



2013 Conservation Stewardship Program Conservation Measurement Tool Guidance (Cropland, Pastureland and Rangeland)

Ag Land General Inventory Questions 1-3

Otherlands definition: Does not apply to cropland/hayland, pastureland or incidental areas to these land uses such as field borders, waterways odd areas, brush draws, windbreaks etc. Does not apply to rangeland and private non-industrial forestland. Otherlands include all other land uses including headquarters, farmsteads, grain bins, shops, feeding areas, silage pits, grain handling, hay storage areas, areas that are not incidental to pasture and cropland, sacrifice areas used for wintering livestock or early spring calving that are not utilized for grazing during the rest of the growing season after livestock are removed are considered other lands. Does not apply to ineligible lands enrolled in CRP, WRP, GRP or publicly owned lands.

Water bodies definition:

- All water bodies must contain open water for at least 30 days or more during the growing season in most years.
- Ponds, lakes and wetlands that are permanent, semi-permanent, or seasonal are applicable.
- Ponds formed by either excavation and/or embankments, designed to capture and store natural runoff water, either with or without irrigation tail-water, are applicable.
- Wetlands that are temporary and contain water for less than 30 days during the growing season in most years are not applicable, such as those commonly planted to annual crops or are in herbaceous/grass cover without open water, do not apply.
- Wetlands do not have to have an official wetland determination to apply as a water body.
- Not applicable to small overflow areas next to tanks and troughs used for livestock grazing.
- Not applicable to irrigation re-use pits designed solely to capture irrigation tail-water.
- Dugout ponds/pits that were not designed as an irrigation re-use pit (have a controlled inlet, dike, pipe, etc.) or serve as a "concentration pit" within a wetland and accumulate natural runoff and or irrigation runoff water are applicable.

Water course definition:

- Includes all perennial, seasonal/intermittent streams and ditches as defined below.
- All streams must have a defined bed and bank, a grade of less than 2% percent. Seasonal streams must have flow for at least 30 days per year as evidenced by a scoured channel bottom or hydrophytic vegetation in the channel. Perennial and seasonal/intermittent streams will have more flow than an ephemeral stream.
- Ditches must have a defined channel with a grade of less than 2% percent, and seasonal flow for at least 30 days per year as evidenced by a scoured channel bottom or hydrophytic vegetation in the channel.
- Irrigation canals are not considered a water course unless they meet the same requirements as a ditch or stream above by flowing for at least 30 days per year strictly from base flow and/or runoff from the adjacent watershed (does not include irrigation water).

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- Grass waterways, road ditches or upland gullies do not count as ditches.
- Ephemeral streams, ditches or other water courses that only have flowing water for a few hours following a moderate to heavy rainfall event or snowmelt are not applicable.

Question 1: Answer yes if you have any of the water courses or water bodies listed above within or directly adjacent to each applicable land use.

Question 2:

- Answer yes when visible dust leaves the site that is generated from heavy on-farm traffic such as feed trucks/equipment, grain trucks/carts, fertilizer/pesticide delivery, etc. on un-paved roads for at least one month or more per year.
- If you answered yes to question 2, answer yes to method(s) listed that are regularly used to control dust.

Question 3: Does not apply to energy use on farm residences, but applies to other farm/ranch facilities.

- Alternative energy sources must be currently used on the farm. They include E85 ethanol or bio-diesel used in flex fuel vehicles/tractors, wind mills for livestock water, solar fencers/pumps, use of wood sources for tank heaters, on-farm generation of power using solar, wind, or methane utilized on farm apply.
- High efficiency grain drying includes some or all of the following: cooling heat recycling, more efficient burners, full enclosures with both cooling and plenum heat recycling, and dryer discharge with even flows installed in the last 3 years. Replacement or upgrades to higher efficiency heating or cooling of farm buildings also apply.
- A recent energy audit of farm headquarters, irrigation pumping plants, drying equipment etc. has been completed and improvements have been made
- High efficiency pumping plants have been installed in the last 3 years. They include existing wells that have a pumping plant evaluation completed that included a pump test (pump curve including pressure and output), re-bowled, and install a new pump based on the pumping plant evaluation results. New wells/pumps that are installed according pumping plant evaluation results also apply.

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Cropland Questions 1 - 18.3

All cropland/hayland fields must have applicable management in place to answer each question affirmatively.

Cropland definition: Includes lands planted to annual crops as well as any lands used for "machine harvested" hayland (even if in permanent hayland).

Rotation/Management System Naming Guidance:

- The Management System must clearly describe the tillage timing/type for each crop (Fall Till, Spring Till, No Till, Ridge Till, and Strip Till etc.), crop rotation and other key descriptors such as dryland, gravity irrigated, pivot irrigated, terraced, etc.
- Management system splits should be made when there are differences in crop rotation, tillage system, gully erosion control practices such as terraces/waterways are present or needed, or nutrient management is significantly different. Examples: irrigated vs. dryland; tillage system; land treatment applied (terraced vs. non-terraced or other measures necessary to control of ephemeral and gully erosion and other visual erosion); nutrient management differences; or other significantly different management. Limited to five management systems. The operator must provide a clear written description of each management system.
- All cropland in each conservation management system must have applicable management in place to answer each question affirmatively unless otherwise noted on this guidance.

Q1: Self-explanatory.

Q2: Harvested crops will equal number of years in Q1 unless "double cropping" applies such as planting an annual forage crop following wheat harvest. Examples: for a corn-corn-bean rotation, question 2d = 2 crops and 2c = 1 year for a total of 3 crops. For perennial hay not in rotation enter one crop, for alfalfa used in a rotation enter the number of years applicable to the rotation including establishment year. For a Corn-Soybean-Wheat/Double Cropped Annual Forage crop enter 4 crops.

- a) Includes fallow following high residue crops (e.g. wheat, corn, and milo) where tillage occurs between harvest and May 31, and fallow following all low residue crops or fallow periods where crop residues are removed by baling or heavy grazing.
- b) Includes all crops listed including edible beans and vegetables.
- c) Includes fallow following high residue crops (e.g. wheat, corn) where tillage is delayed until after May 31 or eco-fallow that is not tilled. This includes low residue crops such as soybeans, sugar beets, sunflowers, corn/sorghum silage, or annual forage crops such as cane/sorghum/sudan cut for hay with less than 12 inches of regrowth following a killing frost. This also includes high residue crops such as wheat, corn or sorghum where more than half of the stover is grazed, baled/removed following harvest.
- d) Includes all corn, sorghum, small grains where residue is not removed, or less than half of the stover is grazed, baled/removed following harvest.
- e) Applies to alfalfa, grass hay, grass harvested for seed or other perennial forages that are harvested. Refer to instructions on Q#2 above for more guidance.

Q3: Includes cover crops planted in a timely fashion and provide significant growth before they are terminated or killed by a frost and are not harvested by haying or grazing. Examples include annual rye planted prior to October 15 following soybeans or corn silage, and various cover crops planted following wheat harvest or seed corn.

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Q4: For the number of crop species only enter one additional species/type when utilizing a cover crop mixture (cocktail) or forage mixture.

Q5-Q5.2: Must be annually cropped and flooded by diverting surface water or pumping ground water and flooded during the critical months of the dormant season of November, March, and April. This does not apply to permanent hayland where flooding may occur due to plugging a drainage ditch or removal of a pumping activity.

Q6: Applicable to perennial grass/legume hay used in a crop rotation or permanent hayland.

Q6.1: For perennial hayland enter 1, for alfalfa in rotation with annual crops enter the number of years that alfalfa is maintained including establishment year.

Q6.2:

- a) Select this answer only if species such as smooth brome and/or other species on List B make up more up 70% or more of the stand.
- b) Select this answer only if species on List A make up at least 30% of the stand.
- c) Select this answer if one or two species from List A are present and make up at least 60% of the stand.
- d) Same as "c" except three or more species from List A are needed that make up at least 60% of the stand.

Q6.3:

- a) Field is cut during the nesting season for Nebraska which is May 1 through July 15.
- b) Half of the hay field is left unhayed until after July 15. All haying is done using at least two of the wildlife friendly techniques listed. The definition for minimum mowing height is 5 inches.
- c) Haying is completed after the nesting season is 75% complete (after June 25).
- d) Same as "c" with the addition that all haying is done using at least two of the wildlife friendly techniques listed in option b.
- e) No haying May 1 through July 15 and not more than once per year.
- f) No haying May 1 through July 15, haying is done on a rotation with a portion (i.e. 20% to 50%) left idle (no haying occurs) each year and all haying is done using at least two of the wildlife friendly techniques listed in option b.

Q7:

- To answer yes to this question there must be incidental areas of wildlife habitat (including CRP) directly adjacent or within the fields/management units contained within each conservation management system. When answering no to this question, Q 7.1 through Q7.4 does not apply.
- Incidental wildlife habitat areas must be clearly marked on a map.
- Each incidental area of wildlife habitat must be a minimum of 0.1 acre and not less than 20 ft wide.
- These areas cannot be separated from the conservation management system by a public road, land not under the control of the cooperator, a different land use, or a different management system than the one to which they are applied.
- Entire fields of CRP or wildlife land that are not within or adjacent to the other fields within the management system are not eligible to count as incidental areas of wildlife habitat.
- Areas of open water cannot be counted as incidental areas of wildlife habitat (shallow areas with emergent vegetation can be counted).

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- Incidental areas of wildlife habitat cannot be “double counted” (i.e. the same acres cannot be used as credit) for both cropland and pastureland or two different management systems).
- Incidental areas of wildlife habitat cannot be hayed or grazed more frequently than once every three years. Haying or grazing cannot occur between May 1 and July 15 and the grazing event cannot be longer than 30 days during the growing season, or not longer than 60 days during the dormant season.
- Incidental areas must be fenced to exclude livestock or livestock are never present.

Q7.1:

- Species on List A are considered desirable vegetation, while species on List B are not desirable.
- Native trees and shrubs are considered desirable vegetation, while non-native invasive trees such as Siberian elm, Russian olive and non-native invasive shrubs such as saltcedar, Autumn olive, Honeysuckle, European buckthorn, and Multi-flora rose are not desirable just as those on List B.
- Any native species in a mixture and adapted to the site (i.e. native grass, trees, shrubs, and wildflower species) are desirable just as those on List A. This would also include limited Eastern redcedar, Honey locust, Osage orange, etc. in a mixture with other native species (planted or volunteer). Monocultures of native invasive plants such as Eastern redcedar, Honey locust, Osage orange, etc. are not desirable.
- Annual weeds that provide suitable wildlife habitat including sunflowers, ragweeds, kochia, marehail, etc. should be considered as desirable cover PROVIDED they exist in a mixture with other desirable species on List A or others listed above.
- If there are multiple cover conditions present on different habitat areas, consider the quality and quantity of each in order to select the correct answer. For example, if there are two habitat areas – one acre of smooth brome field border which would score an “a” and one acre of wooded draw with greater than 67% desired species which would score a “c”; then the correct answer would be in between and “b” should be selected. However, if the two habitat areas consisted of a two-acre smooth brome field border and a 15-acre CRP field planted to native species, the correct answer would be “c” since there is a disproportionate amount of “c” desirable cover.
- When there is a combination of cover types on a given habitat area, consider the amount of each present to determine the quality. For example, a windbreak of a monoculture of Eastern redcedar with a smooth brome understory would qualify as “a” while a windbreak that contains multiple species such as Eastern redcedar, green ash, oaks, and pines with a native grass understory or a row of native shrubs would be considered a “c” in the options below.
 - a) If the answer to a) is Yes, other answers cannot be selected as Yes. The stand contains less than 33% of desirable species from List A or other desirable species described above. For example, it is common for unmanaged habitat areas in Eastern Nebraska to consist of primarily of undesirable cover i.e. smooth brome, Eastern redcedar monocultures, or reed canarygrass in wet areas.
 - b) The stand contains greater than 33% of desirable species from List A or desirable trees and shrubs as described above.
 - c) If the answer to a) or b) is Yes, c) cannot be selected as Yes. The stand contains greater than 67% of desirable species listed on List A or desirable trees and shrubs as described above.

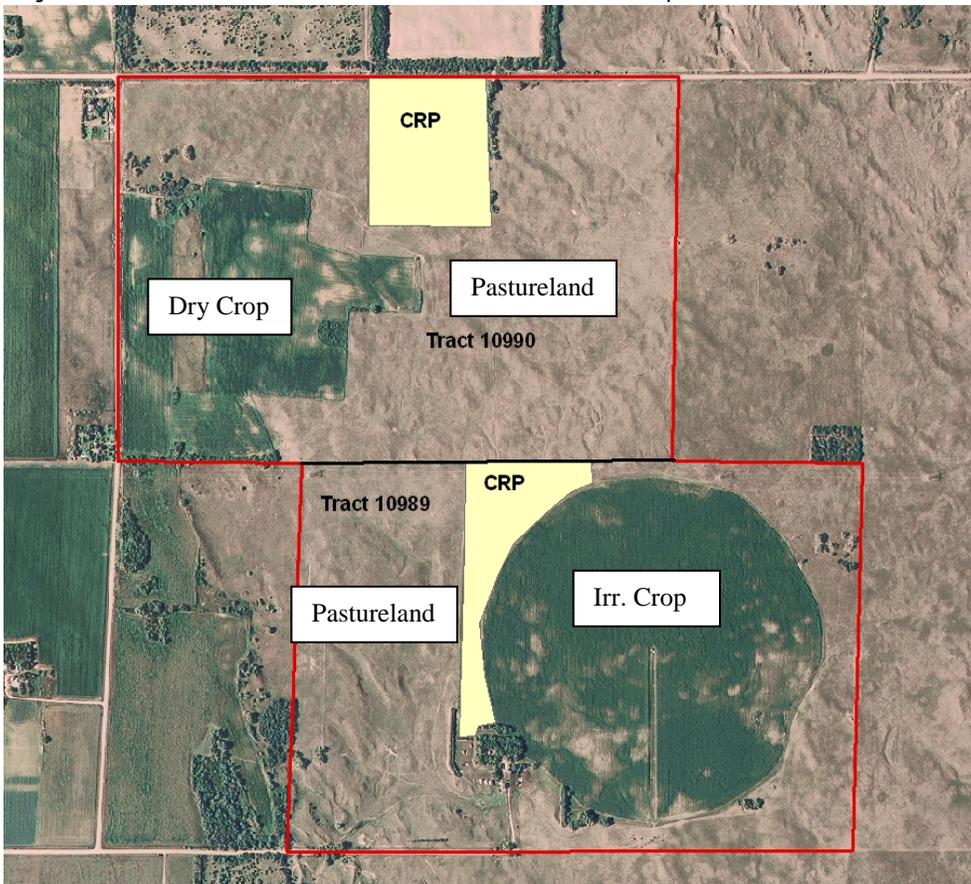
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Q7.2: Determine the total acres of incidental areas of wildlife habitat associated with a given management system and divide it by the total acres within or adjacent to each management system. The same area cannot be counted towards more than one management system.

Q7.3: Average the width of all wildlife areas associated with the management system. For example, if there are three incidental areas of wildlife habitat, take the average width of each area and then average those three widths to get the final answer.

Q7.4: Average the distance from the center of all fields within the management system to the closest incidental area of wildlife habitat. For example, if there were three fields in the management system, measure the distance from the center of each of these fields to the closest habitat area and average the three distances to get the final answer. If there is not an incidental area of wildlife habitat adjacent to or within a given field, measure the distance to the nearest habitat area that applies to the same management system which may be miles away on another tract in the application.

The example below shows two CRP fields that qualify as an incidental area of wildlife habitat. In Tract 10990, the CRP can only be used for the pasture since it is not adjacent to the dry cropland. In Tract 10989, the CRP could be applied to either the irrigated cropland or the pasture since it is adjacent to both land uses. It could also be split between the two management systems.



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Q8: Answer yes only when unharvested/ungrazed crops are left for wildlife food/cover every year and left throughout the winter season and meet one of the definitions for option "a" or "b".

a) or b) Applies when unharvested crops left for wildlife as follows: grain crops/food plots, winter cover crops, un-harvested hay/forage crops, such as sudan, with adequate stubble height (>18") that are present *per forty acres* of cropland and at are least 30 feet wide and next to un-cropped areas.

Q9: Requires a visual check of soil moisture, probing or other method prior to entering a field with farm equipment to ensure the field is not too wet to avoid compaction. All field operations including harvest, tillage, fertilizer application etc. must be avoided when the field is too wet and compaction could occur. No ruts or obvious soil compaction can be evident.

Q10: Consistent use of controlled traffic for all field operations and all crops in rotation is required. Each operation including harvest, planting, fertilizer, pesticide applications, and grain carts must follow the same wheel tracks year after year. Ridge-till, no-till, or strip till systems where established rows are maintained and the same wheel tracks/travel lanes are maintained is most applicable. Does not apply when full width tillage (disks, sweeps, field cultivators) are utilized without a GPS Guidance system to keep tractors on the same wheel tracks year after year. Controlled traffic does not apply to rotations with drilled crops (small grains, drilled beans, alfalfa) unless GPS guidance or established skip rows are utilized to maintain the same wheel tracks year after year. Controlled traffic does not apply to split row planting operations since rows and wheel tracks are not maintained in the same location from year to year.

Q11:

- The number of entries must match the number of years in the rotation. For example, a corn-corn-soybean-5 year's alfalfa rotation (8 year rotation) must have 8 entries, and a wheat-corn-fallow (3 year rotation) must have 3 entries to describe how residue is managed during each year.
- For the fallow year describe the residue management condition that best represents how residue is managed following the harvest of the previous crop through the following winter and spring for spring planted crops following fallow (i.e. millet-fallow), and through the summer for fall planted crops following a fallow period (i.e. wheat-fallow or wheat-corn-fallow rotations). For example, for a wheat-corn-fallow rotations, when wheat is no-till planted into corn stubble or no tillage is used following corn harvest until August which is just before planting wheat use a higher residue category for fallow entry, versus spring/summer tilled corn stubble. When corn stubble is fall tilled it typically will be placed in a lower residue category than spring/summer tilled corn stubble during the fallow portion of the rotation.
- For the crop year following fallow describe the condition that best represents the residue conditions after planting the crop.
- Enter the number of years of established alfalfa/other legumes or legume-grass mixes used in a crop rotation in 11f. For the establishment year place one entry that best represents the residue conditions after planting. Perennial grass hay that is not part of a crop rotation is entered in 11f as 1 crop entry only.
- Choose the answer that best matches the planting/tillage system (including row cultivation) used for each crop including fallow regardless of the depth of tillage.
- The primary factors used to place each crop and fallow in the appropriate category are percent residue cover after planting, timing of tillage, and whether row cultivation is performed to build ridges or create furrows.

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- The amount of stalk grazing, residue removal, depth of tillage, tillage equipment type/setting, tillage speed, number of tillage trips, the type and amount of residue affect the amount of residue remaining on the ground surface.
- The following guidance assumes that significant amounts of residue are not removed by grazing, forage removal or baling crop residues (if this occurs the category for residue cover will be lowered):
 - a) Applicable to all inversion tillage systems where a moldboard plow or other inversion tillage implements is used, including fallow years.
 - b) Applicable to all strip till ridge till and mulch till systems irregardless of tillage depth where soil is not inverted with a moldboard plow or similar inversion tillage implement and less than 30% residue remains after planting, or during the fallow portion of the rotation. Applies to full width tillage operations, such as use of a field cultivator, rolling stalk chopper, or a light disk that leave less than 30% ground cover after planting. For example, when using full width tillage implement on soybean stubble or other low residue crops such as edible beans there is less than 30% residue cover after planting. Another example is when full width tillage is performed multiple times on wheat or corn stubble less than 30% cover will remain after planting, or during the fallow portion of the rotation.
 - c) Applicable to all Fall and Winter full width non-inversion tillage (mulch till) that leave more than 30% residue cover after planting, or during the fallow portion of the rotation. Applicable to spring mulch till systems that leave greater than 30% residue cover after planting that include row cultivation or hilling. Applicable to ridge/strip till and all other tillage systems that either have no tillage or strip tillage performed at or before planting that include row cultivation or hilling.
 - d) Applicable to strip/zone till systems where a portion of the row is zone tilled at or before planting, and spring full width non-inversion tillage systems for spring planted crops that leave greater than 30% residue cover after planting. Applicable to no-till (slot) planting into low residue crops such as corn silage, sorghum haylage, and soybean stubble or dryland crops. Applicable to no-till planting systems where coulters, anhydrous injection, or trash movers, etc. are used that create additional ground disturbance beyond slot planting leaving less than 50% cover after planting, or fallow years where greater than 30% cover is left through the end of the fallow portion of the rotation. Hilling or row cultivation is not allowed.
 - e) Applicable strictly to no-till (slot plant) systems with 50-75% residue cover after planting, or high residue conditions where no tillage occurs during the fallow portion of the rotation. Applicable to high residue dryland crops and low and high residue irrigated crops. Use of coulters, trash movers on planters or drills or anhydrous application, or other fertilizer injection is not allowed on low residue crops because of the amount of additional soil disturbance. Hilling or row cultivation is not allowed.
 - f) Applicable strictly where ground disturbance is limited to no-till (slot) planting into very high residue conditions leaving great than 75% residue cover after planting, permanent hayland, and established alfalfa. Not applicable when additional soil disturbance occurs from coulters on planters or drills or anhydrous application, or other fertilizer injection is used. Hilling or row cultivation is not allowed.

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Q12: A spreadsheet has been developed to consistently answer this question to obtain an average winter cover condition and will be utilized to answer this question. This question considers how crop residue and hay/forage re-growth after a killing frost is managed throughout the winter for wildlife cover for each winter season in the rotation. The winter cover condition for each year of the rotation will be analyzed and input into this spreadsheet to determine the average winter condition over the life of the rotation.

Null Values

Input a null value for where soil is disturbed at harvest such as rodded edible beans, sugar beets, potatoes or other similar low residue crops with soil disturbance. Null values also include where any type of soil disturbance occurs in the fall or winter including fertilizer injection, rolling stalk choppers, field cultivators etc. following low residue crops such as soybeans, corn silage, sunflowers etc. Null values are applicable to high residue crops that have inversion tillage such as plows and other tillage operations where less than 30% residue cover is maintained throughout the winter months.

- a) Applicable when tillage such as rolling stalk choppers, chisels, disks, sub-soilers, or any other type of tillage occurs prior to or during the winter season on high residue crops and at least 30% residue cover is maintained after tillage. Applicable to low residue crops left undisturbed throughout the winter (no soil disturbance at all). Low residue crops include soybeans, dry edible beans, and sunflowers. Applicable to crops cut for silage such as corn silage, sorghum silage, sorghum haylage, corn or other high residue crop where residue is baled off, or any crops where less than 50% cover is maintained throughout the winter. NOTE: Low residue crops that have ground disturbance in the fall or winter of any kind or high residue crops that have fall or winter disturbance and leave less than 30% residue cover are not applicable to any of the options and are entered separately into Q12 spreadsheet (into the top box).
- b) Applicable to high residue crops that are "chopped or shredded" prior to or during the winter season, but the soil surface is not disturbed. Applicable to growing wheat, or rye planted in the fall. Not applicable when soil disturbance occurs from rolling stalk choppers or other devices that roll on the ground, or any tillage equipment used prior to or during the winter do not meet the criteria for this option.
- c) Applicable to corn stalks and other high residue annual crops such as forage sorghums that have residue gleaned by livestock but no mechanical disturbance of residue or the soil surface occurs. Applicable to grasses or legumes that are included in the rotation (i.e. alfalfa) with annual crops or permanent grasses or legumes that are grazed by livestock during the winter months that reduces wildlife cover.
- d) Applicable to high residue crops and hayland where no grazing, soil or residue disturbance occurs after harvest and residue is maintained with no disturbance throughout the winter where average stubble height is less than 8 inches throughout the winter. Applicable to perennial forages/hayland, when the amount of regrowth before a killing frost is less than 8". Corn stubble cut less than 8 inches with an axial flow combine is a typical example of average stubble height less than 8 inches. Not applicable to low residue crops.
- e) Applicable to high residue crops and hayland where no grazing, soil or residue disturbance occurs after harvest and residue is maintained with no disturbance throughout the winter where average stubble height is greater than 8 inches throughout the winter. Applicable to perennial forages/hayland, when the amount of regrowth before a killing frost is greater than 8". Wheat stubble or milo stubble cut at greater than 8 inches in height and left undisturbed are typical examples of stubble height greater than 8 inches.

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Q13: Examples of NO answers: after runoff occurs there is evidence of small ditches (ephemeral erosion) in flow areas during the portion of the rotation/time of the year when there is low residue cover; ditches are worked shut prior to planting the next crop, or occurs after tillage or planting, especially following low residue crops such as soybeans, or fallow, or high residue crops that are tilled. Fields with slopes, or concentrated flow areas that are left with little or no cover for a portion of the year are most prone to visible erosion. Other examples of visible erosion include furrow irrigation erosion; pivot track erosion; visible sediment deposition; active gullies, visible rills on down-hill rows, etc. The photo below shows ephemeral erosion following a low residue crop (soybeans) resulting in a no answer.



Q14 : Practices must be functional (e.g. terraces must not be overtopping and stable outlets such as grassed waterways present in concentrated flow areas and be properly maintained). Windbreaks pertain to field windbreaks that are within or directly adjacent to crop or hayland fields and not farmstead or feedlot shelterbelts. For this question, practices do not need to be present in every field but must be present and provide desired conservation benefits to fields contained in the conservation management system.

Q15: Answer yes when any types of pesticide (herbicides, insecticides, fungicides, rodenticides, etc.) are applied even for only one crop in a rotation, or spot treatments.

Q15.1: IPM Prevention, Avoidance, Monitoring, and Suppression (PAMS) techniques include:

- Prevention – Activities such as cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, and irrigation scheduling to limit situations that are conducive to disease development.
- Avoidance – Activities such as maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, and refuge management.
- Monitoring – Activities such as pest scouting, degree-day modeling, and weather forecasting to help target suppression strategies and avoid routine preventative treatments.
- Suppression – Activities such as the judicious use of cultural, mechanical, biological and chemical control methods that reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms.

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Answer a) Applicable when pesticides are applied and no other PAMS technique is used or documented with a field specific record keeping system.

Answer b) Applicable when a combination of all PAMS techniques are used on some of the crops in the rotation or when one or more PAMS techniques are used in addition to suppression techniques (pesticides) on all crops in the rotation.

Answer c) Applicable when a combination of all PAMS techniques are used on all crops in the rotation.

Q15.2: Records must include copies of WINpst report, WeedSoft reports or other similar environmental screening tools that are used on all fields in the management system.

Q16: Self-explanatory.

Q16.1: Applicable when manure, compost or other organic nutrient sources are applied to cropland.

Q16.1.1: Records must include nutrient analyses of all organic materials applied.

Q16.1.1a: Self-explanatory.

Q16.1.1b: Self-explanatory.

Q16.2: All fields within each management system have soil tests conducted at least once every three years and use the results to adjust/base nutrient application rates.

Q16.2.1: Select the appropriate response base on nitrogen application rates.

Q16.2.2: Select the appropriate response based on application rates for phosphorus or potassium.

Q16.3: Application rates are based on University of Nebraska recommendations and N rate is reduced for N-credits (legumes, prior manure applications, irrigation water above 10 PPM, etc...).

Q16.4: Self-explanatory.

Q16.5: Are in-season nitrogen management tools such as crop sensors, chlorophyll meters or the Pre-Sidedress Nitrate Test (PSNT) used?

Q16.6: Select more than one option if applicable to a given crop in the rotation.

- a) Applicable when fertilizer or manure is incorporated within 24 hours or anhydrous ammonia or liquid N is injected.
- b) Variable rate GPS site specific nutrient application method is used that bases N and P application rates on crop nutrient needs using grid or zone/directed soil sampling.
- c) Applicable when manure, dry or liquid fertilizer is surface applied without any soil disturbance on high residue crop stubble such as undisturbed wheat or corn stubble where 80% residue cover or when applying liquid N though a center pivots when 80% or more crop canopy is present. Fragile crop residues such as beans or sunflowers typically will not provide adequate residue cover. Injected or incorporated fertilizer/manure disturbs too much residue to maintain this amount of cover.

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Q16.7: Question applies to the crop year with the highest nutrient application. For example, corn will typically have higher nutrient applications than soybeans.

- a) Includes fall or early spring application of nutrients applied more than 1 month prior to planting for spring planted crops or green-up of perennials.
- b) Spring applications of nutrients applied less than 1 month prior to planting for spring planted crops or green-up of perennials.
- c) More than 50% of nutrients must be applied after crop emergence or after green-up of perennials and remaining amount of nutrients can be applied in the spring or fall.
- d) At least 50% or all of nutrients are applied after crop emergence or after green-up of perennials. The remaining amount of nutrients must be applied less than 1 month prior to planting.

Q17, Q17.1, and Q17.2 Salinity typically does not apply to Nebraska cropland or hayland.

Q18: Applicable to cropland and hayland that is irrigated.

Q18.1: Must be able to answer yes to the following two questions.

Q18.2: Flow devices such as flow-meters (totalizers), flumes are utilized to measure the amount of water applied to each field annually. Use of hour meters without the use of sonic flow meters is not allowed.

Q18.3: Monitor soil moisture with blocks, tensiometer probe with hand-feel method and/or monitor ET on site to schedule water applications.

Q18.4: Applicable to sprinkler systems e.g. coefficient of uniformity (CU) documentation associated with irrigation sprinkler system improvement (Ex. Conversion from gravity to sprinkler irrigation system, or sprinkler irrigation system re-nozzling.), catch-can, or other method of measuring uniformity of application and adjustments are made to irrigation system to improve uniformity.

Q18.5 and Q18.5.1: Not generally an issue in Nebraska.

Pasture Questions 1-11.3

Pasture Definition: Includes permanent grazing land producing introduced or domesticated forages (i.e. smooth brome, intermediate wheatgrass, orchardgrass, etc.) in a pure stand, in a mixture, or with legumes or single species warm season plantings such as switchgrass.

Pasture Species Mix Name: List pastures separately if they differ in species composition including legumes. Each species needs to be 10% or more of plant composition throughout the pasture to count as a different pasture species mixture. Limited to five pasture species mixes.

Answer questions for each pasture mixture listed. All pastureland in each conservation management system must have applicable management in place to answer each question affirmatively.

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Q1: Must have adequate grazing and roughage available throughout the growing season for livestock and wildlife.

Q2:

- a) Select this answer if grazing heights occurs at the beginning or end of the season is lower than listed in Table 4.
- b) Select this answer if grazing heights are at or above heights listed in Table 4 and greater than 50% of the area within pastures have spots where grazing heights are uneven.
- b) Select this answer if grazing heights are at or above heights listed in Table 4 and less than 50% of the of the area within pastures have spots where grazing heights are uneven.

Q3: Select closest option based on the dominant forage species and functional group(s) (functional groups include: cool-season grass; warm-season grass; and legumes).

Q4:

- a) Select this answer if any one species on List B is the only species present OR if a species NOT listed as "Monocultures" dominates 50% or more of the stand. For example, this is the correct answer if smooth brome is 60% of the stand and orchardgrass is 40% of the stand.
- b) An example would be a stand of 70% or less smooth brome and 30% Intermediate wheatgrass and red clover.
- c) An example would be a stand that has at least 60% of the stand made up of species from list A. Another example would be two species noted as "In Mixture" such as 60% Orchardgrass and 40% intermediate wheatgrass.
- d) An example would be a stand that has at least 60% of the stand made up of species from list A.

Q5-Q5.4: Refer to Cropland Q7-Q7.4 for guidance.

Q6: Applicable when active management including proper grazing use and livestock distribution management is utilized to limit erosion on critical areas (active blowouts etc.), vehicle and stock trail erosion. Active gully erosion cannot exist. (Photos below provide examples where active management is not occurring to limit runoff, control accelerated erosion, or where active gully erosion exists).



<i>^{1/} Table 4. Recommendations for Beginning and Ending Grazing (Heights and Dates) for Nebraska Pastures</i>				
Species	Begin Grazing		End Grazing	
	^{2/} Minimum Height of Vegetative Growth (inches)	Approximate Date*	^{2/} Minimum Residual Height (inches)	^{2/} Minimum Residual Height Before Killing Frost (inches)
Alfalfa	6	May 15	3	6
Alsike and red clover	6	May 15	3	6
Biennial sweetclover	6	May 1	3	6
Big & Sand bluestem	10	June 1	6	10
Birdsfoot trefoil	6	June 1	3	6
Cicer milkvetch	8	May 20	5	8
Creeping foxtail	6	May 1	3	6
Crested wheatgrass	4	April 20	3	6
Eastern gamagrass	18-20	June 1	8	10
Indiangrass	10	June 1	4	10
Intermediate wheatgrass	6	May 1	5	8
Kentucky bluegrass	4	May 1	2	3
Meadow brome	6	May 1	5	6
Orchardgrass	6	May 1	5	8
Pubescent wheatgrass	6	May 1	5	6
Reed canarygrass	8	May 1	4	8
Russian wildrye	6	May 1	3	4
Smooth brome	6	May 1	4	7
Switchgrass	10	June 1	6	10
Tall fescue	6	May 1	3	6
Tall wheatgrass	7	May 1	4	8
Timothy	6	June 1	4	5
Western wheatgrass	6	May 1	3	6

^{1/}Grass and legume mixtures should be grazed in a manner that favors the dominant or desired species. Height is the average height when leaves are lifted in a vertical position. Final degree-of-use and residual forage height determinations should generally be made at or near the end of the growing season. However, reviewing utilization levels after each grazing event permits the land manager to make adjustments to the grazing plan in order to better achieve the desired objectives. At a minimum, use levels will be documented at key grazing areas during an annual follow-up review. See the [National Range and Pasture Handbook, Chapter 5](#) for additional guidance on selecting key plant species, key grazing areas, and degree of use determinations.

^{2/}All heights listed in Table 4 can be adjusted downward by 25% for all species in Vegetative Zone I which applies to all counties located in the Panhandle of Nebraska.

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Q7: Applicable to areas where livestock concentrate for water access, mineral, salt, haying/other supplemental feeding, winter feeding areas, where livestock concentrate next to water bodies/sources listed in Q3 in the general inventory section without fencing to control access and/or maintain an adequate perennial grass buffer next to the water body. These areas are typically void of most perennial vegetation, or contain weedy cover due to livestock concentration (Refer to photos below for examples with unmanaged access to water bodies/sources).



Q8: Applicable if any pesticide is used including spot spraying of thistles, spurge or other weeds, and when pesticides are used on a rotational basis (i.e. once every three years)

Q8.1: IPM Prevention, Avoidance, Monitoring, and Suppression (PAMS) techniques include:

- Prevention – Activities such as cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, and irrigation scheduling to limit situations that are conducive to disease development.
- Avoidance – Activities such as maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, and refuge management.
- Monitoring – Activities such as pest scouting, degree-day modeling, and weather forecasting to help target suppression strategies and avoid routine preventative treatments.
- Suppression – Activities such as the judicious use of cultural, mechanical, biological and chemical control methods that reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms.

Answer a) Applicable when pesticides are applied and no other PAMS technique is used or documented with a field specific record keeping system.

Answer b) Applicable when a combination of all PAMS techniques are used on some forage management system acres or when one or more PAMS techniques are used in addition to suppression techniques (pesticides) on all forage management acres.

Answer c) Applicable when a combination of all PAMS techniques are used on all forage management acres.

Q8.2: Records must include copies of WINpst report, WeedSoft reports or other similar environmental screening tools that are used on all fields in the management system.

Q9: Applicable if nutrients are applied even on an occasional basis.

Q9.1: Applicable when manure, compost or other organic nutrient sources are applied to pastureland.

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Q9.1.1: Records must include nutrient analyses of all organic materials applied.

Q9.1.1a: Self-explanatory.

Q9.1.1b: Self-explanatory.

Q9.2: All fields within each management system have soil tests conducted at least once every five years and use the results to adjust/base nutrient application rates.

Q9.2.1: Select the appropriate response base on nitrogen application rates.

Q9.2.2: Select the appropriate response based on application rates for phosphorus or potassium.

Q9.3: Application rates are based on University of Nebraska recommendations and N rate is reduced for N-credits (legumes, prior manure applications, irrigation water above 10 PPM, etc...).

Q9.4: Select more than one option if applicable to a given crop in the rotation.

a) Applicable when manure is injected at least 2 inches deep.

b) Variable rate GPS site specific nutrient application method is used that bases N and P application rates on crop nutrient needs using grid or zone/directed soil sampling.

c) Applicable when manure, dry or liquid fertilizer is surface applied without any soil disturbance on high residue crop stubble such as undisturbed wheat or corn stubble where 80% residue cover or when applying liquid N though a center pivots when 80% or more crop canopy is present.

Q9.5: Self-explanatory.

Q10-10.2: Salinity typically does not apply to Nebraska pastureland, skip to Q11.

Q11: Applicable to pastureland that is irrigated.

Q11.1: Refer to cropland question 18.1 for guidance.

Q11.2: Refer to cropland question 18.2 for guidance.

Q11.3: Refer to cropland question 18.3 for guidance

Q11.4: Refer to cropland question 18.4 for guidance

Q11.5 and Q11.5.1: Not generally an issue in Nebraska.

Range Questions 1-10.1

Rangeland Definition: Includes native grassland, and native seeding mixtures such as expired CRP or reseeded rangeland. Can include native grassland where up to 2/3 of the plant community includes non-native species that have encroached e.g. smooth brome, Kentucky bluegrass, annuals, or tree encroachment.

All rangeland fields must have applicable management in place to answer each question affirmatively.

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Q1: Must have adequate grazing and roughage available throughout the growing season for livestock and wildlife.

Q2: Percent of use is based on the amount of annual growth removed from grazing including dormant grazing. Records/monitoring supports the amount of annual growth utilized (this can include measuring/estimating plant height, visual estimates, photo-points or other acceptable methods in the 528 Prescribed Grazing Standard and the Range and Pasture Handbook). Patchy appearance means that that some areas are relatively ungrazed and residual plant height is not uniform throughout. Even grazing distribution grazing height is uniform throughout.

Q3: Refer to ecological site descriptions or range sites for descriptions of increasers, decreaseers, invaders, various types of plant communities, climax plant communities etc. for guidance on the correct answer.

a) More than 50% of plant species are non-native or native invaders such as smooth brome, Kentucky bluegrass, annual weeds, Western ragweed, Siberian elm, Eastern redcedar, honeylocust, noxious weeds and other invasive plants.

b-d) Example: Plants that increase under grazing pressure include introduced species listed above and those tolerant to heavy grazing such as short native grasses like dropseeds, needleandthread, buffalograss, blue grama. On tallgrass or mid-grass prairie sites desirable species such as big bluestem, switchgrass, and Indiangrass will decrease under heavy grazing pressure. Determine the approximate ratio accordingly.

Q4: Applicable to all tanks and troughs used for watering livestock, but does not apply to embankment or dugout ponds. A tank/trough must have at least one escape ramp within it and contain water from April into October. Refer to Animal Enhancement Activity ANM18 "Retrofit Watering Facility for Wildlife Escape" for information on the type of escape ramps that apply. Wire cannot be strung across the top of tanks but wooden boards are acceptable for fenceline tanks.

Q5: This question shall be answered yes when brush management control measures have been utilized that impact the extent of brush whether intentional or not such as; broadcast herbicide applications, spot herbicide treatments to control undesired trees/shrubs, mechanical treatments such as digging cutting shearing etc., prescribed burning, grazing systems with intensive browsing of brush by livestock or other activities that impact the extent of brush.

a) Limited brush control of non-native, or invasive brush species such as Eastern redcedar, Siberian elm, Honey locust, Russian olive, Honeysuckle, Multiflora rose etc. have substantially encroached into grassland habitats; or nearly all native brush species such as American plum, chokecherry, skunkbrush sumac, etc. have been nearly eliminated by brush control measures.

b) A moderate encroachment of non-native, or invasive brush species such as Eastern redcedar, Siberian elm, Honey locust, Russian olive, Honeysuckle, Multi-flora rose etc. exists; or non-selective brush control techniques are used (i.e. broadcast Grazon herbicide) that have suppressed native brush species such as American plum, chokecherry, Skunkbrush sumac, etc. are still present.

c) Brush control has eliminated all non-native invasive species i.e. Siberian elm, Russian olive, Multiflora rose, Honey suckle etc. and the level of brush control of invasive native brush species such as Eastern redcedar, Honey locust, buckbrush/snowberry, Sand sage, etc. are appropriate at historic levels on certain ecological/range sites. For example, buckbrush at

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levels of 5% or limited amounts Eastern redcedar on steep slopes would be acceptable for many silty sites and should not be totally eliminated. Brush control measures have not reduced Native shrubs such as American plum, chokecherry, skunkbrush sumac, and other native shrubs are present at historic levels and brush are managed to maintain desired wildlife habitat.

Q6: Answer yes whenever fence exists and select the option for the percentage of wildlife friendly fence in place. The following requirements must be met to be wildlife friendly (applicable to both perimeter fence and cross fence):

- 1) 42" or less top wire height;
- 2) Bottom wire is 16" or greater from the ground for barbed wired, OR 12" or greater from the ground for smooth wire;
- 3) Top 2 wires are at least 12" apart; and
- 4) No woven wire.

Q7: Refer to Q6 of pastureland questions including photos.

Q8: Refer to Q7 of pastureland questions for guidance including photos.

Q9-Q9.2: Refer to pastureland questions 8-8.2 for guidance.

Q10-Q10.1: Typically does not apply to Nebraska rangeland.

Water Questions 1-9

Q1: Applicable only if there are ponds, lakes and wetlands that are permanent, semi-permanent or seasonal water bodies (contain open water for at least 30 days or more during the growing season in most years). Refer to General Inventory Question 2 for water body definitions.

Q2: Percent of water body perimeter that is buffered by at least a 33-foot wide zone of diverse perennial vegetation. Perennial vegetation must not be considered noxious such as saltcedar, phragmites and purple loosestrife. Introduced species such as smooth brome and reed canarygrass are acceptable.

Q3: Must have perennial vegetation (as noted above) around the entire perimeter of all water bodies to answer no.

Q4: Applicable only if there are perennial, seasonal/intermittent streams and ditches that has seasonal flow for at least 30 days per year. Refer to General Inventory Question 2 for water course definitions.

Q5: Applicable if water is being pumped or diverted from a stream.

- a) Water pumping or diversion from stream will stop all flow for at least a portion of the year.
- b) Applicable when diverting or pumping water and screens are not present allowing fish and other aquatic species to pass.
- c) Applicable when diverting or pumping water and screens are present which prevent fish and other aquatic species from passing.

Q6: Consider the type of structure and circumstances relative to flow.

- a) Any structure that completely separates the upstream and downstream stream segments year-round such as a dam with a drop tube or a year-round diversion.

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- b) Any structure that has a culvert (straight tube) that is not inset into the substrate; or a low-water crossing that has a drop on the downstream end of greater than 12 inches; or an irrigation diversion that is only closed off during a portion of the year would qualify for this answer.
- c) Structures such as a low-water crossing without any drop or a culvert that is inset into the substrate would qualify for this answer.

Q7: Applicable to all perennial, seasonal/intermittent streams and ditches that have seasonal flow for at least 30 days per year. (Conditions must exist on 90% of the channel length accounting for both sides of the channel if applicable.)

- a) Applicable when cropping, or spraying herbicides within and/or next to the streambank without a grass buffer, or with a buffer that is less than 20 feet. Applicable when the area adjacent to stream consists annual weeds or noxious weeds.
- b) Applicable when perennial grass buffers are in place that are at least 20 feet wide and consist of native or introduced perennial grasses, or trees (not including noxious weeds).
- c) Applicable when perennial grass buffers are in place that are at least 33 feet wide and consist primarily of native perennial grasses, shrubs or trees.

Q8:

- a) Applicable when buffer is less than 20 feet wide or is dominated by a single species such as reed canarygrass or contains invasive species such as Russian olive, saltcedar, purple loosestrife, phragmites, etc. or is primarily bare ground or annual weeds, or annual crops are planted within 20 feet of the steam bank or edge of water body.
- b) Applicable when buffers are at least 20 feet wide and are primarily consists of non-native plants such as smooth brome and invasive species or noxious weeds are not present.
- c) Applicable when buffers are at least 20 feet wide vegetation is primarily native trees, shrubs and/or grasses.

Q9: All broadcast pesticide applications, or manure applications must maintain a minimum setback of 33 feet from the outside perimeter of all water bodies and the edge of the stream banks on water courses. Distance is measured outward 33 feet perpendicular from the edge of the streambank or the outside perimeter of water bodies.

Wildlife Friendly Plant Species for CSP 2012 in Nebraska

This information is pertinent to the following questions in the Conservation Measurement Tool (CMT):

Cropland Questions 6 and 7

Pasture Questions 3, 4, and 5

This information is also referenced in the following animal enhancements :

ANM03; ANM05; ANM07; ANM23; ANM32; and ANM33

The species on List A, under the "Other Desired" header, and the pollinator table (on next page) are acceptable for wildlife habitat.

Those on List B and under the "Undesirable Plants" are not acceptable.

List A - Pasture/Hayland species that promote wildlife conservation	
Plant Common Name	Functional Group
Alfalfa	Legume
Alkali Cordgrass (Range Species)	Cool Season Grass
Alkali Sacaton	Warm Season Grass
Alsike Clover	Legume
Big Bluestem	Warm Season Grass
Blue Grama	Warm Season Grass
Bluebunch Wheatgrass (Range Species)	Cool Season Grass
Birdsfoot Trefoil	Legume
Buffalograss (Range Species)	Warm Season Grass
Canada Milkvetch	Legume
Canada Wildrye	Cool Season Grass
Cicer Milkvetch	Legume
Eastern Gamagrass	Warm Season Grass
Green Needlegrass	Cool Season Grass
Illinois Bundleflower	Legume
Indiangrass	Warm Season Grass
Indian Ricegrass	Cool Season Grass
Inland Saltgrass (Range Species)	Warm Season Grass
Intermediate Wheatgrass - (In Mixtures)	Cool Season Grass
Leadplant	Legume - Shrub
Little Bluestem	Warm Season Grass
Meadow Bromegrass - (In Mixtures)	Cool Season Grass
Needleandthread	Cool Season Grass
Orchardgrass - (In Mixtures)	Cool Season Grass
Prairie Cordgrass (Range Species)	Cool Season Grass
Prairie Sandreed	Warm Season Grass
Pubescent Wheatgrass - (In Mixtures)	Cool Season Grass
Red Clover	Legume
Russian Wildrye - (In Mixtures)	Cool Season Grass
Sand Bluestem	Warm Season Grass
Sand Lovegrass	Warm Season Grass
Sideoats Grama	Warm Season Grass
Switchgrass	Warm Season Grass
Sweet Clover (Yellow or White) *	Legume
Tall Wheatgrass (In Mixtures)	Cool Season Grass
Thickspike Wheatgrass	Cool Season Grass
Virginia Wildrye	Cool Season Grass
Western Wheatgrass	Cool Season Grass
Wheatgrass Hybrid (Newhy) - (In Mixtures)	Cool Season Grass
White Clover *	Legume

List B - Other pasture/hayland species used in Nebraska	
Plant Common Name	Functional Group
Creeping Foxtail	Cool Season Grass
Crested Wheatgrass	Cool Season Grass
Festulolium	Cool Season Grass
Intermediate Wheatgrass - (Monocultures)	Cool Season Grass
Kentucky Bluegrass *	Cool Season Grass
Meadow Bromegrass - (Monocultures)	Cool Season Grass
Orchardgrass - (Monocultures)	Cool Season Grass
Pubescent Wheatgrass - (Monocultures)	Cool Season Grass
Reed Canarygrass	Cool Season Grass
Russian Wildrye - (Monocultures)	Cool Season Grass
Smooth Bromegrass	Cool Season Grass
Tall Fescue	Cool Season Grass
Tall Wheatgrass - (Monocultures)	Cool Season Grass
Wheatgrass Hybrid (Newhy) - (Monocultures)	Cool Season Grass

Other Desired Plant Species:

- All native wildflowers adapted to the site (examples are blackeyed Susan, rigid goldenrod, leadplant, etc.)
- All native shrubs adapted to the site (examples are American plum, snowberry, sand sage, etc.)
- All native trees adapted to the site (examples are green ash, bur oak, cottonwood, ponderosa pine, etc.)
- Annual weeds such as sunflowers, ragweeds, kochia, marestalk, etc. PROVIDED they are present in combination with a mixture of plants listed above.
- Mixed stands of non-native tree/shrub species that are not invasive such as Austrian pine, lilac, etc.

Other Undesired Plant Species:

- Non-native, invasive tree species which include Siberian elm, Russian olive, etc.
- Non-native, invasive shrub species which include saltcedar, Autumn olive, honeysuckle, European buckthorn, and multi-flora rose
- Invasive native trees/shrubs which form monocultures including Eastern red cedar, honeylocust, osage orange, etc.
- Invasive herbaceous species including phragmites, serecia lespedeza, purple loosestrife, etc.

Commonly Used Native Wildflower Species for Use in Pollinator Habitat Seedings Listed by Bloom Period		
Spring/Early (April 15-June 15)	Summer/Middle (June 15-August 15)	Fall/Late (August 15-October15)
Alumroot	Anemone, Canada	Aster, aromatic
Blanketflower *	Blackeyed Susan *	Aster, azure (sky blue)
False indigo, white	Black Sampson (narrowleaf coneflower)	Aster, New England
False indigo, cream (plains)	Coneflower, grayhead *	Aster, smooth blue
Gaura, scarlet	Coneflower, pale purple	Aster, upland white (heath) *
Golden Alexander	Coneflower, purple *	Beggar-ticks
New Jersey tea	Coneflower, upright prairie *	Boneset
Penstemon, shell-leaf (large)	Coreopsis, plains *	Boneset, tall
Penstemon, narrowleaf	Coreopsis, prairie	Cardinal flower (lobelia)
Penstemon, tall white (beardtongue)	Culver's root	Compass plant
Rose, Arkansas	False sunflower (oxeye sunflower) *	Coneflower, cutleaf (golden glow)
Rose, Carolina (prairie wild)	Flax, blue (subspecies " <i>lewisi</i> " only)	Cup-plant
Rose, woods (Western wild)	Gentian, prairie	False boneset
Sandcherry	Golden-aster, hairy	Gayfeather, dotted
Scarlet globemallow	Goldenrod, Canada *	Gayfeather, plains
Spiderwort, Ohio	Illinois bundleflower *	Gayfeather, rough
Sumac, skunkbush	Larkspur, white	Gayfeather, thickspike
Vetch, American	Leadplant	Gentian, downy
Yarrow, Western *	Milkweed, butterfly	Goldenrod, showy-wand
	Milkweed, common *	Goldenrod, stiff *
	Milkweed, showy	Jerusalem artichoke
	Milkweed, smooth	Joe Pye weed, spotted
	Milkweed, swamp	Lespedeza, roundhead
	Milkweed, whorled	Lobelia, great blue
	Milkvetch, Canada *	Obedience plant
	Mountain mint, Virginia	Pitcher sage
	Onion, nodding	Rattlesnake-master
	Phlox, prairie	Sagewort, cudweed (white sage) *
	Primrose, common evening	Sagewort, fringed (fringed sage)
	Primrose, four-point evening	Seedbox, bushy
	Primrose, Missouri	Sneezeweed
	Prairie cinquefoil	Sunflower, ashy
	Prairieclover, purple	Sunflower, Maximilian *
	Prairieclover, silky	Sunflower, sawtooth
	Prairieclover, white	Sunflower, stiff
	Rocky Mountain bee plant *	Tickseed sunflower (bidens)
	Rosinweed, entire-leaved	
	Sensitive brier	
	Showy Partridge-pea *	
	Tick-clover, Canada (showy)	
	Vervain, blue	
	Verbena, hoary (wooly) *	
	Virginia Mountain mint	
	Western ironweed *	
	Wild bergamot *	
	Wild senna	