate to Substantial Improvement	Proper land application/incorporation will reduce volatilization and particle transport.			
Reduced Visibility	Slight Improvement	Land application reduces fine particulate matter and ozone precursors, burning increases fine particulate matter and ozone precursors			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
PLANTS – SUITABILITY					
Plants not Adapted or Suited	Slight to Substantial Improvement	Nutrients and soil amendments are optimized to enhance suited and desired species.			
PLANTS - CONDITION					
Productivity, Health, and Vigor	Slight to Substantial Improvement	Nutrients and soil amendments are applied to optimize to plant health and productivity.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Moderate to Substantial Improvement	Proper management will increase quality and palatability of forage.			
Wildfire Hazard	Not Applicable	Not applicable.			
ANIMALS - FISH AND WILDLIFE					
Inadequate Food	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Utilization 633</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	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	Wastes are applied to enhance production and nutritive value of the forage used by livestock.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Slight to Substantial Improvement	Management results in nutritive forage improving livestock health.			
HUMAN – ECONOMICS					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Utilization 633</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
Profitability – Change in Profitability		Moderate decrease to slight increase.	0		
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.	No		
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No		
Underutilization of Non-Fossil Energy Resources		Not Applicable	No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Solid/Liquid Waste Separation Facility 632</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Neutral	Some chemicals such as PAM used as flocculants could reduce irrigation induced erosion when the waste stream is surface irrigated			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Slight Improvement	Using amendments and separation could create high organic residues that when land applied could increase soil organic matter in excess of the application of untreated manure			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Neutral	Could be slight worsening to slight improvement depending on whether salts are concentrated or removed from the land applied waste stream			
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce nitrogen concentrations			
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce phosphorus concentrations			
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce phosphorus concentrations			
• Commercial Fertilizer - N	Not Applicable	Not applicable.			
• Commercial Fertilizer – P	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Solid/Liquid Waste Separation Facility 632</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Commercial Fertilizer – K	Not Applicable	Not applicable.			
• Residual Pesticides	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.			
Excessive Subsurface Water	Not Applicable	Not applicable.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Slight Improvement	Altered waste stream with minimum solids will be compatible with irrigation needs			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Neutral	Altered waste stream with minimum solids will be compatible with irrigation needs			
Insufficient Flows in Water Courses	Neutral	Altered waste stream with minimum solids will be compatible with irrigation needs			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Separation and other treatment options are often used to remove nutrients and organics from the waste stream			
• Excessive Salinity	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Solid/Liquid Waste Separation Facility 632</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
In Surface Water:					
• Harmful Levels of Pesticides		Not Applicable	Not applicable.		
• Excessive Nutrients and Organics		Slight to Substantial Improvement	Separation and other treatment options are often used to remove nutrients and organics from the waste stream		
• Excessive Suspended Sediment and Turbidity		Not Applicable	Not applicable.		
• Excessive Salinity		Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.		
• Harmful Levels of Heavy Metals		Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.		
• Harmful Temperatures		Not Applicable	Not applicable.		
• Harmful Levels of Pathogens		Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.		
• 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)		Slight to Moderate Improvement	liquid-solid separation can have some effect in reducing emissions such as ammonia fraction		
Excessive Ozone		Not Applicable	Not applicable.		
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Slight Improvement	Separation may have an impact on the release of a number of manure constituents		
• N <sub>2</sub> O (Nitrous Oxide)		Slight Improvement	Separation may have an impact on the release of a number of manure constituents		
• CH <sub>4</sub> (Methane)		Slight to Moderate Improvement	Separation may have an impact on the release of a number of manure constituents		
Ammonia (NH <sub>3</sub> )		Slight to Substantial Improvement	Separating solids and liquids (particularly feces and urine) can be an effective means of controlling ammonia emissions		
Chemical Drift		Not Applicable	Not applicable.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Solid/Liquid Waste Separation Facility 632</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
Objectionable Odors		Moderate to Substantial Improvement	Liquid/solids separators are very successful in facilitating the reduction of odor emissions from manure, particularly when solids are allowed to remain in an aerobic environment		
Reduced Visibility		Not Applicable	Not applicable.		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Not Applicable	Not applicable.		
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited		Not Applicable	Not applicable.		
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor		Not Applicable	Not applicable.		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Not Applicable	Not applicable.		
Noxious and Invasive Plants		Not Applicable	Not applicable.		
Forage Quality and Palatability		Slight to Moderate Improvement	Separation and handling the solids and liquids separately can alter the waste stream to better meet the needs of the plant		
Wildfire Hazard		Not Applicable	Not applicable.		
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Not Applicable	Not applicable.		
Inadequate Cover/Shelter		Not Applicable	Not applicable.		
Inadequate Water		Not Applicable	Not applicable.		
Inadequate Space		Not Applicable	Not applicable.		
Habitat Fragmentation		Not Applicable	Not applicable.		
Imbalance Among and Within Populations		Not Applicable	Not applicable.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Not Applicable	Not applicable.		
<b>ANIMALS – DOMESTIC</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Solid/Liquid Waste Separation Facility 632</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Inadequate Quantities and Quality of Feed and Forage	Neutral	Separation could favorably alter the waste stream to better provide the needs of growing feed and forage, but this would be minor impact			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Slight Improvement	Some alternatives are used to treat the waste stream to the point water can be reused by livestock. Liquid/solid separation is almost always the first step			
Stress and Mortality	Slight to Moderate Improvement	Suppressing emissions of ammonia and other manure constituents through liquid solid separation may well improve overall animal health and reduce mortality			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Solid/Liquid Waste Separation Facility 632		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No		
Underutilization of Non-Fossil Energy Resources		Not Applicable	No		

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vertical Drain 630</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Slight Improvement	Runoff is captured and discharged subsurface reducing erosion potential.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Slight Improvement	Runoff is captured and discharged subsurface reducing erosion potential.			
Road, Roadsides, and Construction Sites	Slight Improvement	Runoff is captured and discharged subsurface reducing erosion potential.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Not Applicable	Not applicable.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Neutral	Surface water removal may result in increased oxidation of organic matter.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Neutral	When surface drainage is diverted, erosion may decrease.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Neutral	Surface water introduced to strata below the zones conducive to seepage.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vertical Drain 630</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Excessive Runoff, Flooding, or Ponding	Moderate to Substantial Improvement	Surface and subsurface drainage diverted to underground strata and not available to surface problems.			
Excessive Subsurface Water	Slight to Moderate Worsening	Diversion of surface water to subsurface will increase any existing problems.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight to Substantial Improvement	The action provides an outlet for areas with inadequate surface drainage.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Reduced erosion and sediment from flows being diverted subsurface.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Reduced erosion and sediment from flows being diverted subsurface			
Aquifer Overdraft	Moderate to Substantial Improvement	Diverting surface flows subsurface will tend to recharge aquifer.			
Insufficient Flows in Water Courses	Slight to Moderate Worsening	Water diverted underground not available for surface waters.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Moderate Worsening	Water entering the drain may contain pesticide residues.			
• Excessive Nutrients and Organics	Moderate Worsening	Water conveyed to subsurface strata may contain organics and nutrients.			
• Excessive Salinity	Slight Worsening	Water containing soluble salts is outlet below the soil surface where it may reach groundwater.			
• Harmful Levels of Heavy Metals	Slight Worsening	Water diverted to the subsurface may contain some heavy metals.			
• Harmful Levels of Pathogens	Slight Worsening	Water diverted to the subsurface may contain some pathogens.			
• Harmful Levels of Petroleum	Slight Worsening	Water diverted to the subsurface may contain some pathogens.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vertical Drain 630</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Excessive Nutrients and Organics	Slight Improvement	Nutrients in the water diverted into a vertical drain is kept out of surface water.			
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Water diverted subsurface will reduce surface water flows.			
• Excessive Salinity	Slight Improvement	Water containing salt could be diverted from a surface outlet to the subsurface.			
• Harmful Levels of Heavy Metals	Slight Improvement	Water diverted subsurface will reduce metal transport to surface waters.			
• Harmful Temperatures	Neutral	Diversion of drainage water subsurface removes water from surface flows.			
• Harmful Levels of Pathogens	Slight Improvement	Water diverted subsurface reduces surface runoff.			
• Harmful Levels of Petroleum	Slight Improvement	Water diverted subsurface may contain some level of contaminant.			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Not Applicable	Not applicable.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vertical Drain 630</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vertical Drain 630</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Treatment 629</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable		Not applicable.		
Wind	Not Applicable		Not applicable.		
Ephemeral Gully	Not Applicable		Not applicable.		
Classic Gully	Not Applicable		Not applicable.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Neutral		Some chemicals such as PAM used as amendments could reduce irrigation induced erosion when the waste stream is surface irrigated		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight Improvement		Using amendments and separation could create high organic residues that when land applied could increase soil organic matter in excess of the application of untreated manure		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Slight Improvement		If the treatment process includes a storage component, it will allow better management of waste as to rate and timing of application, which allows application when compaction is least likely.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Neutral		Could be slight worsening to slight improvement depending on whether salts are concentrated or removed from the land applied waste stream		
• Animal Waste and other Organics - N	Slight to Moderate Improvement		Using treatment options allows the manipulation of the waste stream to reduce nitrogen concentrations		
• Animal Waste and other Organics - P	Slight to Moderate Improvement		Using treatment options allows the manipulation of the waste stream to reduce phosphorus concentrations		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Treatment 629</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
<ul style="list-style-type: none"> <li>Animal Waste and other Organics - K</li> </ul>	Slight to Moderate Improvement	Using treatment options allows the manipulation of the waste stream to reduce potassium concentrations			
<ul style="list-style-type: none"> <li>Commercial Fertilizer - N</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Commercial Fertilizer - P</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Commercial Fertilizer - K</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Residual Pesticides</li> </ul>	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.			
Excessive Subsurface Water	Neutral	Treatment with some amendments such as PAM could alter the intake rates of soils receiving an altered waste stream,			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Slight Improvement	Altered waste stream with minimum solids will be compatible with irrigation needs			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Neutral	Altered waste stream with minimum solids will be compatible with irrigation needs			
Insufficient Flows in Water Courses	Neutral	Altered waste stream with minimum solids will be compatible with irrigation needs			
WATER – QUALITY					
In Groundwater:					
<ul style="list-style-type: none"> <li>Harmful Levels of Pesticides</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Excessive Nutrients and Organics</li> </ul>	Slight to Substantial Improvement	Amendments and other treatment options are often used to remove nutrients and organics from the waste stream			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Treatment 629</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Excessive Salinity	Slight to Moderate Improvement	Amendments and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Amendments and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Amendments and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Amendments and other treatment options are often used to remove nutrients and organics from the waste stream			
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.			
• Excessive Salinity	Slight to Moderate Improvement	Treatment options such as amendments can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Treatment options such as amendments can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Treatment options such as amendments can be used to alter the waste stream to remove salts, metals, and some pathogens.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
AIR – QUALITY					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Improvement	Some treatment options may result in less dust and other particulate matter			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Moderate to Substantial Improvement	Treatment can be very effective in reducing emissions such as ammonia fraction			
Excessive Ozone	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Treatment 629</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Slight Improvement	Treatment may have an impact on the release of a number of manure constituents			
• N <sub>2</sub> O (Nitrous Oxide)	Slight Improvement	Treatment may have an impact on the release of a number of manure constituents			
• CH <sub>4</sub> (Methane)	Slight to Substantial Improvement	Treatment options often include components that capture methane for beneficial use			
Ammonia (NH <sub>3</sub> )	Moderate to Substantial Improvement	A number of treatments are very successful in reducing ammonia emissions from manure			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Moderate to Substantial Improvement	A number of treatment options are very successful in reducing odor emissions from manure			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited		Not Applicable		Not applicable.	
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor		Slight to Moderate Improvement		Treatment can alter the waste stream to better meet the needs of the plant	
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable		Not applicable.		
• Declining Species, Species of Concern	Not Applicable		Not applicable.		
Noxious and Invasive Plants	Not Applicable		Not applicable.		
Forage Quality and Palatability	Slight to Moderate Improvement		Treatment can alter the waste stream to better meet the needs of the plant		
Wildfire Hazard	Not Applicable		Not applicable.		
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Not Applicable		Not applicable.	
Inadequate Cover/Shelter		Not Applicable		Not applicable.	
Inadequate Water		Not Applicable		Not applicable.	
Inadequate Space		Not Applicable		Not applicable.	
Habitat Fragmentation		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Treatment 629</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
ANIMALS – DOMESTIC					
Inadequate Quantities and Quality of Feed and Forage	Neutral	Treatment could favorably alter the waste stream to better provide the needs of growing feed and forage, but this would be minor impact			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Slight Improvement	Some alternatives are used to treat the waste stream to the point water can be reused by livestock			
Stress and Mortality	Slight to Substantial Improvement	Suppressing emissions of ammonia and other manure constituents may well improve overall animal health and reduce mortality			
HUMAN – ECONOMICS					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Waste Treatment 629</b>		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Underground Outlet 620</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable		Not applicable.		
Wind	Not Applicable		Not applicable.		
Ephemeral Gully	Substantial Improvement		Concentrated flow is eliminated and excess water conveyed to safe outlet		
Classic Gully	Moderate to Substantial Improvement		Concentrated flow is reduced or eliminated and excess water conveyed to safe outlet.		
Streambank	Slight Worsening		Concentrated flows are directed to surface streams at an accelerated rate.		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Slight Improvement		Water is removed from site and not allowed to saturate soils.		
Road, Roadsides, and Construction Sites	Slight to Moderate Improvement		Concentrated flow is conveyed away from site to safe outlet.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Not Applicable		Not applicable.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Not Applicable		Not applicable.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• 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	Not Applicable		Not applicable.		
Damage from Sediment Deposition	Slight to Moderate Improvement		Concentrated water is safely carried off-site without erosion and resulting sedimentation.		
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable		Not applicable.		
Excessive Seepage	Neutral		The action removes concentrated flows before they infiltrate.		
Excessive Runoff, Flooding, or Ponding	Moderate to Substantial Improvement		Ponding and flooding are conveyed to a safe outlet.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Underground Outlet 620</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Excessive Subsurface Water	Neutral	The action removes concentrated flows before they infiltrate.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight to Substantial Improvement	The action provides local outlets for practices such as terraces, diversions, basins, etc			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Concentrated water is safely carried off-site without erosion and resulting sedimentation.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Concentrated water is safely carried off-site without erosion and resulting sedimentation.			
Aquifer Overdraft	Neutral	Removal of concentrated flows may result in changes in local subsurface water amounts but no aquifer level changes			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Neutral	Providing a stable outlet can decrease erosion and the delivery of sediment-bound contaminants to surface water. However, runoff water from terraces and diversions can be high in nutrients and organics, which are delivered directly to surface water.			
• Excessive Suspended Sediment and Turbidity	Neutral	Slowing water in associated structures will cause sediment to settle.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Underground Outlet 620</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Excessive Salinity	Neutral	The action does not increase or decrease the amount of salt lost from a field.			
• Harmful Levels of Heavy Metals	Slight Improvement	Decrease in erosion will lead to decrease in sediment bound contaminants, but practice can increase the delivery of soluble contaminants.			
• Harmful Temperatures	Neutral	Water collected subsurface will remain relatively cool.			
• Harmful Levels of Pathogens	Slight Improvement	Decrease in erosion will lead to decrease in sediment bound contaminants, but practice can increase the delivery of soluble contaminants.			
• Harmful Levels of Petroleum	Slight Improvement	Decrease in erosion will lead to decrease in sediment bound contaminants, but practice can increase the delivery of soluble contaminants.			
<b>AIR – QUALITY</b>					
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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Neutral	Planning and management must consider nitrogen/nitrates in outflow			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Neutral	Planning and management must preclude transport of animal by-products in outflow.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Not Applicable	Not applicable.			
Threatened or Endangered Plant Species:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Underground Outlet 620</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Not Applicable	Not applicable.		
Noxious and Invasive Plants		Not Applicable	Not applicable.		
Forage Quality and Palatability		Not Applicable	Not applicable.		
Wildfire Hazard		Not Applicable	Not applicable.		
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Not Applicable	Not applicable.		
Inadequate Cover/Shelter		Not Applicable	Not applicable.		
Inadequate Water		Not Applicable	Not applicable.		
Inadequate Space		Not Applicable	Not applicable.		
Habitat Fragmentation		Not Applicable	Not applicable.		
Imbalance Among and Within Populations		Not Applicable	Not applicable.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage		Not Applicable	Not applicable.		
Inadequate Shelter		Not Applicable	Not applicable.		
Inadequate Stock Water		Not Applicable	Not applicable.		
Stress and Mortality		Not Applicable	Not applicable.		
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		
Labor – Change in Management Level		0	Slight to Moderate Decrease		
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.	Slight Increase		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Underground Outlet 620</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Watering Facility 614</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Slight to Moderate Improvement		Increased vegetated cover due to better distribution of water reduces soil erosion.		
Wind	Slight to Moderate Improvement		Increased vegetated cover due to better distribution of water reduces soil erosion.		
Ephemeral Gully	Slight to Moderate Improvement		Increased vegetated cover due to better distribution of water reduces soil erosion.		
Classic Gully	Slight Improvement		Increased grass cover due to better distribution of water will retard flows decreasing opportunity for classic erosion.		
Streambank	Moderate to Substantial Improvement		By providing an alternate water source animal traffic on streambanks is removed reducing erosion.		
Shoreline	Moderate to Substantial Improvement		By providing an alternate water source animal traffic on shorelines is removed reducing erosion.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Not Applicable		Not applicable.		
Rangeland Site Stability	Neutral		Traffic may increase around the practice.		
Compaction	Neutral		Traffic may increase around the practice, but the practice will help reduce excess moisture where traffic occurs.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• 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		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Watering Facility 614</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Commercial Fertilizer – K	Not Applicable	Not Applicable			
• Residual Pesticides	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not Applicable			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Neutral	Traffic may increase around the practice.			
Excessive Seepage	Neutral	The action may result in minor amounts of increased infiltration due to retarding flows with better vegetative cover.			
Excessive Runoff, Flooding, or Ponding	Neutral	The action may result in minor amounts of increased infiltration (less surface flows) due to retarding flows with better vegetative cover.			
Excessive Subsurface Water	Neutral	The action may result in minor amounts of increased infiltration due to retarding flows with better vegetative cover.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	The action should reduce erosion and resulting sediment due to increased vegetative cover resulting from better water distribution for animals.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	The action should reduce erosion and resulting sediment due to increased vegetative cover resulting from better water distribution for animals.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Neutral	The action may result in minor amounts of increased infiltration (Less surface flows) due to retarding flows with better vegetative cover.			
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Watering Facility 614</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Slight Worsening	The action tends to concentrate animals, increasing pathogens available for transport.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Water development will decrease livestock trampling in wet areas and nearby streams.			
• Excessive Salinity	Slight Improvement	Better distribution of animals away from surface water reduces the risk of salt contamination from manures.			
• Harmful Levels of Heavy Metals	Slight Improvement	Improved vegetation due to better distribution of water will filter and reduce water borne contaminants. In addition, better distribution of animals results in less concentration of contaminants.			
• Harmful Temperatures	Slight Improvement	Purpose of practice is to protect vegetation along water courses, which in turn moderates stream temperatures.			
• Harmful Levels of Pathogens	Slight Improvement	Improved vegetation due to better distribution of water will filter and reduce water borne contaminants. In addition, better distribution of animals results in less concentration of contaminants.			
• 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	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Watering Facility 614</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Slight to Moderate Improvement	Available water to facilitate grazing management improves growth and vigor of plants.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Slight to Moderate Improvement	The action supplies water to alternative locations hence protecting stream and riparian areas.			
Inadequate Space	Slight to Moderate Improvement	Additional habitat/space is available once water is available.			
Habitat Fragmentation	Slight to Moderate Improvement	Multiple water sources can reconnect habitats.			
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Water helps remove limiting factors.			
Threatened and Endangered Fish and Wildlife Species:					
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
• Declining Species, Species of Concern	Not Applicable	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Watering Facility 614</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Inadequate Quantities and Quality of Feed and Forage	Slight to Substantial Improvement	Improved distribution of animals makes forage more readily available to livestock.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Substantial Improvement	Facilities supply water at remote locations.			
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Establishment 612</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Substantial Improvement	Vegetation and surface litter reduces erosive water energy.			
Wind	Substantial Improvement	Tall vegetation creates a wind shadow, reduces erosive wind velocities and provides a stable area which stops saltating particles.			
Ephemeral Gully	Moderate to Substantial Improvement	Vegetation, surface litter and roots reduce erosive energy of concentrated flows.			
Classic Gully	Slight to Moderate Improvement	Vegetation, surface litter and roots reduce erosive energy of concentrated flows.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Slight to Substantial Improvement	Roots of vegetation binds the soil layers making the site resistant to gravity-induced movement.			
Road, Roadsides, and Construction Sites	Slight to Moderate Improvement	Vegetation and surface litter reduces erosive water energy.			
SOIL – CONDITION					
Organic Matter Depletion	Moderate to Substantial Improvement	Establishment of permanent woody vegetation can lead to increased root and shoot development. Decomposition increases soil organic matter.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight to Moderate Improvement	Root penetration and organic matter helps restore soil structure.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Slight to Moderate Improvement	Woody vegetation takes up limited quantities of salts and other chemicals.			
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Increase vegetative growth and N uptake.			
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Increase vegetative growth and P uptake.			
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Increase vegetative growth and K uptake.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Establishment 612</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Commercial Fertilizer - N	Slight to Moderate Improvement	Increase vegetative growth and N uptake.			
• Commercial Fertilizer – P	Slight to Moderate Improvement	Increase vegetative growth and P uptake.			
• Commercial Fertilizer – K	Slight to Moderate Improvement	Increase vegetative growth and K uptake.			
• Residual Pesticides	Slight to Moderate Improvement	Increased organic matter can tie up some pesticides.			
Damage from Sediment Deposition	Neutral	Vegetation and surface litter trap sediment from off-site but vegetative cover reduces erosion.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Slight to Moderate Improvement	Deep rooted plants uptake excess water.			
Excessive Runoff, Flooding, or Ponding	Slight Worsening	Vegetation slows surface flow rates and creates ponding.			
Excessive Subsurface Water	Slight to Moderate Improvement	Deep rooted plants uptake excess water.			
Drifted Snow	Slight to Moderate Improvement	Snow is captured by tree/shrub crowns and deposited within the grazed area.			
Inadequate Outlets	Slight to Moderate Improvement	Vegetation slows and retains runoff; the need for larger outlets is reduced.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Adapted and managed vegetative production allows more efficient use of available water.			
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Vegetation collects sediment preventing it from being deposited in conveyances.			
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate to Substantial Improvement	Vegetation collects sediment preventing it from being deposited in water bodies.			
Aquifer Overdraft	Slight to Moderate Worsening	Deep rooted vegetation can draw water lowering the water table.			
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.			
<b>WATER – QUALITY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Establishment 612</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
In Groundwater:					
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	The action reduces the need for pesticide use and trees and shrubs take up pesticide residues.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Permanent vegetation will uptake excess nutrients.			
• Excessive Salinity	Slight Improvement	The action may promote contaminant uptake by plants.			
• Harmful Levels of Heavy Metals	Slight Improvement	Establishing metal-accumulating trees and shrubs may remove heavy metals from the soil profile.			
• Harmful Levels of Pathogens	Moderate to Substantial Improvement	Increased vegetative cover and soil microbial activity can enhance competition with pathogens.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	The action reduces runoff and the need for pesticide use. Also, trees and shrubs take up pesticide residues.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Permanent vegetation will uptake excess nutrients.			
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Vegetation provides cover, reduces wind velocities, and increases infiltration.			
• Excessive Salinity	Slight Improvement	The action promotes contaminant uptake by plants.			
• Harmful Levels of Heavy Metals	Slight Improvement	Some plants may take up heavy metals.			
• Harmful Temperatures	Slight to Moderate Improvement	Near streams and other water bodies, trees and shrubs provide shade to moderate water temperature.			
• Harmful Levels of Pathogens	Slight to Substantial Improvement	Woody vegetation captures and delays pathogen movement and thereby increase their mortality.			
• Harmful Levels of Petroleum	Slight Improvement	Increased microbial activity in the planted area breaks down petroleum contaminants.			
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Permanent vegetative cover reduces wind erosion and fugitive dust generation.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Establishment 612</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Permanent vegetative cover reduces wind erosion and fugitive dust generation.			
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Substantial Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Slight to Moderate Improvement	Tall vegetation slows surface air movement and intercepts chemical drift.			
Objectionable Odors	Slight to Moderate Improvement	Vegetation will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.			
Reduced Visibility	Slight to Substantial Improvement	Tall vegetation slows surface air movement and intercepts and captures air borne materials. Reduced wind erosion improves visibility.			
Undesirable Air Movement	Moderate to Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.			
Adverse Air Temperature	Substantial Improvement	Tall vegetation provides shade and moderates temperatures.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.			
Threatened or Endangered Plant Species:					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Establishment 612</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	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	Vegetation is installed and managed to control undesired species.			
Forage Quality and Palatability	Substantial Improvement	Feed and forage plants used by wildlife are managed to maintain optimal conditions.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Slight to Substantial Improvement	Plants are chosen and managed to enhance food value for target species.			
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Plants are chosen and managed to enhance cover/shelter.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Substantial Improvement	Tall vegetation creates vertical habitat structure and enhanced space for wildlife.			
Habitat Fragmentation	Moderate to Substantial Improvement	Vegetation is installed and managed to connect habitats.			
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Cover is designed to minimize limiting factors.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the desired trees and shrubs are not harmed.			
Inadequate Shelter	Moderate to Substantial Improvement	Tall vegetation provides shelter.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Tree/Shrub Establishment 612</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Moderate to Substantial Improvement	Tall vegetation moderates temperatures and weather effects.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass	No			
Underutilization of Non-Fossil Energy Resources	Not Applicable	No			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Salinity and Sodic Soil Management 610</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Not Applicable		Not applicable.		
Wind	Not Applicable		Not applicable.		
Ephemeral Gully	Not Applicable		Not applicable.		
Classic Gully	Not Applicable		Not applicable.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Not Applicable		Not applicable.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Not Applicable		Not applicable.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Slight to Substantial Improvement		Salts in the root zone are reduced by leaching, drainage and/or plant management.		
• 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	Not Applicable		Not applicable.		
Damage from Sediment Deposition	Not Applicable		Not applicable.		
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Neutral		Not Applicable		
Excessive Seepage	Not Applicable		Not applicable.		
Excessive Runoff, Flooding, or Ponding	Not Applicable		Not applicable.		
Excessive Subsurface Water	Not Applicable		Not applicable.		
Drifted Snow	Not Applicable		Not applicable.		
Inadequate Outlets	Not Applicable		Not applicable.		
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement		Control of salt improves use of available water.		
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement		Control of salt improves use of available water.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Salinity and Sodic Soil Management 610</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.			
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Salinity	Slight to Moderate Worsening	The action requires removing salts from the root-zone. Leaching is one alternative and degree of effect depends on the amount of leaching used and the location of the ground water table.			
• Harmful Levels of Heavy Metals	Slight Worsening	Leaching salts from the root zone may also leach heavy metals.			
• Harmful Levels of Pathogens	Slight Worsening	Leaching salts from the root zone may also leach pathogens.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.			
• Excessive Salinity	Slight to Moderate Worsening	Salts leached from the root zone by drainage may enter surface water.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• 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)	Slight to Moderate Improvement	Preventing or reducing salt accumulation in the soil leads to improved vegetative cover, reducing the potential for soil movement by wind.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Salinity and Sodic Soil Management 610</b>	Baseline Setting:				
	Appropriate Land Use(s): Crop, Hay, Pasture				
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Preventing or reducing salt accumulation in the soil leads to improved vegetative cover, reducing the potential for soil movement by wind.			
Excessive Ozone	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
PLANTS – SUITABILITY					
Plants not Adapted or Suited	Slight to Substantial Improvement	Management of salts and the use of soil amendments enhances suited and desired species.			
PLANTS - CONDITION					
Productivity, Health, and Vigor	Slight to Substantial Improvement	Management of salts and the use of soil amendments improves plant productivity and vigor.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Moderate to Substantial Improvement	Proper management and selection of adapted species will increase quality and palatability of forage.			
Wildfire Hazard	Not Applicable	Not applicable.			
ANIMALS - FISH AND WILDLIFE					
Inadequate Food	Not Applicable	Not applicable.			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Salinity and Sodic Soil Management 610</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	Forage vigor and quantity is improved through effective management of soil salinity and sodium.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	0	Slight to substantial.			
Land – Land in Production	0	Slight Increase.			
Capital – Change in Equipment	0	Not applicable.			
Capital - Total Investment Cost	Not applicable.	Negligible			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate.			
Labor - Labor	0	Slight to moderate increase.			
Labor – Change in Management Level	0	Slight to Moderate Decrease			
Risk - Yield	Slight to moderate decrease increase due to reduced salt levels.	Slight Increase			
Risk - Flexibility	Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase			
Risk - Timing	Moderate to substantial increase, depending on level of concentration.	Slight Increase			
Risk – Cash Flow	Slight increase due to establishment costs.	Situational			
Profitability – Change in Profitability	Moderate decrease to slight increase.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	No			
<b>HUMAN – ENERGY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Salinity and Sodic Soil Management 610</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Roughening 609</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Slight Improvement	Soil roughness created for wind erosion also temporarily reduces runoff and erosion from water			
Wind	Slight Improvement	Clods and ridges from tillage temporarily reduce wind erosion			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Not Applicable	Not applicable.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Slight to Moderate Improvement	Wind erosion reduction provides a slight to moderate reduction in sedimentation from wind blown sediment			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.			
Excessive Subsurface Water	Not Applicable	Not applicable.			
Drifted Snow	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Roughening 609</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Inadequate Outlets	Slight Improvement	Wind erosion reduction reduces accumulation of wind blown soil that reduces water outlet capacity.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Wind erosion reduction reduced soil accumulation in surface water conveyances.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Wind erosion reduction reduced soil accumulation in water bodies.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Salinity	Neutral	Roughened surface may increase infiltration, moving soluble salts below the root zone.			
• Harmful Levels of Heavy Metals	Slight Worsening	Roughened surface may cause some modest infiltration increases, moving soluble contaminants and pathogens below the root zone.			
• Harmful Levels of Pathogens	Slight Worsening	Roughened surface may cause some modest infiltration increases, moving soluble contaminants and pathogens below the root zone.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight Improvement	The action reduces soil erosion from wind.			
• Excessive Nutrients and Organics	Not Applicable	Not applicable.			
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Formation of clods will reduce wind erosion.			
• Excessive Salinity	Neutral	Roughened surface may cause some modest infiltration increases, decreasing runoff potential.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Roughening 609</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Harmful Levels of Heavy Metals	Slight Improvement	The action reduces wind erosion, reducing transport of heavy metal containing particulates.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Substantial Improvement	Increasing the random roughness of the soil surface reduces the potential for wind erosion.			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	Increasing the random roughness of the soil surface reduces the potential for wind erosion.			
Excessive Ozone	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Neutral	Some carbon may be lost due to soil disturbance.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Moderate to Substantial Improvement	Reduction in wind erosion potential and fugitive dust			
Undesirable Air Movement	Neutral	Roughening disrupts the saltation process but do not slow winds.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Not Applicable	Not applicable.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Not Applicable	Not applicable.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Roughening 609</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Inadequate Cover/Shelter	Not Applicable	Not applicable.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	Not applicable.	Not applicable.			
Land – Land in Production	Not applicable.	Negligible to slight increase.			
Capital – Change in Equipment	0	Slight to moderate.			
Capital - Total Investment Cost	0	Slight to moderate increase.			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate increase			
Labor - Labor	Situational. Slight to moderate increase, depending on volume of treatment and equipment used.	Negligible			
Labor – Change in Management Level	0	Not applicable.			
Risk - Yield	Not applicable.	Slight Decrease			
Risk - Flexibility	Negligible to slight decrease due to environmental and manure-handling benefits.	Not applicable.			
Risk - Timing	Not applicable.	Slight Increase			
Risk – Cash Flow	Slight increase due to implementation cost.	Slight to Moderate Increase			
Profitability – Change in Profitability	Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.	0			
<b>HUMAN - CULTURAL</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Roughening 609</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	0	0			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	0	0			
Underutilization of Non-Fossil Energy Resources	0	0			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Main or Lateral 608</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Slight Worsening	Improving drainage may increase surface soil drying.			
Ephemeral Gully	Slight to Moderate Improvement	Reducing soil profile saturation increases infiltration by improving drainage and therefore decreases water runoff.			
Classic Gully	Slight Worsening	Because of higher concentration and velocities from water collection.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Not Applicable	Not applicable.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Because of improved drainage.			
Excessive Subsurface Water	Slight to Substantial Improvement	Control of water table - subsurface water is collected and conveyed to a proper outlet.			
Drifted Snow	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Main or Lateral 608</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Inadequate Outlets	Moderate Worsening	Water from drains increase pressure on outlets.			
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.			
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Worsening	Earthen ditches transport sediment that normally deposits to some degree.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Worsening	Because of sediment transport in the drainage system.			
Aquifer Overdraft	Slight Worsening	Drains intercept water that may recharge aquifers.			
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Water collected by drains can enhance flows in water courses.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Slight Improvement	The action facilitates the removal of surface water, thus reducing percolation of water and nutrients.			
• Excessive Salinity	Slight to Moderate Improvement	The action removes both surface and subsurface water and associated contaminants from the site.			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action removes both surface and subsurface water and associated contaminants from the site.			
• Harmful Levels of Pathogens	Slight to Moderate Improvement	The action removes both surface and subsurface water and associated contaminants from the site.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Main or Lateral 608</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>		
<ul style="list-style-type: none"> <li>• Excessive Nutrients and Organics</li> </ul>		Slight to Moderate Worsening	Increasing the rate of runoff from a field can increase the amount of soluble pollutants delivered to surface water.		
<ul style="list-style-type: none"> <li>• Excessive Suspended Sediment and Turbidity</li> </ul>		Slight to Moderate Worsening	Increased drainage and runoff will carry sediments.		
<ul style="list-style-type: none"> <li>• Excessive Salinity</li> </ul>		Slight to Moderate Worsening	The action removes both surface and subsurface water and associated contaminants from the site.		
<ul style="list-style-type: none"> <li>• Harmful Levels of Heavy Metals</li> </ul>		Slight to Moderate Worsening	Heavy metals are carried with sediment to surface waters.		
<ul style="list-style-type: none"> <li>• Harmful Temperatures</li> </ul>		Neutral	Surface water is conveyed relatively quickly, reducing the risk of warming.		
<ul style="list-style-type: none"> <li>• Harmful Levels of Pathogens</li> </ul>		Slight to Moderate Worsening	Where pathogens are transported by sediments		
<ul style="list-style-type: none"> <li>• Harmful Levels of Petroleum</li> </ul>		Slight to Moderate Worsening	Because of increased surface water runoff carrying petroleum		
<b>AIR – QUALITY</b>					
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		Not Applicable	Not applicable.		
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>• CO<sub>2</sub> (Carbon Dioxide)</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>• N<sub>2</sub>O (Nitrous Oxide)</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>• CH<sub>4</sub> (Methane)</li> </ul>		Not Applicable	Not applicable.		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Not Applicable	Not applicable.		
Objectionable Odors		Neutral	Planning and management must preclude transport of animal by-products in outflow.		
Reduced Visibility		Not Applicable	Not applicable.		
Undesirable Air Movement		Not Applicable	Not applicable.		
Adverse Air Temperature		Not Applicable	Not applicable.		
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited		Not Applicable	Not applicable.		
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor		Slight to Moderate Improvement	Improved drainage enhances growing environment for non-hydrophytes. If hydrophytes are desired, drainage will increase the problem.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Main or Lateral 608</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Slight to Substantial Improvement	Drainage improves forage quality and palatability.			
Wildfire Hazard	Not Applicable	Not applicable.			
ANIMALS - FISH AND WILDLIFE					
Inadequate Food	Neutral	Increase or decrease in food supply depends on plant species on the site and degree of drainage.			
Inadequate Cover/Shelter	Neutral	Increase or decrease in cover/shelter depends on plant species on the site due to soil moisture/plant relationships.			
Inadequate Water	Neutral	The action will increase available wet habitat for some species and decrease it for others.			
Inadequate Space	Not Applicable	Not applicable.			
Habitat Fragmentation	Not Applicable	Not applicable.			
Imbalance Among and Within Populations	Slight Worsening	May restrict animal movement.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	When threatened or endangered species are present, protection and recovery are addressed in the planning process.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	When threatened or endangered species are present, protection and recovery are addressed in the planning process.			
ANIMALS - DOMESTIC					
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	Quantity and quality of forage species will be improved if drainage is installed to enhance their production.			
Inadequate Shelter	Not Applicable	Not applicable.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
PRACTICE: Surface Drainage, Main or Lateral 608		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use		Not applicable.		Not applicable.	
Land – Land in Production		Not applicable.		Negligible to slight increase.	
Capital – Change in Equipment		0		Slight to moderate.	
Capital - Total Investment Cost		0		Slight to moderate increase.	
Capital – Annual Cost		0		Situational.	
Capital – Credit and Farm Program Eligibility		0		Slight to moderate increase	
Labor - Labor		Situational. Slight to moderate increase, depending on volume of treatment and equipment used.		Negligible	
Labor – Change in Management Level		0		Not applicable.	
Risk - Yield		Not applicable.		Slight Decrease	
Risk - Flexibility		Negligible to slight decrease due to environmental and manure-handling benefits.		Not applicable.	
Risk - Timing		Not applicable.		Slight Increase	
Risk – Cash Flow		Slight increase due to implementation cost.		Slight to Moderate Increase	
Profitability – Change in Profitability		Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.		0	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		0		0	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		0		0	
Underutilization of Non-Fossil Energy Resources		0		0	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Field Ditch 607</b>	Baseline Setting:				
	Appropriate Land Use(s): Crop, Hay, Pasture				
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Slight Worsening	Improving drainage may increase surface soil drying.			
Ephemeral Gully	Slight to Moderate Improvement	Reducing soil profile saturation increases infiltration by improving drainage and therefore decreases water runoff.			
Classic Gully	Slight Worsening	Because of higher concentration and velocities from water collection.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Slight to Moderate Worsening	Drainage increases organic matter oxidation.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight Improvement	Soils have less risk of compaction when they are dryer.			
Subsidence	Slight Worsening	Drainage increases organic matter oxidation.			
Contaminants:					
• Salts and other Chemicals	Slight to Moderate Improvement	Soluble pollutants will decrease because of increased water removal.			
• Animal Waste and other Organics - N	Slight Improvement	Drainage removes N with water and aerated soils increased N uptake by most plants.			
• Animal Waste and other Organics - P	Slight Improvement	Drainage removes P with water and aerated soils increased P uptake by most plants.			
• Animal Waste and other Organics - K	Slight Improvement	Drainage removes K with water and aerated soils increased K uptake by most plants.			
• Commercial Fertilizer - N	Slight Improvement	Drainage removes N with water and aerated soils increased N uptake by most plants.			
• Commercial Fertilizer – P	Slight Improvement	Drainage removes P with water and aerated soils increased P uptake by most plants.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Field Ditch 607</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Commercial Fertilizer – K	Slight Improvement	Drainage removes K with water and aerated soils increased K uptake by most plants.			
• Residual Pesticides	Slight Improvement	Increased infiltration and aerobic conditions may lead to increased pesticide degradation in the root zone.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Because of improved drainage.			
Excessive Subsurface Water	Slight to Substantial Improvement	Control of water table - subsurface water is collected and conveyed to a proper outlet.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Moderate Worsening	Water from drains increase pressure on outlets.			
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.			
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Worsening	Earthen ditches transport sediment that normally deposits to some degree.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Worsening	Because of sediment transport in the drainage system.			
Aquifer Overdraft	Slight Worsening	Drains intercept water that may recharge aquifers.			
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Water collected by drains can enhance flows in water courses.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Improvement	The action decreases deep percolation and promotes aerobic degradation of pesticide residues.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Field Ditch 607</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Excessive Nutrients and Organics	Slight Improvement	The action facilitates the removal of surface runoff, thus reducing percolation of water and nutrients.			
• Excessive Salinity	Slight Improvement	The action removes surface flows before infiltration and intercepts subsurface flows.			
• Harmful Levels of Heavy Metals	Slight Improvement	The action removes surface flows before infiltration and intercepts subsurface flows.			
• Harmful Levels of Pathogens	Slight Improvement	The action removes surface flows before infiltration and intercepts subsurface flows.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Neutral	If the drain is designed to collect surface runoff, pesticides in surface water may be increased. If the purpose is to collect subsurface water, surface runoff will be decreased and aerobic degradation of pesticide residues will increase.			
• Excessive Nutrients and Organics	Slight to Moderate Worsening	Increasing the rate of runoff from a field can increase the amount of soluble pollutants delivered to surface water.			
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Worsening	Increased drainage and runoff will carry sediments.			
• Excessive Salinity	Slight to Moderate Worsening	The action removes both surface and subsurface flows and soluble contaminants from site.			
• Harmful Levels of Heavy Metals	Slight to Moderate Worsening	Heavy metals are carried with sediment to surface waters.			
• Harmful Temperatures	Neutral	Surface water is conveyed relatively quickly, reducing the risk of warming.			
• Harmful Levels of Pathogens	Slight to Moderate Worsening	Where pathogens are transported by sediments			
• Harmful Levels of Petroleum	Slight to Moderate Worsening	Because of increased surface water runoff carrying petroleum			
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	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Field Ditch 607</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)		Not Applicable		Not applicable.	
• N <sub>2</sub> O (Nitrous Oxide)		Not Applicable		Not applicable.	
• CH <sub>4</sub> (Methane)		Not Applicable		Not applicable.	
Ammonia (NH <sub>3</sub> )		Not Applicable		Not applicable.	
Chemical Drift		Not Applicable		Not applicable.	
Objectionable Odors		Neutral		Planning and management must preclude transport of animal by-products in outflow.	
Reduced Visibility		Not Applicable		Not applicable.	
Undesirable Air Movement		Not Applicable		Not applicable.	
Adverse Air Temperature		Not Applicable		Not applicable.	
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited		Not Applicable		Not applicable.	
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor		Slight to Moderate Improvement		Improved drainage enhances growing environment for non-hydrophytes. If hydrophytes are desired, drainage will increase the problem.	
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act		Not Applicable		Not applicable.	
• Declining Species, Species of Concern		Not Applicable		Not applicable.	
Noxious and Invasive Plants		Not Applicable		Not applicable.	
Forage Quality and Palatability		Slight to Substantial Improvement		Drainage improves forage quality and palatability.	
Wildfire Hazard		Not Applicable		Not applicable.	
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Neutral		Increase or decrease in food supply depends on plant species on the site and degree of drainage.	
Inadequate Cover/Shelter		Neutral		Increase or decrease in cover/shelter depends on plant species on the site due to soil moisture/plant relationships.	
Inadequate Water		Neutral		The action will increase available wet habitat for some species and decrease it for others.	
Inadequate Space		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Field Ditch 607</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Habitat Fragmentation		Not Applicable		Not applicable.	
Imbalance Among and Within Populations		Not Applicable		Not applicable.	
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.	
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage		Moderate to Substantial Improvement		Quantity and quality of forage species will be improved if drainage is installed to enhance their production.	
Inadequate Shelter		Not Applicable		Not applicable.	
Inadequate Stock Water		Not Applicable		Not applicable.	
Stress and Mortality		Not Applicable		Not applicable.	
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use		Not applicable.		Not applicable.	
Land – Land in Production		Not applicable.		Negligible to slight increase.	
Capital – Change in Equipment		0		Slight to moderate.	
Capital - Total Investment Cost		0		Slight to moderate increase.	
Capital – Annual Cost		0		Situational.	
Capital – Credit and Farm Program Eligibility		0		Slight to moderate increase	
Labor - Labor		Situational. Slight to moderate increase, depending on volume of treatment and equipment used.		Negligible	
Labor – Change in Management Level		0		Not applicable.	
Risk - Yield		Not applicable.		Slight Decrease	
Risk - Flexibility		Negligible to slight decrease due to environmental and manure-handling benefits.		Not applicable.	
Risk - Timing		Not applicable.		Slight Increase	
Risk – Cash Flow		Slight increase due to implementation cost.		Slight to Moderate Increase	
Profitability – Change in Profitability		Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.		0	
<b>HUMAN - CULTURAL</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Surface Drainage, Field Ditch 607</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		0		0	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		0		0	
Underutilization of Non-Fossil Energy Resources		0		0	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Subsurface Drain 606</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Moderate to Substantial Improvement	Reducing soil profile saturation increases infiltration by improving drainage and therefore decreases water runoff.			
Wind	Slight Worsening	Improving drainage may increase surface soil drying.			
Ephemeral Gully	Moderate to Substantial Improvement	Reducing soil profile saturation increases infiltration by improving drainage and therefore decreases water runoff.			
Classic Gully	Slight Improvement	Interception water and reduction of seeps that can cause gully formation.			
Streambank	Slight Improvement	Interception water and reduction of seeps that can cause streambank instability.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Slight to Moderate Improvement	Removal of subsurface water which contributes to instability of soil mass.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Slight to Moderate Worsening	Reducing water table increases oxidation of organic matter			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight to Moderate Improvement	Soils have less risk of compaction when they are dryer.			
Subsidence	Slight to Moderate Worsening	Lowering of water table allows the oxidation of organic matter.			
Contaminants:					
• Salts and other Chemicals	Slight to Substantial Improvement	The leached salts may be removed from the soil through drainage.			
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Leached N from animal waste may be removed from the soil through drainage.			
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Leached P from animal waste may be removed from the soil through drainage.			
• Animal Waste and other Organics - K	Slight Improvement	Leached K from animal waste may be removed from the soil through drainage.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Subsurface Drain 606</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
• Commercial Fertilizer - N	Slight to Moderate Improvement	Leached N from animal waste may be removed from the soil through drainage.			
• Commercial Fertilizer – P	Slight to Moderate Improvement	Leached P from animal waste may be removed from the soil through drainage.			
• Commercial Fertilizer – K	Slight Improvement	Leached K from animal waste may be removed from the soil through drainage.			
• Residual Pesticides	Slight Improvement	Increased infiltration and aerobic conditions may lead to increased pesticide degradation in the root zone.			
Damage from Sediment Deposition	Not Applicable	Not applicable.			
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Moderate to Substantial Improvement	Interception of excessive seepage through drainage.			
Excessive Runoff, Flooding, or Ponding	Moderate to Substantial Improvement	Removal of excessive surface water through drainage will reduce flooding and ponding.			
Excessive Subsurface Water	Moderate to Substantial Improvement	Control of water table - subsurface water is collected and conveyed to a proper outlet.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight to Moderate Worsening	Water from drains increase pressure on outlets.			
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.			
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Reduces runoff containing sediment.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Reduces runoff containing sediment.			
Aquifer Overdraft	Slight Worsening	Drains intercept water that may recharge aquifers.			
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Water collected by drains can enhance flows in water courses.			
<b>WATER – QUALITY</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Subsurface Drain 606</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
In Groundwater:					
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action decreases deep percolation and promotes aerobic degradation of pesticide residues.			
• Excessive Nutrients and Organics	Slight Improvement	The action collects and removes water and soluble nutrients from the site.			
• Excessive Salinity	Slight to Moderate Improvement	Leaching of saline and sodic soils will be intercepted before salinity reaches groundwater.			
• Harmful Levels of Heavy Metals	Slight Improvement	Heavy metals leached from the soil will be intercepted before reaching groundwater.			
• Harmful Levels of Pathogens	Slight Improvement	Pathogens leached from the soil will be intercepted before reaching groundwater.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action decreases runoff and promotes aerobic degradation of pesticide residues. Avoid direct outlet to surface water.			
• Excessive Nutrients and Organics	Slight to Moderate Worsening	Collecting and releasing nutrient laden water removed from fields to receiving surface waters.			
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Runoff and resulting erosion will be decreased			
• Excessive Salinity	Slight to Moderate Worsening	Percolating water picks up salts that are then collected in tile lines and outletted to surface waters.			
• Harmful Levels of Heavy Metals	Neutral	The action reduces runoff and increases infiltration. Percolating water picks up metals that are then collected in tile lines.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Neutral	Limited decrease due to decreased runoff, but any infiltrating water with pathogens will be concentrated in tile lines			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
<b>AIR – QUALITY</b>					
Particulate Matter less than 10 Micrometers in Diameter (PM 10)		Not Applicable		Not applicable.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Subsurface Drain 606</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Not Applicable	Not applicable.			
Excessive Ozone	Not Applicable	Not applicable.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Not Applicable	Not applicable.			
Undesirable Air Movement	Not Applicable	Not applicable.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Not Applicable	Not applicable.			
<b>PLANTS - CONDITION</b>					
Productivity, Health, and Vigor	Slight to Moderate Improvement	Improved drainage enhances growing environment for non-hydrophytes. If hydrophytes are desired, drainage will increase the problem.			
Threatened or Endangered Plant Species:					
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.			
• Declining Species, Species of Concern	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Not Applicable	Not applicable.			
Forage Quality and Palatability	Moderate to Substantial Improvement	Drainage improves forage quality and palatability.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Neutral	Increase or decrease in food supply depends on plant species on the site due to soil moisture/plant relationships.			
Inadequate Cover/Shelter	Neutral	Increase or decrease in cover/shelter depends on plant species on the site due to soil moisture/plant relationships.			
Inadequate Water	Neutral	The action will increase available wet habitat for some species and decrease it for others.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Subsurface Drain 606</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Inadequate Space	Not Applicable		Not applicable.		
Habitat Fragmentation	Not Applicable		Not applicable.		
Imbalance Among and Within Populations	Not Applicable		Not applicable.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Slight to Substantial Improvement		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Slight to Substantial Improvement		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement		Quantity and quality of forage species will be improved if drainage is installed to enhance their production.		
Inadequate Shelter	Not Applicable		Not applicable.		
Inadequate Stock Water	Not Applicable		Not applicable.		
Stress and Mortality	Not Applicable		Not applicable.		
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	Not applicable.		Not applicable.		
Land – Land in Production	Not applicable.		Negligible to slight increase.		
Capital – Change in Equipment	0		Slight to moderate.		
Capital - Total Investment Cost	0		Slight to moderate increase.		
Capital – Annual Cost	0		Situational.		
Capital – Credit and Farm Program Eligibility	0		Slight to moderate increase		
Labor - Labor	Situational. Slight to moderate increase, depending on volume of treatment and equipment used.		Negligible		
Labor – Change in Management Level	0		Not applicable.		
Risk - Yield	Not applicable.		Slight Decrease		
Risk - Flexibility	Negligible to slight decrease due to environmental and manure-handling benefits.		Not applicable.		
Risk - Timing	Not applicable.		Slight Increase		
Risk – Cash Flow	Slight increase due to implementation cost.		Slight to Moderate Increase		
Profitability – Change in Profitability	Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.		0		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Subsurface Drain 606</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		0		0	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		0		0	
Underutilization of Non-Fossil Energy Resources		0		0	

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Herbaceous Wind Barriers 603</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Headquarters, Urban, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>SOIL - EROSION</b>					
Sheet and Rill	Slight Worsening	Runoff from snowmelt may increase the potential for sheet and rill erosion.			
Wind	Moderate to Substantial Improvement	Stiff stemmed herbaceous vegetation established across the prevailing wind erosion direction reduces soil erosion from wind by trapping saltating soil particles and sheltering an area down wind.			
Ephemeral Gully	Slight Worsening	Runoff from snowmelt may increase the potential for ephemeral gully erosion			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight to Moderate Improvement	Organic matter loss by wind erosion is reduced.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Neutral	Establishment of barriers has no more effect on compaction than normal farming operations.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Not Applicable	Not applicable.			
• 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	Not Applicable	Not applicable.			
Damage from Sediment Deposition	Slight to Moderate Improvement	The action reduces soil erosion from wind and the resulting soil deposition.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Herbaceous Wind Barriers 603</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Headquarters, Urban, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Not Applicable	Not applicable.			
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.			
Excessive Subsurface Water	Not Applicable	Not applicable.			
Drifted Snow	Slight to Moderate Improvement	Tall herbaceous vegetation will trap snow upwind of structures and animal concentration areas.			
Inadequate Outlets	Not Applicable	Not applicable.			
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.			
Inefficient Water use on Non-Irrigated Land	Moderate Improvement	Trapped snow can provide additional plant available moisture.			
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Reduced wind blown sediment.			
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Reduced wind blown sediment.			
Aquifer Overdraft	Not Applicable	Not applicable.			
Insufficient Flows in Water Courses	Not Applicable	Not applicable.			
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides	Not Applicable	Not applicable.			
• Excessive Nutrients and Organics	Neutral	The action, when designed to manage snow, could increase the potential for nutrients to leach below the crop root zone.			
• Excessive Salinity	Not Applicable	Not applicable.			
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.			
• Harmful Levels of Pathogens	Not Applicable	Not applicable.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight Improvement	The action reduces soil erosion from wind. Also, the barriers may attract beneficial insects or trap insect pests which reduce the need for pesticide applications.			
• Excessive Nutrients and Organics	Slight Improvement	The action reduces soil erosion from wind and the potential transport of soil-adsorbed nutrients to surface water.			
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Vegetation reduces soil erosion from wind and the resulting offsite sediment deposits			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Herbaceous Wind Barriers 603</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Headquarters, Urban, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Excessive Salinity	Slight Improvement	The action can reduce the transport of wind-borne saline particles to surface water bodies.			
• Harmful Levels of Heavy Metals	Slight Improvement	Reduced wind erosion reduces transport of metals attached to dust.			
• Harmful Temperatures	Not Applicable	Not applicable.			
• 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)	Slight to Substantial Improvement	Properly spaced barriers can effectively reduce wind erosion and particulate emissions.			
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Properly spaced barriers can effectively reduce wind erosion and particulate emissions.			
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.			
Excessive Greenhouse Gas:					
• CO <sub>2</sub> (Carbon Dioxide)	Slight Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.			
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.			
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.			
Chemical Drift	Slight to Moderate Improvement	Tall vegetation will intercept chemical drift			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Slight to Moderate Improvement	May remove dust or airborne particles			
Undesirable Air Movement	Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.			
Adverse Air Temperature	Not Applicable	Not applicable.			
PLANTS – SUITABILITY					
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.			
PLANTS - CONDITION					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Herbaceous Wind Barriers 603</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Headquarters, Urban, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Productivity, Health, and Vigor	Slight to Substantial Improvement	Plants selected will be maintained at optimal growing conditions for the intended purpose.			
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.			
Noxious and Invasive Plants	Moderate to Substantial Improvement	Vegetation is installed and managed to control undesired species.			
Forage Quality and Palatability	Slight to Moderate Improvement	Forage quality and palatability is improved in the protected area.			
Wildfire Hazard	Not Applicable	Not applicable.			
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food for wildlife.			
Inadequate Cover/Shelter	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more cover for wildlife.			
Inadequate Water	Not Applicable	Not applicable.			
Inadequate Space	Slight to Moderate Improvement	Herbaceous wind barriers can provide additional habitat/space.			
Habitat Fragmentation	Slight to Moderate Improvement	Herbaceous wind barriers provide habitat connectivity.			
Imbalance Among and Within Populations	Not Applicable	Not applicable.			
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.			
<b>ANIMALS – DOMESTIC</b>					
Inadequate Quantities and Quality of Feed and Forage	Slight Improvement	There may be some use of the planting for feed and forage by livestock.			
Inadequate Shelter	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Herbaceous Wind Barriers 603</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop, Headquarters, Urban, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	Not applicable.	Not applicable.			
Land – Land in Production	Not applicable.	Negligible to slight increase.			
Capital – Change in Equipment	0	Slight to moderate.			
Capital - Total Investment Cost	0	Slight to moderate increase.			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate increase			
Labor - Labor	Situational. Slight to moderate increase, depending on volume of treatment and equipment used.	Negligible			
Labor – Change in Management Level	0	Not applicable.			
Risk - Yield	Not applicable.	Slight Decrease			
Risk - Flexibility	Negligible to slight decrease due to environmental and manure-handling benefits.	Not applicable.			
Risk - Timing	Not applicable.	Slight Increase			
Risk – Cash Flow	Slight increase due to implementation cost.	Slight to Moderate Increase			
Profitability – Change in Profitability	Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	0	0			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	0	0			
Underutilization of Non-Fossil Energy Resources	0	0			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<b>SOIL - EROSION</b>					
Sheet and Rill	Moderate to Substantial Improvement	Stiff-stemmed vegetation planted along the contour or across areas of concentrated flow slows runoff, effectively reducing slope length and increasing infiltration .			
Wind	Slight Improvement	Stiff-stemmed vegetation effectively reduces the unsheltered distance when oriented across the prevailing wind erosion direction.			
Ephemeral Gully	Substantial Improvement	Stiff-stemmed vegetation planted along the contour or across areas of concentrated flow slows runoff, effectively reducing slope length and increasing infiltration .			
Classic Gully	Slight to Moderate Improvement	Vegetation planted across slopes reduces runoff and contributes to gully stabilization.			
Streambank	Slight Improvement	Vegetation planted across slopes reduces runoff and contributes to streambank stabilization.			
Shoreline	Slight Improvement	Vegetation planted across slopes reduces runoff and contributes to streambank stabilization.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Neutral	Stiff-stemmed vegetation strategically located on the slope may divert water away from areas sensitive to mass movement. Increased evapotranspiration may reduce soil saturation during the growing season. Infiltration will increase.			
Road, Roadsides, and Construction Sites	Slight to Moderate Improvement	Vegetation and surface litter reduces erosive water energy.			
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Neutral	Buildup of eroded topsoil above vegetative barrier and growth of permanent cover will increase or maintain organic matter above the barrier but decrease it below the barrier.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight to Moderate Worsening	Root penetration and organic matter helps restore soil structure in the immediate vicinity of the vegetative barrier. Soils remain wet longer Immediately above the vegetative barrier and may lead to more potential compaction due to vehicular traffic.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
<ul style="list-style-type: none"> <li>Salts and other Chemicals</li> </ul>	Slight to Moderate Worsening	The action can over time collect or redistribute salts within a field due to seepage, if present.			
<ul style="list-style-type: none"> <li>Animal Waste and other Organics - N</li> </ul>	Slight to Moderate Worsening	Growing vegetation will take up N from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate N.			
<ul style="list-style-type: none"> <li>Animal Waste and other Organics - P</li> </ul>	Slight to Moderate Worsening	Growing vegetation will take up P from organics and remove some excess P from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate P.			
<ul style="list-style-type: none"> <li>Animal Waste and other Organics - K</li> </ul>	Slight to Moderate Worsening	Growing vegetation will take up K from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate K.			
<ul style="list-style-type: none"> <li>Commercial Fertilizer - N</li> </ul>	Slight to Moderate Worsening	Growing vegetation will take up N from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate N.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
• Commercial Fertilizer – P	Slight to Moderate Worsening	Growing vegetation will take up P from organics and remove some excess P from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate P.			
• Commercial Fertilizer – K	Slight to Moderate Worsening	Growing vegetation will take up K from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate K.			
• Residual Pesticides	Slight to Moderate Worsening	Buildup of sediment behind the practice may accumulate contaminants.			
Damage from Sediment Deposition	Slight to Moderate Worsening	Vegetation and surface litter traps sediment.			
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.			
Excessive Seepage	Neutral	Where soils have restrictive layers, increased infiltration may create seeps.			
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Worsening	Vegetation will slow runoff and create ponding.			
Excessive Subsurface Water	Slight to Moderate Improvement	Increased vegetation will cause ponding and infiltration increasing subsurface water.			
Drifted Snow	Not Applicable	Not applicable.			
Inadequate Outlets	Slight to Moderate Improvement	Vegetation slows and retains runoff; the need for larger outlets is reduced.			
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Vegetation slows runoff and improves infiltration increasing soil water recharge.			
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Vegetative barriers slow runoff and can pond water, increasing water infiltration.			
Reduced Capacity of Conveyances by Sediment Deposition	Substantial Improvement	Sediment trapped preventing it from being deposited elsewhere.			
Reduced Storage of Water Bodies by Sediment Accumulation	Substantial Improvement	Sediment trapped preventing it from being deposited elsewhere.			
Aquifer Overdraft	Slight Improvement	Increased infiltration increases recharge, reducing overdraft.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.			
<b>WATER – QUALITY</b>					
In Groundwater:					
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.			
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration which may provide transport for nutrients.			
• Excessive Salinity	Slight Worsening	The action can increase infiltration which may move soluble salts to groundwater.			
• Harmful Levels of Heavy Metals	Slight Worsening	The action encourages increased infiltration, which may leach heavy metals.			
• Harmful Levels of Pathogens	Neutral	Increased microbial activity in vegetative barrier increases the rate of pathogen degradation. Ponding slows the rate of pathogen movement allowing time for mortality. Infiltration can increase.			
• Harmful Levels of Petroleum	Not Applicable	Not applicable.			
In Surface Water:					
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action reduces runoff and erosion and traps adsorbed pesticides.			
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Solid organics and nutrients attached to sediment may be filtered out. Soluble organics infiltrate into the soil and may be taken up by plants and soil organisms.			
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Vegetation slows runoff, filters water, and increases infiltration.			
• Excessive Salinity	Slight Improvement	The action increases infiltration and reduces runoff, which may reduce salt movement off-site..			
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Runoff containing heavy metals is slowed, increasing infiltration into the soil where metals are often tied up. Some plants may take up heavy metals.			
• Harmful Temperatures	Not Applicable	Not applicable.			

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Slight to Moderate Improvement	Vegetative barriers capture sediment-bound pathogens and retard pathogen movement, allowing more time for mortality to occur before pathogens can reach water bodies.			
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Slight Improvement	Vegetative barrier slows runoff and increases infiltration of petroleum contaminants. Increased microbial activity in the vegetative barrier breaks down petroleum contaminants.			
<b>AIR – QUALITY</b>					
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 surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.			
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>	Slight Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.			
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>	Not Applicable	Not applicable.			
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>	Not Applicable	Not applicable.			
Ammonia (NH <sub>3</sub> )	Slight to Moderate Improvement	Interception of NH <sub>3</sub> by plants			
Chemical Drift	Not Applicable	Not applicable.			
Objectionable Odors	Not Applicable	Not applicable.			
Reduced Visibility	Slight Improvement	Reduction in wind erosion potential and fugitive dust			
Undesirable Air Movement	Slight Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.			
Adverse Air Temperature	Not Applicable	Not applicable.			
<b>PLANTS – SUITABILITY</b>					
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.			
<b>PLANTS - CONDITION</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
Productivity, Health, and Vigor	Slight to Substantial Improvement		Reduced erosion and improved water management creates site conditions favorable to plant health and productivity.		
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable		Not applicable.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable		Not applicable.		
Noxious and Invasive Plants	Moderate to Substantial Improvement		Vegetation is installed and managed to control undesired species.		
Forage Quality and Palatability	Not Applicable		Not applicable.		
Wildfire Hazard	Not Applicable		Not applicable.		
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food	Slight Improvement		Food species can be included in the barrier.		
Inadequate Cover/Shelter	Slight Improvement		The barrier provides cover for some species.		
Inadequate Water	Slight Improvement		The available water meeting the quality required by target species is improved by the filtering functions of the barriers.		
Inadequate Space	Slight Improvement		Barriers provide some additional space.		
Habitat Fragmentation	Slight Improvement		Barriers can connect adjacent habitats to a limited degree.		
Imbalance Among and Within Populations	Slight Improvement		By providing corridors for certain wildlife, vegetative barriers may enhance selected species.		
Threatened and Endangered Fish and Wildlife Species:					
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral		Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<b>ANIMALS – DOMESTIC</b>					

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Vegetative Barrier 601</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>	<b>RATIONALE</b>			
Inadequate Quantities and Quality of Feed and Forage	Slight Improvement	There may be some use of the planting for feed and forage by livestock.			
Inadequate Shelter	Slight Improvement	Tall herbaceous vegetation may provide limited shelter.			
Inadequate Stock Water	Not Applicable	Not applicable.			
Stress and Mortality	Not Applicable	Not applicable.			
<b>HUMAN – ECONOMICS</b>					
Land - Change in Land Use	Not applicable.	Not applicable.			
Land – Land in Production	Not applicable.	Negligible to slight increase.			
Capital – Change in Equipment	0	Slight to moderate.			
Capital - Total Investment Cost	0	Slight to moderate increase.			
Capital – Annual Cost	0	Situational.			
Capital – Credit and Farm Program Eligibility	0	Slight to moderate increase			
Labor - Labor	Situational. Slight to moderate increase, depending on volume of treatment and equipment used.	Negligible			
Labor – Change in Management Level	0	Not applicable.			
Risk - Yield	Not applicable.	Slight Decrease			
Risk - Flexibility	Negligible to slight decrease due to environmental and manure-handling benefits.	Not applicable.			
Risk - Timing	Not applicable.	Slight Increase			
Risk – Cash Flow	Slight increase due to implementation cost.	Slight to Moderate Increase			
Profitability – Change in Profitability	Negligible to moderate increase due to potential for lower energy costs related to ventilation requirements and sale of agricultural byproducts.	0			
<b>HUMAN - CULTURAL</b>					
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	0	0			
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources	0	0			
Underutilization of Non-Fossil Energy Resources	0	0			

## Human Considerations Explanation

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

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Forest Stand Improvement 666</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>SOIL - EROSION</b>					
Sheet and Rill		Slight to Moderate Worsening		Removal of vegetation and ground disturbance can increase erosion.	
Wind		Neutral		Residual vegetation and debris maintain non-erosive conditions.	
Ephemeral Gully		Slight to Moderate Worsening		Removal of vegetation and ground disturbance can increase erosion.	
Classic Gully		Slight to Substantial Improvement		Removal of overstory canopy increases amounts and vigor of erosion-controlling ground cover.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Slight to Moderate Worsening		Removal of some or all woody vegetation diminishes root systems which bind soil layers to resist gravity-induced movement.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
<b>SOIL – CONDITION</b>					
Organic Matter Depletion		Slight to Moderate Worsening		Removal of woody vegetation from a site removes organic material that could have become soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight to Moderate Worsening		Equipment used to harvest or remove forest products can compact forest soils.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
<ul style="list-style-type: none"> <li>• Salts and other Chemicals</li> </ul>		Neutral		Forest products that have assimilated salts/chemicals are removed or harvested from the site.	
<ul style="list-style-type: none"> <li>• Animal Waste and other Organics                             <ul style="list-style-type: none"> <li>- N</li> </ul> </li> </ul>		Slight to Moderate Improvement		Forest products that have assimilated N from waste/organic materials are removed or harvested from the site, with higher uptake of N by remaining trees.	

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Forest Stand Improvement 666</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• Animal Waste and other Organics - P		Slight to Moderate Improvement	Forest products that have assimilated P from waste/organic materials are removed or harvested from the site, with higher uptake of P by remaining trees.		
• Animal Waste and other Organics - K		Slight to Moderate Improvement	Forest products that have assimilated K from waste/organic materials are removed or harvested from the site, with higher uptake of P by remaining trees.		
• Commercial Fertilizer - N		Slight to Moderate Improvement	Forest products that have assimilated N from waste/organic materials are removed or harvested from the site, with higher uptake of N by remaining trees.		
• Commercial Fertilizer - P		Slight to Moderate Improvement	Forest products that have assimilated P from waste/organic materials are removed or harvested from the site, with higher uptake of P by remaining trees.		
• Commercial Fertilizer - K		Slight to Moderate Improvement	Forest products that have assimilated K from waste/organic materials are removed or harvested from the site, with higher uptake of P by remaining trees.		
• Residual Pesticides		Not Applicable	Not applicable.		
Damage from Sediment Deposition		Neutral	Removal of woody material in flood plains could increase scour and remove sediment deposits.		
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable	Not applicable.		
Excessive Seepage		Slight to Moderate Worsening	Fewer tall trees results in less water consumed.		
Excessive Runoff, Flooding, or Ponding		Slight to Substantial Improvement	Removal of woody materials from flood or ponding-prone areas allows water to flow through or out of an area decreasing the duration of inundation.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Forest Stand Improvement 666</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
Excessive Subsurface Water		Slight to Moderate Worsening	Removal of deep rooted vegetation can raise the water table.		
Drifted Snow		Not Applicable	Not applicable.		
Inadequate Outlets		Slight Worsening	Fewer trees results in less water consumed therefore increasing runoff rates, requiring larger outlets.		
Inefficient Water use on Irrigated Land		Not Applicable	Not applicable.		
Inefficient Water use on Non-Irrigated Land		Slight to Substantial Improvement	Undesired vegetation is removed which reallocates water to remaining desired vegetation or provides additional water yield from the site.		
Reduced Capacity of Conveyances by Sediment Deposition		Slight Improvement	Removal of overstory canopy increases amounts and vigor of erosion-controlling ground cover.		
Reduced Storage of Water Bodies by Sediment Accumulation		Slight Improvement	Removal of overstory canopy increases amounts and vigor of erosion-controlling ground cover.		
Aquifer Overdraft		Slight Improvement	Removal of some or all deep-rooted vegetation consumes less water.		
Insufficient Flows in Water Courses		Slight to Substantial Improvement	Undesired vegetation is removed which provides additional water yield from the site.		
WATER – QUALITY					
In Groundwater:					
• Harmful Levels of Pesticides		Slight to Moderate Improvement	Managing for desirable plant health and vigor reduces the need for pesticide applications.		
• Excessive Nutrients and Organics		Slight to Substantial Improvement	Forest products that have assimilated nutrients/organics are removed or harvested from the site.		
• Excessive Salinity		Neutral	Forest products that are storing salts in their biomass may be removed or harvested from the site. Reduced stand density can increase infiltration and leaching of salts.		

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	WASHINGTON	FIELD OFFICE	ALL	DATE	9/2008
<b>PRACTICE: Forest Stand Improvement 666</b>		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
• Harmful Levels of Heavy Metals		Slight Improvement	Removal of overstory canopy increases vigor of ground cover that can increase heavy metal uptake and reduce the potential for leaching.		
• Harmful Levels of Pathogens		Slight Improvement	Removal of canopy/woody vegetation exposes the site and increases mortality of pathogens that would have otherwise entered ground water.		
• Harmful Levels of Petroleum		Not Applicable	Not applicable.		
In Surface Water:					
• Harmful Levels of Pesticides		Slight to Moderate Improvement	Managing for desirable plant health and vigor reduces the need for pesticide applications.		
• Excessive Nutrients and Organics		Slight to Substantial Improvement	Removal of overstory canopy increases amounts and vigor of ground cover that slows surface runoff and allows infiltration. Nutrients and organics are used by vegetation and soil biota.		
• Excessive Suspended Sediment and Turbidity		Neutral	Proper stocking rates of desired vegetation will provide minimal effect.		
• Excessive Salinity		Slight Improvement	Removal of overstory canopy can increase the amount and vigor of ground cover, slowing runoff and increasing infiltration.		
• Harmful Levels of Heavy Metals		Slight Improvement	Removal of overstory canopy increases vigor of ground cover that can increase heavy metal uptake and reduces runoff.		
• Harmful Temperatures		Slight Worsening	Removal of overstory canopy removes shade that moderates stream temperature.		
• Harmful Levels of Pathogens		Slight to Substantial Improvement	Removal of canopy/woody vegetation exposes the site and increases mortality of pathogens that would have otherwise entered surface water.		

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RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>		Slight Improvement	Removal of canopy/woody vegetation exposes the site and increases evaporation of petroleum that would have otherwise entered surface water.		
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 short-term increase in vehicle emissions and ozone precursors from site preparation equipment.		
Excessive Greenhouse Gas:					
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>		Moderate to Substantial Improvement	Health and vigor of remaining plants have increased utilization of CO <sub>2</sub> , thus sequestering carbon. Carbon may be stored indefinitely in wood products removed from the site.		
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>		Not Applicable	Not applicable.		
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>		Not Applicable	Not applicable.		
Ammonia (NH <sub>3</sub> )		Not Applicable	Not applicable.		
Chemical Drift		Slight Worsening	Reduction in canopy allows less opportunity for drift particle adsorption and increases wind speeds that transport particles.		
Objectionable Odors		Not Applicable	Not applicable.		
Reduced Visibility		Slight Worsening	Reduction in canopy allows less opportunity for particle adsorption and increases wind speeds that transport particles.		
Undesirable Air Movement		Slight Worsening	Reduction in canopy increases wind speeds.		
Adverse Air Temperature		Slight to Moderate Worsening	Removal of tall vegetation eliminates shade and increases temperatures.		
PLANTS – SUITABILITY					
Plants not Adapted or Suited		Moderate to Substantial Improvement	Plants selected for retention are more adapted and suited.		
PLANTS - CONDITION					
Productivity, Health, and Vigor		Substantial Improvement	Most productive, healthy and vigorous plants are retained.		

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<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Threatened or Endangered Plant Species:					
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral		When threatened or endangered plants are present, protection and recovery are addressed in the planning process.	
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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		Noxious and invasive plants are removed.	
Forage Quality and Palatability		Moderate to Substantial Improvement		Canopy is modified to favor forage quality and palatability.	
Wildfire Hazard		Substantial Improvement		Canopy and understory removal reduces fuel loadings, breaks up fuel continuity, removes "ladder" fuels.	
<b>ANIMALS - FISH AND WILDLIFE</b>					
Inadequate Food		Slight to Substantial Improvement		Canopies and understories are managed to enhance wood production and value and will provide food for wildlife and improved watershed conditions.	
Inadequate Cover/Shelter		Slight to Substantial Improvement		Trees are managed to enhance wood production and value and will provide cover/shelter for wildlife and improved water quantity and quality in watersheds for aquatic habitats.	
Inadequate Water		Not Applicable		Not applicable.	
Inadequate Space		Slight to Moderate Improvement		Canopies and understories are managed to enhance space requirements.	
Habitat Fragmentation		Slight to Moderate Improvement		Canopies and understories are managed to retain plant community connectivity.	
Imbalance Among and Within Populations		Slight to Substantial Improvement		Canopies and understories are managed to meet species requirements.	
Threatened and Endangered Fish and Wildlife Species:					

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RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS	RATIONALE		
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>		Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.		
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>		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	Canopy is modified to improve understory forage quantity and quality.		
Inadequate Shelter		Neutral	Remaining canopy and understory continue to provide shelter.		
Inadequate Stock Water		Not Applicable	Not applicable.		
Stress and Mortality		Slight to Substantial Improvement	Improved forage quality and quantity reduces animals illness or death from disease, parasites, insects, poisonous plants, or other factors.		
HUMAN – ECONOMICS					
Land - Change in Land Use		0	Slight to substantial.		
Land – Land in Production		0	Slight Increase.		
Capital – Change in Equipment		0	Not applicable.		
Capital - Total Investment Cost		Not applicable.	Negligible		
Capital – Annual Cost		0	Situational.		
Capital – Credit and Farm Program Eligibility		0	Slight to moderate.		
Labor - Labor		0	Slight to moderate increase.		
Labor – Change in Management Level		0	Slight to Moderate Decrease		
Risk - Yield		Slight to moderate decrease increase due to reduced salt levels.	Slight Increase		
Risk - Flexibility		Slight increase based on methods used to reduce concentrations.	Moderate to Substantial Increase		
Risk - Timing		Moderate to substantial increase, depending on level of concentration.	Slight Increase		
Risk – Cash Flow		Slight increase due to establishment costs.	Situational		
Profitability – Change in Profitability		Moderate decrease to slight increase.	0		
HUMAN - CULTURAL					

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<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		Not applicable.		No	
<b>HUMAN – ENERGY</b>					
Depletion of Fossil Fuel Resources		This practice requires substantial energy expenditures for control of water. Little change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perennial grass		No	
Underutilization of Non-Fossil Energy Resources		Not Applicable		No	

## Human Considerations Explanation

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