

# National Resource Concern List and Planning Criteria

## Natural Resources Conservation Service (NRCS)



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## INTRODUCTION

This document is the official list of NRCS resource concerns and planning criteria that are used to determine resource treatment levels using the conservation planning process.

A resource concern is the resource condition that does not meet minimum acceptable condition levels as established by resource planning criteria shown in the Field Office Technical Guide (FOTG), Section III. This implies an expected degradation of the soil, water, air, plant, animal, or energy resource base to the extent that the sustainability or intended use of the resource is impaired.

Planning criteria are a quantitative or qualitative statement of the minimum level of treatment required to address a given resource concern. Planning criteria are established for all NRCS resource concerns and may be assessed using specific tools or through client input and planner observation as listed in this document.

A nationally supported tool that automates and streamlines the resource concern assessment process (e.g., Conservation Assessment Ranking Tool or Conservation Desktop) can be used to document meeting FOTG planning criteria for conservation program planning purposes. Although an automated assessment tool may not directly rely on the assessment methodology identified in the planning criteria for resource assessment, it utilizes similar inputs to provide thresholds to document whether planning criteria have been achieved.

In this document, each NRCS resource concern is listed with a description of the concern and the objective in treating the concern. Tables sorted by land use are included for each resource concern, which list the assessment method (tool, observation, etc.) and resource concern planning criteria for that assessment. Each row of the table represents planning criteria that on their own will determine if the planning criteria have been met.

Example:

### **Resource Concern**

*Description of resource concern.*

**Objective:** *What is accomplished by treating the resource concern.*

**When land use is:** *NRCS Land use*

<b>Tools</b>	<b>Planning Criteria</b>
<i>Tool or observation that can be used to assess the resource concern</i>	<i>The expected result that would indicate there is no resource concern</i>
<i>Tool or observation that can be used to assess the resource concern</i>	<i>The expected result that would indicate there is no resource concern</i>

# **NRCS Resource Concern List and Planning Criteria**

## **Resource Concerns**

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### **Water**

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- **Pathogens and chemicals from manure, biosolids, or compost applications transported to ground water** (page 22)
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- **Petroleum, heavy metals, and other pollutants transported to ground water** (page 24)
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## Soil Resource Concerns

### **Sheet and rill erosion**

Detachment and transport of soil particles caused by rainfall, melting snow, or irrigation.

**Objective:** Reduce sheet and rill erosion.

**When land use is:** Crop

<b>Tools</b>	<b>Planning Criteria</b>
Current NRCS water erosion technology	Water erosion $\leq$ T

**When land use is:** Forest, Farmstead, Associated Agriculture Lands, or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Site is stable and without visible signs of active erosion.

**When land use is:** Range

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Soil Site Stability: slight to moderate or less
Rangeland Trend Worksheet	Positive trend
Rangeland Hydrology & Erosion Model (RHEM)	10% below T
Client input and/or planner observation	Sheet and rill erosion matches the ecological site description and/or the reference sheet for rangeland planning criteria.

Note: RHEM applicable for use only in designated area by certified RHEM users.

**When land use is:** Pasture

<b>Tools</b>	<b>Planning Criteria</b>
Current NRCS water erosion technology	Water erosion $<$ T
Pasture Condition Score Sheet (PCS)	Soil erosion, plant vigor and plant cover elements $\geq$ 4

## **Wind erosion**

Detachment and transport of soil particles caused by wind.

**Objective:** Reduce wind erosion.

**When land use is:** Crop

<b>Tools</b>	<b>Planning Criteria</b>
Current NRCS wind erosion technology AND Crop Tolerance to Blowing Soil Table (Title 190, National Agronomy Manual, Table 502–1)	Wind erosion $\leq$ T AND Plant damage from airborne soil particles is below crop damage tolerance levels.

**When land use is:** Forest, Farmstead, Developed Land, Associated Agriculture Lands, or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Site is stable and without visible signs of active erosion.

**When land use is:** Range

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Soil Site Stability: slight to moderate or less OR Wind-Scoured and/or Depositional Areas Indicator 6: slight to moderate or less.
Rangeland Trend Worksheet	Positive trend AND Condition of Soil Surface Indicator 5 is positive.
Client input and/or planner observation	Wind scours, blowouts, and/or depositional areas are few or infrequent as compared to the ecological site description reference sheet and pedestal formation is rare.

**When land use is:** Pasture

<b>Tools</b>	<b>Planning Criteria</b>
Current NRCS wind erosion technology	Wind erosion $\leq$ T
Pasture Condition Score Sheet (PCS)	Soil erosion, and plant cover element $\geq$ 3

### **Ephemeral gully erosion**

Soil erosion that results in small gullies in the same flow area that can be obscured by tillage.

**Objective:** Control the formation of ephemeral gullies.

**When land use is:** Crop

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	No ephemeral gullies observed.

### **Classic gully erosion**

Gullies created by runoff that can enlarge a channel progressively by head cutting and/or lateral widening.

**Objective:** Stabilize an actively eroding gully.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands, or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Site is stable and without visible signs of active erosion.

**When land use is:** Range

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Soil Site Stability: slight to moderate or less AND Hydrologic Function: slight to moderate or less OR Gully Indicator: slight to moderate or less.

### **Bank erosion from streams, shorelines, or water conveyance channels**

Erosion resulting from poor land management practices, storm events, wave action, rain, ice, wind, runoff, loss of vegetation, hydrologic dynamics, stream isolation from floodplains, and/or other disturbed/altered geomorphological processes.

**Objective:** Restore the stability of eroding banks.

**When land use is:** Crop, Forest, Range, Farmstead, Developed Land, Associated Agriculture Lands, or Other and streams, shoreline, or channels are adjacent to the planning area.

<b>Tools: Streambanks</b>	<b>Planning Criteria</b>
Stream Visual Assessment Protocol (SVAP2)	For streambanks - Bank Condition Score $\geq 5$
Client input and/or planner observation	Banks are stable

<b>Tools: Shorelines/Conveyance Channels</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Banks are stable

**When land use is:** Pasture

<b>Tools: Streambanks/Shorelines</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Streambank and shoreline element $\geq 4$
Client input and/or planner observation	Banks are stable

<b>Tools: Conveyance Channels</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Banks are stable

### **Subsidence**

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 and issues, or depressions caused by underground activities. This resource concern is only applicable when the soil is a histosol.

**Objective:** Reduce potential for subsidence to occur and treat existing subsidence.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, or Associated Ag Land

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	No observed subsidence of a histosol soil AND current land use, activities and management on histosol soils are not increasing the oxidation of organic matter.

### **Compaction**

Management-induced soil compaction at any level throughout the soil profile resulting in reduced plant productivity, biological activity, infiltration and aeration.

**Objective:** Reduce soil compaction.

**When land use is:** Crop, Forest, Associated Agriculture Lands or Other

<b>Tools</b>	<b>Planning Criteria</b>
State-modified In-Field Soil Health Assessment Worksheet based on the national template	No resource concern results
Client input and/or planner observation	No observed evidence of compaction, such as ponding, stunted plant growth, or root growth limitation.

<b>Tools</b>	<b>Planning Criteria</b>
Penetrometer	Rating less than 150 psi within top 6" depth and < 300 in 6–18" depth.

**When land use is: Range**

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Soil Site Stability: slight to moderate or less AND Hydrologic Function: slight to moderate or less OR Compaction Indicator 11 slight to moderate or less.
Client input and/or planner observation	No observed evidence of compaction, such as ponding, stunted plant growth, or root growth limitation.

**When land use is: Pasture**

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Soil compaction and soil regenerative features element $\geq 4$
Client input and/or planner observation	No observed evidence of compaction, such as ponding, stunted plant growth, or root growth limitation and slight or no resistance with wire flag inserted to 12".
Penetrometer	Rating less than 150 psi within top 6" depth and < 300 in 6–18" depth.

**Organic matter depletion**

Management-induced depletion of any or all pools of soil organic matter resulting in limited soil function and processes that support plant productivity, biological activity and water and nutrient cycling.

**Objective:** Maintain, increase and/or improve soil organic matter.

**When land use is: Crop or Associated Ag Land**

<b>Tools</b>	<b>Planning Criteria</b>
State-modified In-Field Soil Health Assessment Worksheet based on the national template	No resource concern results

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Soil Health Management System (SHMS) that addresses organic matter depletion is being followed.
Soil Test Results	Annual soil test shows organic matter, labile carbon, or labile bioavailable nitrogen trends at or above typical value for a high functioning soil for that specific soil map unit and in site conditions. OR Improved organic matter over multiple years of results.
Current NRCS water erosion technology	Soil Condition Index trending positive and the Soil Tillage Intensity Rating is <20

**When land use is: Forest**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	The ground is covered with plant litter in various stages of decomposition, herbaceous vegetation, and/or a biological crust that protects the soil.

**When land use is: Range**

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Soil Site Stability: slight to moderate or less AND Biotic Integrity: slight to moderate or less OR Soil Surface Loss and Degradation: slight to moderate or less.

**When land use is: Pasture**

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Live or dormant plant cover, plant residue as soil cover and plant diversity element $\geq 4$

**Concentration of salts or other chemicals**

Concentration of salts leading to salinity and/or sodicity reducing productivity or limiting desired use, or concentrations of other chemicals impacting productivity, populations of beneficial organisms or limiting desired use.

**Objective:** Reduce concentration of salts or other chemicals in the soil.

**Land Use (Salts):** Crop, Forest, Range, Pasture or Associated Ag Land

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	No salt concentration evidence observed OR Onsite effects have been mitigated.
Soil and irrigation water tests	Salinity does not exceed crop salt tolerance OR For rangeland and pasture, salt concentrations match what is expected for the ecological site description.
Electrical Conductivity (EC) meters and National Engineering Handbook Part 623 Chapter 2	Crop specific electrical conductivity (EC), pH, or sodium adsorption ratio (SAR) threshold values are not exceeded.

**Land Use (Chemical):** Crop, Range, Pasture, Farmstead, Developed Land or Associated Ag Land

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	No chemical concentration evidence observed OR Onsite effects have been mitigated.

**When land use is:** Developed Land (Urban Map Unit)

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	No chemical concentration evidence observed OR Onsite effects have been mitigated.
Hazmat Field Inspection Checklist	No restriction result
X-Ray Fluorescence Meter	Meets heavy metal thresholds

**Soil organism habitat loss or degradation**

Quantity, quality, diversity or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of beneficial soil organisms.

**Objective:** Improve habitat for beneficial soil organisms.

**When land use is:** Crop, Forest, Developed Land, or Associated Ag Land

<b>Tools</b>	<b>Planning Criteria</b>
State-modified In-Field Soil Health Assessment Worksheet based on the national template	No resource concern results

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Soil Health Management System (SHMS) that addresses soil organism habitat loss or degradation is being followed.

**When land use is: Range**

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Soil Site Stability: slight to moderate or less AND Biotic Integrity: slight to moderate or less

**When land use is: Pasture**

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Live or dormant plant cover, plant residue as soil cover, plant Ddiversity, and soil compaction and soil regenerative features elements $\geq 4$

**Aggregate instability**

Management-induced degradation of water stable soil aggregates resulting in destabilized soil carbon; surface crusting; reduced water infiltration, water holding capacity, and aeration; depressed resilience to extreme weather; increased ponding and flooding; increased soil erosion and plant stress; and reduced habitat and soil biological activity.

**Objective:** Improve aggregate stability.

**When land use is: Crop, Forest, Associated Ag land**

<b>Tools</b>	<b>Planning Criteria</b>
State-modified In-Field Soil Health Assessment Worksheet based on the national template	No resource concern results
Client input and/or planner observation	Soil Health Management System (SHMS) that addresses aggregate instability is being followed. AND No evidence of poor aggregate stability, such as surface crusting, lack of soil structure.

Tools	Planning Criteria
NRCS-approved Water Soil Aggregate Assessment Test, such as cylinder, strainer, or Soil Quality Test Kit (SQKT).	Water stable aggregates are present at critical levels AND Cylinder: At least 80% remains intact after 5 minutes with little cloudy water AND Strainer: soil remains intact with aggregates apparent AND Soil Quality Test Kit (SQKT): meets stability class 6

Note: If concentration of salts is a resource concern it will affect aggregates stability.

**When land use is: Range**

Tools	Planning Criteria
Range Health Assessment (RHA)	Soil Surface Loss or Degradation: slight to moderate or less

**When land use is: Pasture**

Tools	Planning Criteria
Pasture Condition Score Sheet (PCS)	Soil compaction and soil regenerative features elements $\geq 4$

## Water Resource Concerns

### **Ponding and flooding**

Water covering the land surface, along with saturated conditions below the surface, degrades natural resources, or restricts capability of land to support its intended use.

**Objective:** Reduce the risk of natural resource degradation, or limitation to land use caused by flooding or ponding.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Ag Land, or Other

Tools	Planning Criteria
Client input and/or planner observation	No observed ponding OR Ponding is treated and/or managed to reduce degradation of natural resources and meet the client’s natural resource management and land use objectives, avoids perpetuating existing natural resource concerns, and avoids creating new natural resource concerns.

Note: Examples of client input or planner observation:

- Aerial image made at time(s) when excess water is expected indicate the threat/impairment has been reduced or its timing changed. Examples: plant condition, sediment deposits, high water marks.
- National- or State-approved hydrology model predicts ponding or flooding will be reduced, or its timing changed.
- Client’s testimonial indicates ponding or flooding were reduced, allowing intended land use after an event that would historically cause ponding or flooding.
- Field measurement of water levels and presence of conservation practices indicates the threat/impairment has been reduced.

### **Seasonal high water table**

Ground water or a perched water table causing saturated conditions near the surface degrades water resources or restricts capability of land to support its intended use.

**Objective:** Reduce the risk of natural resource degradation or limitation to land use caused by a seasonal high water table.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands or Other

Tools	Planning Criteria
Client input and/or planner observation	No observed seasonal high water table OR Seasonal high water table is treated and/or managed to meet client’s natural resource management and land use objectives, avoids perpetuating existing natural resource concerns, and avoids creating new natural resource concerns.
National- or State-Approved Hydrology model	Predicts seasonal high water table will be reduced or its timing changed.

Note: Examples of client input or planner observation:

- Client’s testimonial indicates seasonal high water table was reduced, allowing intended land use after an event that would historically cause high water table.
- Field measurement of water levels and presence of conservation practices indicates the threat/impairment from seasonal highwater table has been reduced.

**Seeps**

Sub-surface saturated flows that percolates slowly to the surface, degrades water resources, or restricts capability of land to support its intended use.

**Objective:** Reduce the risk of natural resource degradation, or limitation to land use caused by a seep.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands or Other

Tools	Planning Criteria
Client input and/or planner observation	No observed seeps OR Seeps are treated and/or managed to meet the client’s natural resource management and land use objectives, avoids perpetuating existing natural resource concerns, and avoids creating new natural resource concerns.

Note: Examples of client input or planner observation:

- Aerial image made at time(s) when excess water from seeps is expected indicates the threat/impairment has been reduced, or its timing changed.

- National- or State-approved hydrology model predicts seeps will be reduced, or their timing changed.
- Client’s testimonial indicates seeps were reduced, allowing intended land use after an event that would historically cause seepage.
- Field measurement of water levels and presence of conservation practices indicates the threat/impairment from seeps has been reduced.

**Drifted snow**

Wind-blown snow accumulates around and over surface structures, which restricts access to humans or animals; or wind removes snow from desired location where it can be used to accumulate water.

**Objective:** Control where snow drifts accumulate.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Drifting of snow is controlled to limit negative impacts to humans and animals and/or improve moisture management.
Locally approved drift simulation models	Predicts negative impacts of snow drift are reduced.

**Surface water depletion**

Water from collected precipitation runoff, ponds, lakes, surface watercourses and reservoirs is used at a rate that is detrimental to ecological functions or other identified uses and threatens sustained availability of surface water.

**Objective:** Reduce surface water depletion.

**Any Land Use**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Water use is managed to meet State/local regulations regarding water withdrawals. AND Water is utilized without significant long-term impact to water supply OR Water use is being reduced commensurate with available supply, OR Water is no longer withdrawn.

<b>Tools</b>	<b>Planning Criteria</b>
State-declared surface water depletion concern	Meet State/local regulations regarding water withdrawals.

### **Ground water depletion**

Underground water is used at a rate greater than aquifer recharge.

#### **Objective:**

Reduce the risk of natural resource degradation, or limitation to land use caused by ground water depletion.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Manage ground water withdrawal rates to meet the client's natural resource management and land use objectives while avoiding perpetuating existing natural resource concerns or creating new natural resource concerns.
State-/Region-declared ground water depletion concern	Meet State/local regulations regarding water withdrawals.

### **Naturally available moisture use**

Natural precipitation is not optimally managed to support desired land use goals or ecological processes.

**Objective:** Manage natural precipitation more efficiently.

**When land use is:** Crop, Forest, Developed Land or Associated Ag Land

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Activities are managed to maintain or enhance water infiltration rates and minimize evaporation to utilize as much natural precipitation as possible.

**When land use is:** Range

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA)	Hydrologic Function Attributes: slight to moderate or less.

**When land use is:** Pasture

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Soil compaction and soil regenerative features and live plant cover elements $\geq 4$

### **Inefficient irrigation water use**

Irrigation water is not stored, delivered, scheduled and/or applied efficiently.

**Objective:** Manage irrigation water efficiently.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands or Other

<b>Tools</b>	<b>Planning Criteria</b>
Farm Irrigation Rating Index (FIRI)	FIRI $\geq 80\%$ of maximum system potential
State-approved assessment tool	Irrigation system components and management meet State irrigation guide efficiency criteria.

### **Nutrients transported to surface water**

Nutrients (organic and inorganic) stored, concentrated, or applied are transported to receiving surface waters in quantities that degrade water quality and limit its use for intended purposes.

**Objective:** Reduce transport of nutrients to surface water.

**When land use is:** Crop and nutrient are applied (**or legumes make up greater than 50% of the crop rotation**)

<b>Tools:</b>	<b>Planning Criteria</b>
Evaluation of current nutrient management	Nutrients (organic or inorganic) are applied based on a plan, in accordance with Land Grant University recommendations, which specifies the source, amount, timing and method of application, required conservation practices needed to reduce nutrient movement to surface waters, and contains State-specific nutrient application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).

<b>Tools:</b>	<b>Planning Criteria</b>
Current State NRCS-approved nitrogen, phosphorus, and soil erosion assessment tools (P Index Tools, State NRCS approved N tools, etc.)	Nutrient application meets site specific conditions and tool results do not show risk of negative environmental impacts.

**When land use is:** Forest, Developed Land, Associated Agriculture Lands or Other AND nutrients are applied.

<b>Tools:</b>	<b>Planning Criteria</b>
Evaluation of current nutrient management	Nutrients (organic or inorganic) are applied based on a plan, in accordance with Land Grant University recommendations, which specifies the source, amount, timing and method of application, required conservation practices needed to reduce nutrient movement to surface waters, and contains State-specific nutrient application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).

**When land use is:** Pasture and nutrient are applied (or legumes make up greater than 50% of the crop rotation)

<b>Tools:</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS) Evaluation of current nutrient management	PCS for livestock concentration areas and streambank/shoreline erosion elements $\geq 4$ AND Nutrients (organic or inorganic) are applied based on a plan, in accordance with Land Grant University recommendations, which specifies the source, amount, timing and method of application, required conservation practices needed to reduce nutrient movement to surface waters, and contains State-specific nutrient application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).

**When land use is:** Farmstead

<b>Tools</b>	<b>Planning Criteria</b>
Current NRCS-approved farmstead assessment or evaluation tools	Nutrients are stored in a way which reduces nutrient movement to surface waters.

**When Nutrients are stored/mixed/loaded, regardless of land use:**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Nutrients are stored/mixed/loaded in a way which reduces nutrient movement to surface waters.

**Nutrients transported to ground water**

Nutrients (organic and inorganic) stored, concentrated, or applied are transported to ground waters in quantities that degrade water quality and limit its use for intended purposes.

**Objective:** Reduce transport of nutrients to ground water.

**When land use is:** Crop, Forest, Pasture, Developed Land, Associated Agriculture Lands or Other and nutrients are applied

<b>Tools: If Nutrients Applied</b>	<b>Planning Criteria</b>
Evaluation of current nutrient management	Nutrients (organic or inorganic) are applied based on a plan, which specifies the source, amount, timing and method of application, required conservation practices needed to reduce nutrient movement to ground water, and contains State-specific nutrient application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).
Current State NRCS-approved nitrogen leaching assessment tools, data, and map resources (source water protection management zone maps, public well nitrate contamination data, and private well nitrate contamination data)	Nutrient application meets site specific conditions and tool results do not show risk of negative environmental impacts.

**When Nutrients are stored/mixed/loaded, regardless of land use:**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Nutrients are stored/mixed/loaded in a way which reduces nutrient movement to ground water.

### **Pesticides transported to surface water**

Pesticides are lost from their application area and transported to surface water sources in quantities that degrade water quality and limit its use for intended purposes.

**Objective:** Reduce hazardous pesticide losses from application areas that can be transported to surface water sources.

#### **Any Land Use, where pesticides are applied:**

<b>Tools</b>	<b>Planning Criteria</b>
Evaluation of current pest management system	Pesticides are applied based on a pest management system which specifies the Land Grant University and label requirements, required conservation practices and/or IPM techniques needed to reduce pesticide movement to surface waters, and contains State-specific required application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).
Windows Pesticide Screening Tool (WIN-PST)	Mitigation is applied based on the WIN-PST soil/pesticide combinations as follows: <ul style="list-style-type: none"><li>• Intermediate: 20 Points of Mitigation</li><li>• High: 40 Points of Mitigation</li><li>• Extra High: 60 Points of Mitigation</li></ul>

#### **When Pesticides are stored/mixed/loaded, regardless of land use:**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Pesticides are stored/mixed/loaded in a way which reduces movement to surface water.

### **Pesticides transported to ground water**

Pesticide losses from the application area are transported to ground water sources in quantities that degrade water quality and limit its use for intended purposes.

**Objective:** Reduce hazardous pesticide losses from application areas that can be transported to ground water sources.

#### **Any Land Use, where pesticides are applied:**

<b>Tools</b>	<b>Planning Criteria</b>
Evaluation of current pest management system	Pesticides are applied based on a pest management system which specifies the Land Grant University and label requirements, required conservation

Tools	Planning Criteria
	practices and/or IPM techniques needed to reduce pesticide movement to ground water, and contains State-specific required application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).
Windows Pesticide Screening Tool (WIN-PST)	Mitigation is applied based on the WIN-PST soil/pesticide combinations as follows: <ul style="list-style-type: none"> <li>• Intermediate: 20 Points of Mitigation</li> <li>• High: 40 Points of Mitigation</li> <li>• Extra High: 60 Points of Mitigation</li> </ul>

**When Pesticides are stored/mixed/loaded, regardless of land use:**

Tools	Planning Criteria
Client input and/or planner observation	Pesticides are stored/mixed/loaded in a way which reduces movement to ground water.

Note: State-approved tools may be available to inform decisions.

**Pathogens and chemicals from manure, biosolids, or compost applications transported to surface water**

Pathogens, pharmaceuticals, leachate and chemicals from manure, biosolids or compost transported to receiving waters in quantities that degrade water quality and limit uses.

**Objective:** Reduce transport of pathogens, pharmaceuticals, leachate and polluting chemicals from manure, biosolids, or compost to surface water.

**Any Land Use**

Tools	Planning Criteria
Evaluation of current nutrient management	Nutrients (organic or inorganic) are applied based on a plan, in accordance with Land Grant University recommendations, which specifies the source, amount, timing and method of application, required conservation practices needed to reduce nutrient movement to surface waters, and contains State-specific nutrient application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).

Note: Additional assessments for Pasture and Range:

- If livestock have access to pasture or range, then a grazing plan is followed or livestock access to the stream is minimized.

**When manure, biosolids, or compost are stored, regardless of land use:**

Tools	Planning Criteria
Client input and/or planner observation AND Compost temperature and procedure record	Manure, biosolids, or compost are stored in a way minimize loss to surface water. AND Conservation practices minimize loss to surface water. AND Compost and composted mortalities meet time and temperature requirements for pathogen reduction and/or destruction.

**Pathogens and chemicals from manure, biosolids, or compost applications transported to ground water**

Pathogens, pharmaceuticals, leachate and chemicals from manure, biosolids or compost transported to ground waters in quantities that degrade water quality and limit uses.

**Objective:** Reduce transport of pathogens, pharmaceuticals, leachate and polluting chemicals from manure, biosolids, or compost to ground water.

**Any Land Use**

Tools	Planning Criteria
Evaluation of current nutrient management	Nutrients (organic or inorganic) are applied based on a plan, in accordance with Land Grant University recommendations, which specifies the source, amount, timing and method of application, required conservation practices needed to reduce nutrient movement to ground water, and contains State-specific nutrient application and livestock access setbacks (e.g., sinkholes, wells, water courses, wetlands, or rapidly permeable soil areas).

Note: Additional assessments for Pasture and Range

- If livestock have access to pasture or range, THEN grazing plan is followed

**When manure, bio-solids, or compost are stored, regardless of land use:**

Tools	Planning Criteria
Client input and/or planner observation AND Compost temperature and procedure record	Manure, biosolids, or compost are stored in a way that minimizes loss to ground water. AND Conservation practices that minimize loss to ground water are in place. AND Compost and composted mortalities meet time and temperature requirements for pathogen reduction and/or destruction.

**Salts transported to surface water**

Irrigation or rainfall runoff transports salts to receiving surface waters in quantities that degrade water quality and limit use for intended purposes

**Objective:** Limit transfer of salts from site to receiving surface waters.

**All Land Uses**

Tools	Planning Criteria
Locally approved Soil Salinity Tests and Water Quality Tests	Soil test results < local/State criteria AND Water quality test results < local/State criteria

**Salts transported to ground water**

Irrigation or rainfall infiltration transport salts to ground water in quantities that degrade aquifer water quality and limit intended uses.

**Objective:** Limit loss of salts from site to ground water.

**Any Land Use**

Tools	Planning Criteria
Locally approved Soil Salinity Tests and Water Quality Tests	Soil test results < local/State criteria AND Water quality test results < local/State criteria

**Petroleum, heavy metals, and other pollutants transported to surface water**

Petroleum, heavy metals, and other chemical pollutants for on-farm use are lost from areas of concentration (handling, storage, or processing facilities and areas) to receiving surface waters in quantities that degrade water quality and limits its use for intended purposes. This resource concern does not cover pathogens/manure, sediment (although sediment contaminated with petroleum, heavy metals, or other chemical pollutants would be covered), nor naturally occurring salts.

**Objective:** Reduce losses from facilities for handling, storing, or processing of petroleum, heavy metals, and other chemical pollutants to surface water.

**All Land Uses**

Tools	Planning Criteria
Client input and/or planner observation	If petroleum storage facility is located on 100-year floodplain, it is designed to withstand at least a 25-year flood. AND The petroleum, heavy metal, or chemical pollutant is protected from surface runoff that can carry the pollutants to surface water. AND All petroleum storage sites are free from obvious signs of continuous or significant leakage.

**Petroleum, heavy metals, and other pollutants transported to ground water**

Petroleum, heavy metals, and other chemical pollutants for on-farm use are lost from areas of concentration (handling, storage, or processing facilities and areas) to receiving ground water in quantities that degrade water quality and limit its use for intended purposes. This resource concern does not cover pathogens/manure, sediment (although sediment contaminated with petroleum, heavy metals, or other chemical pollutants would be covered), nor naturally occurring salts.

**Objective:** Reduce losses from facilities for handling, storing, or processing of petroleum, heavy metals, and other chemical pollutants to ground water.

**Any Land Use**

Tools	Planning Criteria
Client input and/or planner observation	If petroleum storage facility is located on 100-year floodplain, it is designed to withstand at least a 25-year flood. AND The petroleum, heavy metal, or chemical pollutant is protected from surface runoff that can carry the pollutants to surface water. AND All petroleum storage sites are free from obvious signs of continuous or significant leakage.

**Sediment transported to surface water**

Offsite transport of sediment to surface water degrades water quality and limits use for intended purposes.

**Objective:** Limit sediment loss from site to surface waters.

**When land use is:** Crop, Farmstead, Developed Land, Water, Associated Agriculture Lands or Other

Tools	Planning Criteria
Current NRCS water erosion technology AND Current NRCS wind erosion technology AND Streambanks: Stream Visual Assessment Protocol (SVAP2) AND Client input and/or planner observation	Water erosion $\leq T$ AND Wind erosion $\leq T$ AND Bank condition score $\geq 5$ AND Upslope treatment and buffer practices address concentrated flows, ephemeral gullies, and classic gullies to water bodies and Stream water crossings are stable.

**When land use is:** Forest

Tools	Planning Criteria
Streambanks: Stream Visual Assessment Protocol (SVAP2) AND Client input and/or planner observation	Bank condition score $\geq 5$ AND Upslope treatment and buffer practices address concentrated flows, ephemeral gullies, and classic gullies to water bodies AND Heavy use areas are stable.

**When land use is: Range**

<b>Tools</b>	<b>Planning Criteria</b>
Range Health Assessment (RHA) AND Rangeland Trend Worksheet AND Streambanks: Stream Visual Assessment Protocol (SVAP2)	Soil Site Stability and Hydrologic Function attribute: slight to moderate or less AND Positive trend AND Bank condition score $\geq 5$

**When land use is: Pasture**

<b>Tools</b>	<b>Planning Criteria</b>
Current NRCS water erosion technology AND Current NRCS wind erosion technology AND Streambanks: Stream Visual Assessment Protocol (SVAP2) AND Pasture Condition Score Sheet (PCS) AND Client input and/or planner observation	Water erosion $\leq T$ AND Wind erosion $\leq T$ AND Bank condition score $\geq 5$ AND Soil erosion and livestock concentration areas elements $\geq 4$ AND Upslope treatment and buffer practices address concentrated flows, ephemeral gullies, and classic gullies to water bodies. AND Stream water crossings are stable.

**Elevated water temperature**

Surface water temperatures exceed State/Federal standards in downstream receiving waters which limits its use for intended purposes.

**Objective:** Lower stream water temperature and/or prevent additional water temperature increases in downstream receiving waters.

**Any Land Use**

<b>Tools</b>	<b>Planning Criteria</b>
Streambanks: Stream Visual Assessment Protocol (SVAP2)	Riparian area quality and canopy cover element scores $\geq 6$ AND Riparian area quantity element score $\geq 5$

## Air Resource Concerns

### **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, oxides of nitrogen, and volatile organic compounds – can cause multiple negative environmental impacts.

**Objective:** Emissions of PM and PM precursors from agricultural activities do not excessively contribute to negative impacts to human, plant, or animal health; do not excessively contribute to regional visibility restriction, unwanted chemical droplet drift, and unwanted deposition on surfaces; and do not result in safety or nuisance visibility restrictions.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead or Associated Agriculture Lands (except as noted in the **For** column)

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Diesel engines	Client input and planner observation	<p><i>PM attainment areas:</i> At least 75% of the normal annual horsepower-hours for diesel engines larger than 25 brake horsepower in operation at the PLU are from engines that are certified to at least EPA Tier 3 standards (based on engine model year and horsepower rating). OR <i>PM nonattainment and maintenance areas:</i> All diesel engines larger than 25 brake horsepower in operation at the PLU are from engines that are certified to at least EPA Tier 3 standards (based on engine model year and horsepower rating).</p>
Non-engine combustion sources	Client input and planner observation	<p><i>PM attainment areas:</i> At least 50% of the normal annual fuel usage for non-engine combustion sources in operation at the PLU is either natural gas or propane. OR At least 50% of the non-engine combustion sources in operation at the PLU utilize emissions control for PM and NOx emissions. OR <i>PM nonattainment and maintenance areas:</i> At least 75% of the normal annual fuel usage for non-engine combustion sources in operation at the PLU is either natural gas or propane. OR</p>

For	Tools	Planning Criteria
		At least 75% of the non-engine combustion sources in operation at the PLU utilize emissions control for PM and NOx emissions.
Open burning	Client input and planner observation	<i>Fire for ecosystem management:</i> All prescribed fire at the PLU is applied according to a prescribed burn plan that includes Basic Smoke Management Practices. AND <i>Fire for biomass management:</i> All fire events for managing agricultural biomass debris at the PLU utilize Basic Smoke Management Practices.
Chemical pesticide drift	Client input and planner observation	Neither the planner nor the client has observed any chemical drift issues related to chemical pesticide application at the PLU.
Nitrogen fertilizer (Crop, Forest, Pasture or Associated Agriculture Lands only)	Evaluation of current nutrient management	Nitrogen (organic or inorganic) is applied based on a plan which specifies the source, amount, timing and method of application, and conservation activities needed to reduce nitrogen loss to air.
Dust from field operations (Crop and Pasture only)	Client input and planner observation	Demonstrated reduction in PM emissions from the benchmark condition OR Neither the planner nor the client has observed any PM/dust issues related to field operations at the PLU.
Dust from unpaved roads	Client input and planner observation	Neither the planner nor the client has observed any PM/dust issues related to vehicle and machinery traffic on unpaved roads and surfaces at the PLU.
Windblown dust	Client input and planner observation Current wind erosion technology	Demonstrated reduction in PM emissions from the benchmark condition OR Neither the planner nor the client has observed any PM/dust issues related to windblown dust at the PLU.
Confinement-based animal operations (Farmstead only)	Client input and planner observation NAQSAT	Neither the planner nor the client has observed any PM/dust issues related to confinement-based animal production at the PLU. AND The score bars for the Animals and Housing, On Farm Roads, Manure Storage (if dry manure is stored or handled), Land Application (if dry manure is land

For	Tools	Planning Criteria
		<p>applied), and Feed and Water (if dry feed ingredients are stored or handled) data categories under Particulate Matter (Dust) and the score bars for Feed and Water, Manure Storage, Land Application, Animals and Housing, and Collection and Transfer under Ammonia in the NAQSAT report are all at least 50% green.</p> <p>OR</p> <p>Appropriate documentation is provided to indicate why an applicable NAQSAT score bar identified above with less than 50% green is acceptable.</p>

### **Emissions of greenhouse gases (GHGs)**

Emissions of methane, nitrous oxide, and carbon dioxide increase atmospheric concentrations of greenhouse gases.

**Objective:** Emissions of nitrous oxide from nitrogen fertilizer, methane and nitrous oxide from confinement-based animal production, and loss of carbon from soils and biomass do not excessively contribute to increased atmospheric concentrations of greenhouse gases.

**When land use is:** Crop, Forest, Pasture or Associated Agricultural Land

For	Tools	Planning Criteria
Nitrogen fertilizer	Evaluation of current nutrient management	Nitrogen (organic or inorganic) is applied based on a plan, in accordance with Land Grant University recommendations, which specifies the source, amount, timing and method of application, conservation activities needed to reduce nitrogen loss to air.
Carbon stocks	<p>Client input and planner observation</p> <p>Soils Hydric Rating by Map Unit interpretation</p> <p>COMET-Farm</p>	<p>The client is implementing a strategy for maintaining or increasing carbon stocks in soils and perennial biomass at the PLU</p> <p>AND</p> <p>All undrained hydric and organic soils at the PLU are maintained with perennial cover</p> <p>OR</p> <p>An analysis of overall carbon stocks in soils and perennial biomass at the PLU using COMET-Farm shows that carbon stocks are stable or increasing</p> <p>AND</p> <p>All undrained hydric and organic soils at the PLU are maintained with perennial cover.</p>

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Grazing animals	Client input and planner observation	The client is implementing a grazing management plan to balance the energy and nutrition requirements of the grazing animals with the productivity of the grazing lands.

**When land use is: Range**

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Carbon stocks	Client input and planner observation  Soils Hydric Rating by Map Unit interpretation  COMET-Farm	The client is implementing a strategy for maintaining or increasing carbon stocks in soils and perennial biomass at the PLU. AND All hydric and organic soils at the PLU are maintained with perennial cover. OR An analysis of overall carbon stocks in soils and perennial biomass at the PLU using COMET-Farm shows that carbon stocks are stable or increasing. AND All hydric and organic soils at the PLU are maintained with perennial cover.
Grazing animals	Client input and planner observation	The client is implementing a grazing management plan to balance the energy and nutrition requirements of the grazing animals with the productivity of the grazing lands.

**When land use is: Farmstead**

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Confinement-based animal operations	NAQSAT	The score bars for the Manure Storage and Feed and Water data categories under Methane and the score bars for Feed and Water, Manure Storage, and Land Application under Nitrous Oxide in the NAQSAT report are all at least 50% green OR Appropriate documentation is provided to indicate why an applicable NAQSAT score bar identified above with less than 50% green is acceptable.

### **Emissions of ozone precursors**

Emissions of ozone precursors – oxides of nitrogen and volatile organic compounds – result in formation of ground-level ozone, which can have negative impacts to human, plant, and animal health.

**Objective:** Emissions of ozone precursors from agricultural activities do not excessively contribute to negative impacts to human, plant, or animal health.

**When land use is:** Crop, Forest, Range, Pasture or Associated Agricultural Land

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Diesel engines	Client input and planner observation	<p><i>Ozone attainment areas:</i> At least 75% of the normal annual horsepower-hours for diesel engines larger than 25 brake horsepower in operation at the PLU are from engines that are certified to at least EPA Tier 3 standards (based on engine model year and horsepower rating). OR <i>Ozone nonattainment and maintenance areas:</i> All diesel engines larger than 25 brake horsepower in operation at the PLU are from engines that are certified to at least EPA Tier 3 standards (based on engine model year and horsepower rating).</p>
Non-engine combustion sources	Client input and planner observation	<p><i>Ozone attainment areas:</i> At least 50% of the normal annual fuel usage for non-engine combustion sources in operation at the PLU is either natural gas or propane. OR At least 50% of the non-engine combustion sources in operation at the PLU utilize emissions control for NOx emissions. OR <i>Ozone nonattainment and maintenance areas:</i> At least 75% of the normal annual fuel usage for non-engine combustion sources in operation at the PLU is either natural gas or propane. OR At least 75% of the non-engine combustion sources in operation at the PLU utilize emissions control for NOx emissions.</p>
Open burning	Client input and planner observation	<p><i>Fire for ecosystem management:</i> All prescribed fire at the PLU is applied according to a prescribed burn plan that includes Basic Smoke Management Practices.</p>

For	Tools	Planning Criteria
		<p>AND</p> <p><i>Fire for waste management:</i> All fire events for managing agricultural biomass debris at the PLU utilize Basic Smoke Management Practices.</p>
Pesticide VOCs	Client input and planner observation Evaluation of pest management system	<p><i>Ozone nonattainment and maintenance areas:</i> The client has implemented an integrated Pest management system utilizing prevention, avoidance, monitoring, and suppression to minimize or eliminate use of VOC pesticides at the PLU.</p>

**When land use is: Farmstead**

For	Tools	Planning Criteria
Diesel engines	Client input and planner observation	<p><i>Ozone attainment areas:</i> At least 75% of the normal annual horsepower-hours for diesel engines larger than 25 brake horsepower in operation at the PLU are from engines that are certified to at least EPA Tier 3 standards (based on engine model year and horsepower rating). OR <i>Ozone nonattainment and maintenance areas:</i> All diesel engines larger than 25 brake horsepower in operation at the PLU are from engines that are certified to at least EPA Tier 3 standards (based on engine model year and horsepower rating).</p>
Non-engine combustion sources	Client input and planner observation	<p><i>Ozone attainment areas:</i> At least 50% of the normal annual fuel usage for non-engine combustion sources in operation at the PLU is either natural gas or propane. OR At least 50% of the non-engine combustion sources in operation at the PLU utilize emissions control for NOx emissions. OR <i>Ozone nonattainment and maintenance areas:</i> At least 75% of the normal annual fuel usage for non-engine combustion sources in operation at the PLU is either natural gas or propane. OR</p>

For	Tools	Planning Criteria
		At least 75% of the non-engine combustion sources in operation at the PLU utilize emissions control for NOx emissions.
Open burning	Client input and planner observation	<p><i>Fire for ecosystem management:</i> All prescribed fire at the PLU is applied according to a prescribed burn plan that includes Basic Smoke Management Practices.</p> <p>AND</p> <p><i>Fire for agriculture biomass management:</i> All fire events for managing agricultural biomass debris at the PLU utilize Basic Smoke Management Practices.</p>
Pesticide VOCs	Client input and planner observation Evaluation of pest management system	<p><i>Ozone nonattainment and maintenance areas:</i> The client has implemented an integrated pest management system utilizing prevention, avoidance, monitoring, and suppression to minimize or eliminate use of VOC pesticides at the PLU.</p>
Confinement-based animal operations	NAQSAT	<p><i>Ozone nonattainment and maintenance areas:</i> The score bars for the Manure Storage, Feed and Water, and Animals and Housing data categories under Volatile Organic Compounds in the NAQSAT report are all at least 50% green.</p> <p>OR</p> <p>Appropriate documentation is provided to indicate why an applicable NAQSAT score bar identified above with less than 50% green is acceptable.</p>

### **Objectionable odors**

Emissions of odorous compounds – volatile organic compounds, ammonia, and odorous sulfur compounds – can cause nuisance conditions.

**Objective:** Emissions of volatile organic compounds, ammonia, and odorous sulfur compounds from agricultural activities do not excessively contribute to negative odor impacts.

**When land use is: Crop, Forest, Pasture or Associated Agricultural Land**

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Nitrogen fertilizer	Evaluation of current nutrient management	Nitrogen (organic or inorganic) is applied based on a plan which specifies the source, amount, timing and method of application, and conservation activities needed to reduce nitrogen loss to air.
Pesticides	Evaluation of pest management system	The client has implemented an integrated pest management system utilizing prevention, avoidance, monitoring, and suppression to minimize or eliminate use of pesticides with objectionable odors on the PLU.

**When land use is: Farmstead**

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Confinement-based animal operations	Client input and planner observation NAQSAT	Neither the planner nor the client has observed any odor issues related to confinement-based animal production at the PLU. AND The score bars for the Mortalities, Manure Storage, Feed and Water, Land Application, and Animals and Housing data categories under Odor, the score bars for the Manure Storage, Feed and Water, and Animals and Housing data categories under Volatile Organic Compounds, the score bars for the Manure Storage and Feed and Water data categories under Hydrogen Sulfide, and the score bars for the Manure Storage, Feed and Water, Land Application, Animals and Housing, and Collection and Transfer data categories under Ammonia in the NAQSAT report are all at least 50% green. OR Appropriate documentation is provided to indicate why an applicable NAQSAT score bar identified above with less than 50% green is acceptable.

**Emissions of airborne reactive nitrogen**

Emissions of airborne reactive nitrogen – ammonia and oxides of nitrogen – can negatively impact atmospheric chemistry, cause unwanted fertilization via deposition in sensitive ecosystems, and degrade regional visibility.

**Objective:** Emissions of airborne reactive nitrogen from agricultural activities do not excessively contribute to negative atmospheric and/or ecosystem impacts.

**When land use is:** Crop, Forest, Range, Pasture, Farmstead or Associated Agricultural Land (except where noted in **For** column)

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Open burning	Client input and planner observation	<i>Fire for ecosystem management:</i> All prescribed fire at the PLU is applied according to a prescribed burn plan that includes Basic Smoke Management Practices. AND <i>Fire for biomass management:</i> All fire events for managing agricultural biomass debris at the PLU utilize Basic Smoke Management Practices.
Nitrogen fertilizer (Not for Range or Farmstead)	Evaluation of current nutrient management	Nitrogen (organic or inorganic) is applied based on a plan which specifies the source, amount, timing and method of application, and conservation activities needed to reduce nitrogen loss to air.
Confinement-based livestock operations (Farmstead only)	Client input and planner observation NAQSAT	The score bars for the Manure Storage, Feed and Water, Land Application, Animals and Housing, and Collection and Transfer data categories under Ammonia in the NAQSAT report are all at least 50% green. OR Appropriate documentation is provided to indicate why an applicable NAQSAT score bar identified above with less than 50% green is acceptable.

## Plant Resource Concerns

### **Plant productivity and health**

Improper fertility, management or plants not adapted to site negatively impact plant productivity, vigor and/or quality

**Objective:** Improve poor plant productivity and health.

**When land use is:** Crop

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	No evidence of yield limiting conditions.
Yield data and Crop Health Information	Crop yield is greater or equal to 75% of the realistic yield expectations found in Land Grant University Guidelines or realistic yield tables; (lowest value should be used when indices differ).
Productivity indices in Sec II of FOTG	Crop yield is greater or equal to 75% of the realistic yield expectations found in productivity indices in Section II of the FOTG.

**When land use is:** Forest

<b>Tools</b>	<b>Planning Criteria</b>
Forest Inventory AND Client input and/or planner observation	Forest species are adapted to site and tree density is within stocking guidelines. AND Forest growth and health support desired ecological functions and/or management objectives. AND There is no excessive or unexplained mortality. AND No invasive species are present or are managed to not reduce forest productivity and growth.

**When land use is: Range**

<b>Tools</b>	<b>Planning Criteria</b>
Rangeland Health Assessment (RHA)	RHA – biotic integrity attribute rating: slight to moderate departure or less. OR The Functional Structural Groups #12, Plant Mortality #13, and Annual Production #15 indicators are slight to moderate departure or less.
Rangeland Trend Worksheet	Positive trend OR Measured improvements in plant health and productivity over time.
Similarity Index Worksheet	Vegetation meets similarity index of 60 or greater for desired vegetation state or plant community within the ESD State and Transition Model.

Note: Only use the similarity index worksheet when desired vegetation states or plant communities are described in an ecological site description.

**When land use is: Pasture**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation AND Pasture Condition Score Sheet (PCS)	Plants are adapted to the site and meet production goals. AND Percent Desirable Plants $\geq$ 3 and Live or dormant plant cover, and plant vigor elements $\geq$ 4

**When land use is: Farmstead, Developed Land, Associated Agriculture Lands or Other**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Plants are adapted to the site. AND Plants are vigorous and healthy.

### **Plant structure and composition**

Plant communities have insufficient composition and structure to achieve ecological functions and management objectives. This resource concern includes degradation of wetland habitat, targeted ecosystems, or unique plant communities.

**Objective:** Improve plant structure and composition.

**When land use is:** Crop

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation (Use transect and yield data when available)	Rotations or use of other vegetation are such that a diversity of composition and structure exists on the landscape of the operation.

**When land use is:** Forest

<b>Tools</b>	<b>Planning Criteria</b>
Forest Inventory	Plant communities contain adequate diversity, composition and structure to support desired ecological functions and/or management objectives.

**When land use is:** Range

<b>Tools</b>	<b>Planning Criteria</b>
Rangeland Health Assessment (RHA)	RHA – biotic integrity attribute rating: slight to moderate departure or less. OR The functional/structural indicator has a rating of slight to moderate departure or less.
Rangeland Trend Worksheet	Composition changes provide adequate plant community diversity and composition and structure towards a desired plant community or vegetative state.

**When land use is:** Pasture

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Percent desirable plants and plant vigor elements $\geq 4$

### **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.

**Objective:** Reduce plant pest pressure.

**When land use is:** Crop

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation (May be based on crop scouting, crop/soil yield comparisons, field pest histories, or University guidelines)	Pest damage to plants are below economic, historic, pest model or environmental thresholds.

**When land use is:** Range

<b>Tools</b>	<b>Planning Criteria</b>
Rangeland Health Assessment (RHA)	RHA – biotic integrity and invasive plants attribute ratings: slight to moderate departure or less
Ecological Site Descriptions	Invasive plants and other pests are within parameters of ecological site descriptions.

**When land use is:** Pasture

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS)	Plant vigor and percent desirable plants elements $\geq 4$

**When land use is:** Forest, Farmstead, Developed Land, Associated Agriculture Lands or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Pest damage to plants are below economic, historic, pest model or environmental thresholds.

**Wildfire hazard from biomass accumulation**

The kinds and amounts of plant biomass create wildfire hazards that pose risks to human safety, structures, plants, animals, and air resources.

**Objective:** Reduce biomass accumulation and the risk of wildfire hazard.

**Any Land Use**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation (May be based on visual assessment protocols, site and flammable biomass inventories, or aerial photo analysis)	Fuel loads and fuel ladders are managed to provide defensible space and mitigate wildfire risk.

## Animal Resource Concerns

### Terrestrial habitat for wildlife and invertebrates

Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified terrestrial wildlife or invertebrate species.

**Objective:** Improve quantity and quality of habitat to meet requirements of identified terrestrial wildlife or invertebrate species.

#### **Any Land Use**

<b>Tools</b>	<b>Planning Criteria</b>
Wildlife Habitat Evaluation Guide (WHEG)	Overall WHEG score $\geq 0.5$ or 50% of maximum score.
Specialist (e.g., biologist) report or management plan	Specialist/planner documentation that prescribed practices will adequately address specific wildlife resource concern(s).

### Aquatic habitat for fish and other organisms

Habitat requirements of identified fish and other organisms are inadequate.

**Objective:** Provide water that is sufficient in quality and extent to meet target species or guild habitat requirements, remove barriers to enable aquatic species movement and improve associated riparian habitat to meet target species or guild habitat requirements

**When land use is:** Crop, Forest, Range, Pasture, Farmstead, Associated Agriculture Lands or Other

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Ephemeral Streams And Water Bodies	Stream Visual Assessment Protocol (SVAP2)	SVAP2 - Fish habitat complexity, aquatic invertebrate habitat, and barriers to aquatic species movement element scores $\geq 7$ AND There are more than 8 Aquatic Habitat Features (AHF) AND Water is available in quality and extent to meet target species or guild habitat requirements.
Ephemeral Streams And Water Bodies	Specialist (e.g. biologist) reports and documentation	Specialist/planner documentation that prescribed practices will adequately address specific fish or other aquatic organism resource concern(s).

<b>For</b>	<b>Tools</b>	<b>Planning Criteria</b>
Perennial Streams	Stream Visual Assessment Protocol (SVAP2)	SVAP2 - Fish habitat complexity, aquatic invertebrate habitat, barriers to aquatic species movement, element scores $\geq 7$ AND There are more than 8 Aquatic Habitat Features (AHF) AND Water is available year-round in quality and extent to meet target species or guild habitat requirements. AND In stream or adjacent physical structures, water withdrawals do not restrict or prohibit movement of aquatic species. AND Riparian habitat meets target species or guild requirements.
Perennial Streams	Specialist (e.g., biologist) reports and documentation	Specialist/planner documentation that prescribed practices will adequately address specific fish or other aquatic organism resource concern(s).

Note: Particularly in ephemeral streams, habitat needs and types vary considerably throughout the country. States should adjust habitat feature characteristics to reflect reference conditions in their region.

### **Feed and forage imbalance**

Feed and Forage quality or quantity is inadequate for nutritional needs and production goals of the kinds and classes of livestock.

**Objective:** Balance the quantity and quality of feed and forage to meet livestock needs and reduce negative impacts to other resources.

**When land use is:** Crop (grazed)

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Livestock forage, roughage and supplemental nutritional requirements are addressed AND Sufficient residue and/or stubble height is maintained to prevent or mitigate other resource concerns.

**When land use is: Forest (grazed)**

<b>Tools</b>	<b>Planning Criteria</b>
National Range and Pasture Handbook (NRPH)	Herd/flock average body condition scores are not negatively affecting reproduction cycle timelines. AND An inventory of livestock-forage/feed is in balance for intended use.
Client Input and/or planner observation	The forest stand is maintained to prevent or mitigate other resource concerns.

**When land use is: Range**

<b>Tools</b>	<b>Planning Criteria</b>
Rangeland Health Assessment (RHA) AND National Range and Pasture Handbook (NRPH)	RHA – Biotic Integrity Attribute and Annual Production Indicator: slight to moderate departure or less. AND Herd/flock average body condition scores are not negatively affecting reproduction cycle timelines. AND An inventory of livestock-forage/feed is in balance for intended use.

**When land use is: Pasture**

<b>Tools</b>	<b>Planning Criteria</b>
Pasture Condition Score Sheet (PCS) AND Livestock-Forage/Feed Inventory	Grazing utilization and severity element $\geq 4$ AND Livestock forage, roughage, and supplemental nutritional requirements are addressed, and sufficient residual and/or stubble height is maintained to prevent or mitigate other resource concerns.

**When land use is: Farmstead**

<b>Tools</b>	<b>Planning Criteria</b>
National Range and Pasture Handbook (NRPH)	Livestock forage, roughage and supplemental nutritional requirements addressed. AND An inventory of livestock-forage/feed is in balance for intended use.

### **Inadequate livestock shelter**

Livestock lack adequate shelter from climatic conditions to meet basic needs.

**Objective:** Supply adequate shelter to meet grazing livestock needs.

**When land use is:** Crop (grazed), Forest, Range, Pasture, Farmstead, Developed Land, Associated Agriculture Lands or Other

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation AND National Range and Pasture Handbook (NRPH)	NRPH thermal neutral zones or local Extension Service guidelines are met. AND There is protection (wind or shade) available. AND No excessive use areas are evident. AND Shady areas exist and do not show excessive use, crowding or other limits. AND Kind/Class of livestock does impact the severity of need.

### **Inadequate livestock water quantity, quality and distribution**

Quantity and quality of drinking water are insufficient to meet basic needs for the kind and class of livestock and improper distribution negatively impacts other resources.

**Objective:** Supply adequate quantity and quality of water to meet basic livestock needs and assure proper distribution to reduce negative impacts to other resources.

**When land use is:** Crop (grazed), Forest (grazed), Range, Pasture or Farmstead

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Water of acceptable quality and quantity are adequately distributed to meet kind/class of livestock.
National Range and Pasture Handbook (NRPH)	Local Extension Service guidelines, or State guidelines or NRPH are met.

Note: Distribution based on National Range and Pasture Handbook (NRPH) 5.2-39;5.3-1 and consumed water per animal based on NRPH 6-7.

## Energy Resource Concerns

### **Energy efficiency of equipment and facilities**

Stationary equipment or facilities are using energy inefficiently.

**Objective:** Improve energy efficiency of stationary equipment and facilities to reduce energy use.

#### **Any Land Use**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Energy use has been cost effectively minimized to the extent practicable.
USDA approved Energy Audit (ASABE S612 Type 2 Audit)	A minimum of one energy efficiency recommendation is implemented.
NRCS approved tool to evaluate energy conservation opportunities	A minimum of one energy efficiency recommendation is implemented.
NRCS Energy Estimator Tools	A minimum of one energy efficiency recommendation is implemented.

### **Energy efficiency of farming/ranching practices and field operations**

Mobile on-farm, ranching, forestry or field operations are using energy inefficiently.

**Objective:** Improve energy efficiency of mobile farming, ranching, forestry practices and field operations to reduce energy use.

#### **When land use is: Crop, Forest, Range, Pasture or Farmstead**

<b>Tools</b>	<b>Planning Criteria</b>
Client input and/or planner observation	Energy use has been cost effectively minimized to the extent practicable.
USDA approved Energy Audit (ASABE S612 Type 2 Audit)	A minimum of one energy efficiency recommendation is implemented.
NRCS approved tool to evaluate energy conservation opportunities	A minimum of one energy efficiency recommendation is implemented.
NRCS Energy Estimator Tools	A minimum of one energy efficiency recommendation is implemented.