### Resource Concerns and Human Considerations (SWAPE+H) Definitions

<table>
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<tr>
<th>Resource Concerns</th>
<th>Definitions</th>
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<tr>
<td><strong>SOIL EROSION</strong></td>
<td>Detachment and transportation of soil particles caused by rainfall runoff/splash, irrigation runoff or wind that degrades soil quality.</td>
</tr>
<tr>
<td>Concentrated flow erosion</td>
<td>Untreated classic gullies may enlarge progressively by head cutting and/or lateral widening. Ephemeral gullies occur in the same flow area and are obscured by tillage. This includes concentrated flow erosion caused by runoff from rainfall, snowmelt or irrigation water.</td>
</tr>
<tr>
<td>Excessive bank erosion from stream shorelines/ water conveyance channels</td>
<td>Sediment from banks or shorelines threatens to degrade water quality and limit use for intended purposes.</td>
</tr>
<tr>
<td><strong>SOIL QUALITY DEGRADATION</strong></td>
<td>Loss of volume and depth of organic soils due to oxidation caused by above normal microbial activity resulting from excessive water drainage, soil disturbance, or extended drought. This excludes karst / sinkholes issues or depressions caused by underground activities.</td>
</tr>
<tr>
<td>Compaction</td>
<td>Management induced soil compaction resulting in decreased rooting depth that reduces plant growth, animal habitat and soil biological activity.</td>
</tr>
<tr>
<td>Organic matter depletion</td>
<td>Soil organic matter is not adequate to provide a suitable medium for plant growth, animal habitat, and soil biological activity.</td>
</tr>
<tr>
<td>Concentration of salts or other chemicals</td>
<td>Concentration of salts leading to salinity and/or sodicity reducing productivity or limiting desired use. Concentrations of other chemicals impacting productivity or limiting desired use.</td>
</tr>
<tr>
<td><strong>EXCESS / INSUFFICIENT WATER</strong></td>
<td>Surface water or poor subsurface drainage restricts land use and management goals. Wind-blown snow accumulates around and over surface structures, restricting access to humans and animals.</td>
</tr>
<tr>
<td>Ponding, flooding, seasonal high water table, seeps, and drifted snow</td>
<td>Natural precipitation is not optimally managed to support desired land use goals or ecological processes.</td>
</tr>
<tr>
<td>Inefficient moisture management</td>
<td>Irrigation water is not stored, delivered, scheduled and/or applied efficiently. Aquifer or surface water withdrawals threaten sustained availability of ground or surface water. Available irrigation water supplies have been reduced due to aquifer depletion, competition, regulation and/or drought.</td>
</tr>
<tr>
<td>Inefficient use of irrigation water</td>
<td>Irrigation water is not stored, delivered, scheduled and/or applied efficiently. Aquifer or surface water withdrawals threaten sustained availability of ground or surface water. Available irrigation water supplies have been reduced due to aquifer depletion, competition, regulation and/or drought.</td>
</tr>
<tr>
<td><strong>WATER QUALITY DEGRADATION</strong></td>
<td>Nutrients - organic and inorganic - are transported to receiving waters through surface runoff and/or leaching into shallow ground waters in quantities that degrade water quality and limit use for intended purposes.</td>
</tr>
<tr>
<td>Excess nutrients in surface and ground waters</td>
<td>Pest control chemicals are transported to receiving waters in quantities that degrade water quality and limit use for intended purposes.</td>
</tr>
<tr>
<td>Pesticides transported to surface and ground waters</td>
<td>Pathogens, pharmaceuticals, and other chemicals carried by land applied soil amendments are transported to receiving waters in quantities that degrade water quality and limit use for intended purposes. This resource concern also includes the off-site transport of leachate and runoff from compost or other organic materials of animal origin.</td>
</tr>
<tr>
<td>Excess pathogens and chemicals from manure, bio-solids or compost applications</td>
<td>Irrigation or rainfall runoff transports salts to receiving water in quantities that degrade water quality and limit use for intended purposes.</td>
</tr>
<tr>
<td>Excessive salts in surface and ground waters</td>
<td>Heavy metals, petroleum and other pollutants are transported to receiving water sources in quantities that degrade water quality and limit use for intended purposes.</td>
</tr>
<tr>
<td>Petroleum, heavy metals and other pollutants transported to receiving waters</td>
<td>Off-site transport of sediment from sheet, rill, gully, and wind erosion into surface water that threatens to degrade surface water quality and limit use for intended purposes.</td>
</tr>
<tr>
<td>Excessive sediment in surface waters</td>
<td>Surface water temperatures exceed State/Federal standards and/or limit use for intended purposes.</td>
</tr>
<tr>
<td>Elevated water temperature</td>
<td>Resource concern concerning the excessive amounts of sediment transported from sheet, rill, gully, and wind erosion to surface water that threatens to degrade surface water quality and limit use for intended purposes.</td>
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</table>
### Air Quality Impacts

| **Emissions of Particulate Matter (PM) and PM Precursors** | Direct emissions of particulate matter - dust and smoke -, as well as the formation of fine particulate matter in the atmosphere from other agricultural emissions - ammonia, NOx, and VOCs - cause multiple environmental impacts, such as: 1) The unintended movement of particulate matter - typically dust or smoke - results in safety or nuisance visibility restriction, 2) The unintended movement of particulate matter and/or chemical droplets results in unwanted deposits on surfaces, 3) Increased atmospheric concentrations of particulate matter can impact human and animal health and degrade regional visibility. |
| **Emissions of Greenhouse Gases (GHGs)** | Emissions increase atmospheric concentrations of greenhouse gases. |
| **Emissions of Ozone Precursors** | Emissions of ozone precursors - NOx and VOCs - resulting in formation of ground-level ozone that cause negative impacts to plants and animals. |
| **Objectionable odors** | Emissions of odorous compounds - VOCs, ammonia and odorous sulfur compounds - cause nuisance conditions |

### Degraded Plant Condition

| **Undesirable plant productivity and health** | Plant productivity, vigor and/or quality negatively impacts other resources or does not meet yield potential due to improper fertility, management or plants not adapted to site. This includes addressing pollinators and beneficial insects. |
| **Inadequate structure and composition** | Plant communities have insufficient composition and structure to achieve ecological functions and management objectives. This includes degradation of wetland habitat, targeted ecosystems, or unique plant communities. |
| **Excessive plant pest pressure** | Excessive pest damage to plants including that from undesired plants, diseases, animals, soil borne pathogens, and nematodes. This concern addresses invasive plant, animal and insect species. |
| **Wildfire hazard, excessive biomass accumulation** | The kinds and amounts of fuel loadings - plant biomass - create wildfire hazards that pose risks to human safety, structures, plants, animals, and air resources. |

### Inadequate Habitat for Fish and Wildlife

| **Habitat degradation** | Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. |

### Livestock Production Limitation

| **Inadequate feed and forage** | Feed and forage quality or quantity is inadequate for nutritional needs and production goals of the kinds and classes of livestock. |
| **Inadequate livestock shelter** | Livestock lack adequate shelter from climatic conditions to maintain health or production goals. |
| **Inadequate livestock water** | Quantity, quality and/or distribution of drinking water are insufficient to maintain health or production goals for the kinds and classes of livestock. |

### Inadequate Energy Use

<p>| <strong>Equipment and facilities</strong> | Inefficient use of energy in the Farm Operation increases dependence on non-renewable energy sources that can be addressed through improved energy efficiency and the use of on-farm renewable energy sources. As an example, this concern addresses inefficient energy use in pumping plants, on-farm processing, drying and storage. |
| <strong>Farming/ranching practices and field operations</strong> | Inefficient use of energy in field operations increases dependence on non-renewable energy sources that can be addressed through improved efficiency and the use of on-farm renewable energy sources. |</p>
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<th>Resource Concerns and Human Considerations (SWAPE+H) Definitions (cont.)</th>
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<tr>
<td><strong>SOCIAL</strong></td>
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<tr>
<td>Cultural Resources and/or Historic Properties Present or Suspected to be Present (Effect)</td>
<td>The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.</td>
</tr>
<tr>
<td>Public health and safety</td>
<td>The degree to which the risk to public health and safety is expected to increase or decrease.</td>
</tr>
<tr>
<td>Client/Community Characteristics</td>
<td>Differing social, ethnic, or religious backgrounds may also affect the adoption of conservation practices. Example: some groups may have land-use ethics or social customs that conflict with some NRCS conservation practices.</td>
</tr>
<tr>
<td><strong>ECONOMIC (Land, Labor, Capital, Management Level, Risk, Profitability)</strong></td>
<td></td>
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<tr>
<td>Land - Change in Land Use</td>
<td>The degree to which implementing the conservation practice is expected to cause a change from one land use to another.</td>
</tr>
<tr>
<td>Land - Change in Quantity of Land in Production</td>
<td>The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.</td>
</tr>
<tr>
<td>Capital - Change in Profitability</td>
<td>The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.</td>
</tr>
<tr>
<td>Capital - Change in Equipment</td>
<td>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.</td>
</tr>
<tr>
<td>Capital - Total Investment Cost</td>
<td>A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.</td>
</tr>
<tr>
<td>Capital - Change in Annual Costs</td>
<td>A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice. Example: The cost that a producer is expected to need to spend on an annual basis in order to perform the operations and maintenance (O&amp;M) necessary to meet the requirements of NRCS practice standards.</td>
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<tr>
<td>Capital - Credit &amp; Farm Program Eligibility</td>
<td>Included to make conservation planners aware of the potential availability of funding for implementing conservation practices, and that payment rates do not reflect a specific percentage of installation costs. Program participants should be advised to get bids before signing the contract.</td>
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<tr>
<td>Labor - Change in Labor</td>
<td>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. Including O&amp;M, maintenance/monitoring requirements.</td>
</tr>
<tr>
<td>Labor - Change in Management Level</td>
<td>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.</td>
</tr>
<tr>
<td>Risk - Cash Flow</td>
<td>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.</td>
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<tr>
<td>Risk - Yield</td>
<td>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.</td>
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<tr>
<td>Risk - Flexibility &amp; Timing</td>
<td>The degree to which risk, as related to the flexibility/timing 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.</td>
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