

AR 2021 CSP Renewal Activity List
Enhancements

Code	Resource Concern	Resource Concern Cause	Crop (Annual and Mixed)	Crop (Perennial)	Pasture	Range	Forest	Associated Ag Land	Farmstead	Full Enhancement Name	Enhancement Description	Units	Enhancement Lifespan	Max years enh. can be contracted
E314A	PLANTS; ANIMALS	Plant Structure and Composition, Plant Pest Pressure; Terrestrial Habitat for Wildlife and Invertebrates			X	X	X	X		Brush management to improve wildlife habitat	Brush management is employed to create a desired plant community, consistent with the related ecological site steady state, which will maintain or enhance the wildlife habitat desired for the identified wildlife species. It will be designed to provide plant structure, density and diversity needed to meet those habitat objectives. This enhancement does not apply to removal of woody vegetation by prescribed fire or removal of woody vegetation to facilitate a land use change.	acre	10	5
E315A	PLANTS	Plant Productivity and Health, Plant Structure and Composition, Plant Pest Pressure			X	X	X	X		Herbaceous weed treatment to create desired plant communities consistent with the ecological site	Mechanical, chemical, or biological, herbaceous weed treatment will be used to control targeted, herbaceous weeds to create, release, or restore desired plant communities that are consistent with achievable, ecological site, steady state descriptions.	acre	5	5
E327A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X			X	X	X	Conservation cover for pollinators and beneficial insects	Seed or plug nectar and pollen producing plants in non-cropped areas such as field borders, vegetative barriers, contour buffer strips, grassed waterways, shelterbelts, hedgerows, windbreaks, conservation cover, and riparian forest and herbaceous buffers.	acre	5	1
E327B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X				X	X	Establish Monarch butterfly habitat	Seed or plug milkweed (<i>Asclepias</i> spp.), and high-value monarch butterfly nectar plants on marginal cropland, field borders, contour buffer strips, and similar areas.	acre	5	1
E328A	SOIL; PLANTS	Sheet and Rill Erosion; Wind Erosion; Organic Matter Depletion; Compaction; Plant Pest Pressure; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Resource conserving crop rotation	Establish a Resource Conserving Crop Rotation. Rotation must include AT LEAST one resource conserving crop as determined by the State Conservationist in a minimum three year crop rotation. The crop rotation will reduce soil erosion (water and wind), improve soil health, improve soil moisture efficiency, and reduce plant pest pressures.	acre	1	5
E328B	SOIL; PLANTS	Sheet and Rill Erosion; Wind Erosion; Organic Matter Depletion; Compaction; Plant Pest Pressure; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Improved resource conserving crop rotation	Improve an existing Resource Conserving Crop Rotation. Must enrich an existing rotation which already includes AT LEAST one resource conserving crop as determined by the State Conservationist in a minimum three year crop rotation. The crop rotation will reduce soil erosion (water and wind), improve soil health, improve soil moisture efficiency, and reduce plant pest pressures.	acre	1	5

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E328C	SOIL	Sheet and Rill Erosion, Wind Erosion	X							Conservation crop rotation on recently converted CRP grass/legume cover	Implement a crop rotation management system on crop land acres that have recently converted from CRP grass/legume conservation cover to annual planted crops. Crop rotation minimizes disturbance resulting in a Soil Tillage Intensity Rating (STIR) less than 10 and reduces soil erosion from water and wind to below soil tolerance (T) level. The current NRCS wind and water erosion prediction technologies must be used to document the rotation, soil erosion estimate, and STIR calculations. *This enhancement is limited to acres where the conversion event took place not more than 2 years prior. Enhancement not applicable on hayland.	acre	1	5
E328D	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Leave standing grain crops unharvested to benefit wildlife	Implement a crop rotation which allows a portion of grain crops to be left in fields un-harvested to provide food and cover for wildlife during winter months.	acre	1	5
E328E	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Soil health crop rotation	Implement a crop rotation which addresses all four principle components of soil health: increases diversity of the cropping system; maintains residue throughout the year; keeps a living root; and minimizes soil chemical, physical and biological disturbance. The rotation will include at least 4 different crop and/or cover crop types (crop types include cool season grass, warm season grass, cool season broadleaf, warm season broadleaf) grown in a sequence that will produce a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.	acre	1	5
E328F	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Modifications to improve soil health and increase soil organic matter	Use of soil health assessment to evaluate impact of current conservation crop rotation in addressing soil organic matter depletion (primary assessment made in Year 1). Modifications to the crop rotation and/or crop management will be made as a result of the assessment results (adding a new crop and/or cover crop to the rotation; making changes to planting and/or tillage system, harvest timing of crops, or termination timing of cover crops). During Year 3 a follow up assessment will be completed to allow time for the modifications to show increased soil organic matter. Modified system must produce a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.	acre	1	5

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E328G	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement	Crop rotation on acres converted, no more than 2 years prior, from CRP grass/legume cover to annual crops. Diverse rotation with living roots and residue cover throughout year and minimal disturbance. Enhancement not applicable on hayland.	acre	1	5
E328H	SOIL	Concentration of Salts and other Chemicals	X							Conservation crop rotation to reduce the concentration of salts	Implement a crop rotation to reduce the concentration of salts and other chemicals from saline seeps. The rotation should include at least 3 crops and/or cover crops grown in a sequence in the recharge areas of saline seeps that have rooting depths and water requirements adequate to fully utilize all available soil water. Do not use summer fallow. Use an approved water balance procedure to determine crop selection and sequence. Select crops with a tolerance to salinity levels that match the salinity of the discharge area. (See state lists)	acre	1	5
E328I	WATER	Nutrients Transported to Surface Water	X	X						Forage harvest to reduce water quality impacts by utilization of excess soil nutrients	Establish a forage crop (single species or mix) following a primary annual crop to take up excess soil nutrients. Select forage known to effectively utilize and scavenge nutrients. Forage shall be harvested for forage, but not be grazed or burned.	acre	1	1
E328J	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Improved crop rotation to provide benefits to pollinators	Improve the existing crop rotation by adding pollinator friendly crops into the rotation. The crop rotation shall include a minimum of three different crops in a minimum five year crop rotation. Each year, the pollinator friendly crop will be planted on a minimum of 5% of cropland acres contained within the agricultural operation. Use of insecticides is limited for the pollinator friendly crop.	acre	1	5
E328K	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Multiple crop types to benefit wildlife	Alternating crops in a systematic arrangement of strips across a field to provide diverse rotations of crops that provide wildlife food. At least two crops will be planted in adjacent strips a minimum of 0.5 acres in size.	acre	1	5
E329A	SOIL	Sheet and Rill Erosion; Wind Erosion	X							No till to reduce soil erosion	Establish no till system to reduce sheet and rill and wind erosion soil loss. Field(s) must have a soil loss at or below the soil tolerance (T) level for water and wind erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 10 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to calculate soil loss and STIR.	acre	1	5

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E329B	AIR	Emissions of Particulate Matter (PM) and PM Precursors	X							No till to reduce tillage induced particulate matter	Establish no till system to reduce tillage induced particulate matter. Field(s) must have a soil loss at or below the soil tolerance (T) level for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 10 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to document soil loss and STIR calculations.	acre	1	5
E329C	WATER	Inefficient Irrigation Water Use; Naturally Available Moisture Use	X							No till to increase plant-available moisture	Establish a no till system to increase plant-available moisture. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations. Maintain a minimum 60 percent surface residue cover throughout the year to reduce evaporation from the soil surface.	acre	1	5
E329D	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							No till system to increase soil health and soil organic matter content	Establish a no till system to increase soil health and soil organic matter content. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The crop rotation must achieve a soil conditioning index (SCI) of zero or higher. The current NRCS wind and water erosion prediction technologies must be used to document STIR and SCI calculations. Residue shall not be burned, grazed, or harvested.	acre	1	5
E329E	ENERGY	Energy Efficiency of Farming/Ranching Practices and Field Operations	X							No till to reduce energy	Establish a no till system which reduces total energy consumption associated with field operations by at least 25% compared to current tillage system (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.	acre	1	5
E338A	PLANTS	Plant Pest Pressure, Wildfire Hazard from Biomass Accumulation			X	X	X			Strategically planned, patch burning for grazing distribution and wildlife habitat	Patch burn grazing is the application of prescribed fires on portions of an identified grazing unit at different times of the year. Patch burn grazing allows grazing animals to select where they want to graze creating a mosaic of vegetation structures and diversity that will maintain or enhance the wildlife habitat desired for the identified wildlife species and maintain livestock production.	acre	1	5

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E338B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates; Feed and Forage Imbalance					X			Short-interval burns to promote a healthy herbaceous plant community	The controlled use of fire is applied in a forest to restore fire-adapted plants while improving wildlife habitat, wildlife food supply, and reducing the risk of damage from intense, severe wildfires. The ideal interval between prescribed burns is not often achieved. To improve the effectiveness of prescribed burning, the frequency of prescribed burning is increased appropriately, for a specified time period, to help restore ecological conditions in forests and woodlands. Short return interval prescribed burning is used to regenerate desirable tree species, improve the condition of fire-adapted plants and native herbaceous vegetation, improve wildlife food supply, create wildlife habitat (snags and den/cavity trees), limit encroachment of competing vegetation including non-native species, and reduce the future risk of damage from intense, severe wildfires.	acre	1	5
E338C	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates					X			Sequential patch burning	Conduct prescribed burning beneath a forest canopy (ground fire), burning a portion of the area each year to create a mosaic of vegetation in several stages of development, to provide a more diverse understory and contribute to wildlife habitat. The health of conifer and oak-conifer forests, particularly longleaf pine with a characteristic herbaceous understory, is dependent on fire or another means of controlling encroaching woody vegetation. A healthy longleaf or shortleaf pine, or pine-oak forest, can support a wide array of wildlife including pollinators and several endangered or threatened species.	acre	1	5
E340A	SOIL	Sheet and Rill Erosion; Wind Erosion	X	X						Cover crop to reduce soil erosion	Cover crop added to current crop rotation to reduce soil erosion from water and wind to below soil tolerance (T) level. Cover crops grown during critical erosion period(s). Species are selected that will have physical characteristics to provide adequate erosion protection.	acre	1	5
E340B	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Intensive cover cropping to increase soil health and soil organic matter content	Implementation of cover crop mix to provide soil coverage during ALL non-crop production periods in an annual crop rotation. Cover crop shall not be harvested or burned. Planned crop rotation including cover crops and associated management activities must achieve a soil conditioning index (SCI) of zero or higher. The current NRCS wind and water erosion prediction technologies must be used to document SCI calculations.	acre	1	5
E340C	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X	X						Use of multi-species cover crops to improve soil health and increase soil organic matter	Implement a multi-species cover crop to add diversity and increase biomass production to improve soil health and increase soil organic matter. Cover crop mix must include a minimum of 4 different species. The cover crop mix will increase diversity of the crop rotation by including crop types currently missing, e.g. Cool Season Grass (CSG), Cool Season Broadleaves (CSB), Warm Season Grasses (WSG), Warm Season Broadleaves (WSB).	acre	1	5

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E340D	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability		X						Intensive orchard/vineyard floor cover cropping to increase soil health	Implement orchard or vineyard floor cover crops. Cover crop shall not be harvested, grazed, or burned. Must achieve a soil conditioning index of zero or higher and produce a positive trend in the Organic Matter subfactor over the life of the rotation.	acre	1	5
E340E	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Use of soil health assessment to assist with development of cover crop mix to improve soil health	Soil health assessment (year 1) to evaluate current crop rotation in addressing soil organic matter depletion. Results are utilized to select a multi-species cover crop mix to add to the current crop rotation. Follow up assessment completed (year 3).	acre	1	5
E340F	SOIL	Compaction	X	X						Cover crop to minimize soil compaction	Establish a cover crop mix that includes plants with both fibrous root and deep rooted systems. Fibrous to treat and prevent both near surface (0-4") and deep (>4") soil compaction and deep rooted to break up deep compacted soils. Cover crop shall not be harvested, grazed, or burned.	acre	1	5
E340G	WATER	Nutrients Transported to Surface Water; Nutrients Transported to Groundwater	X	X						Cover crop to reduce water quality degradation by utilizing excess soil nutrients	Establish a cover crop mix to take up excess soil nutrients. Select cover crop species for their ability to effectively utilize nutrients. Terminate the cover crop as late as practical to maximize plant biomass production and nutrient uptake. Cover crop shall not be harvested, grazed, or burned.	acre	1	5
E340H	PLANT	Plant Pest Pressure	X	X						Cover crop to suppress excessive weed pressures and break pest cycles	Establish a cover crop mix to suppress excessive weed pressures and break pest cycles. Select cover crop species for their life cycles, growth habits, and other biological, chemical and/or physical characteristics. Select cover crop species that do not harbor pests or diseases of subsequent crops in the rotation. Cover crop shall not be harvested, grazed, or burned.	acre	1	5
E340I	SOIL	Compaction	X							Using cover crops for biological strip till	Establish alternating strips of cover crops in which one strip acts as a biological strip-tiller and the adjacent strip promotes soil health with high residue cover crops. This will facilitate planting of the subsequent cash crop into the biologically strip-tilled row without the need for mechanical disturbance.	acre	1	5
E345A	SOIL	Sheet and Rill Erosion; Wind Erosion	X							Reduced tillage to reduce soil erosion	Establish a reduced tillage system to reduce soil loss. Field(s) must have a soil loss at or below the soil tolerance (T) level for water and wind erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 40 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to calculate soil loss and STIR.	acre	1	5

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E345B	AIR	Emissions of Particulate Matter (PM) and PM Precursors	X							Reduced tillage to reduce tillage induced particulate matter	Establish a reduced tillage system to reduce tillage induced particulate matter. Field(s) must have a soil loss at or below the soil tolerance (T) level for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 40 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to document soil loss and STIR calculations.	acre	1	5
E345C	WATER	Inefficient Irrigation Water Use; Naturally Available Moisture Use	X							Reduced tillage to increase plant-available moisture	Establish a reduced till system to increase plant-available moisture. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations. Maintain a minimum 60 percent surface residue cover throughout the year to reduce evaporation from the soil surface.	acre	1	5
E345D	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Reduced tillage to increase soil health and soil organic matter content	Establish a reduced till system to increase soil health and soil organic matter content. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The crop rotation must achieve a soil conditioning index (SCI) of zero or higher and produce a positive trend in the Organic Matter (OM) subfactor over the life of the crop rotation. The current NRCS wind and water erosion prediction technologies must be used to document STIR and SCI calculations. Residue shall not be burned, grazed, or harvested.	acre	1	5
E345E	ENERGY	Energy Efficiency of Farming/Ranching Practices and Field Operations	X							Reduced tillage to reduce energy use	Establish a reduced tillage system which reduces total energy consumption associated with field operations by at least 25% compared to conventional tillage systems (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.	acre	1	5
E374A	ENERGY	Energy Efficiency of Farming/Ranching Practices and Field Operations	X	X	X			X	X	Install variable frequency drive(s) on pump(s)	Install Variable Frequency Drive(s) (VFD) on Pumping Plant (Conservation Practice Standard CPS 533) with the correct sensors, on all pumps indicated in the energy audit.	no	10	1
E374B	ENERGY	Energy Efficiency of Farming/Ranching Practices and Field Operations	X	X	X			X	X	Switch fuel source for pump motor(s)	Switch the fuel source for the pump motor(s) indicated in the energy audit to a renewable source (wind, solar, geothermal, etc.). (CPS 533 Pumping Plant)	no	10	1

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E381A	PLANTS, ANIMALS	Plant Structure and Composition, Plant Productivity and Health, Terrestrial Habitat for Wildlife and Invertebrates, Aquatic Habitat for Fish and other Organisms			X		X	X		Silvopasture to improve wildlife habitat	Establishing a combination of trees or shrubs and compatible forages on the same acreage, providing forage, shade, and/or shelter for livestock and including a purpose of enhancing wildlife habitat.	acre	15	1
E382A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates			X	X	X	X		Incorporating "wildlife friendly" fencing for connectivity of wildlife food resources	Retrofitting or constructing fences that provide a means to control movement of animals, people, and vehicles, but minimizes wildlife movement impacts.	ft	20	1
E382B	SOIL	Plant productivity and Health, PLant Structure and Composition			X	X				Installing electrical fence offsets and wire to facilitate cross-fencing for improved grazing management	Retrofitting conventional fences such as barb wire, with new electrical offsets and electrical wire to facilitate cross-fencing for improved grazing management.	ft	20	1
E383A	PLANT	Wildfire Hazard from Biomass Accumulation				X	X			Grazing-maintained fuel break to reduce the risk of fire	The area has existing fuel break(s) of 30 to 60 feet in width, supporting a mixture of woody sprouts and some herbaceous vegetation. Warm-season perennial vegetation will be established on the fuel breaks, and will be over-seeded with cool-season annual forages in the fall. Grazing will be managed on the fuel breaks to remove or modify the fine fuel vegetation, thus reducing the risk of fire spread from ground fires. Ground cover will be maintained to control soil erosion and facilitate prescribed burning.	acre	10	1
E384A	PLANT, SOIL	Wildfire Hazard from Biomass Accumulation, Organic Matter Depletion					X	X		Biochar production from woody residue	Utilizes woody debris remaining after fuel reduction harvests or wildfires to create biochar. Biochar stores carbon and is a useful soil amendment that improves SOM and water-holding capacity.	acre	10	1
E386A	SOIL	Sheet and Rill Erosion; Wind Erosion	X	X				X		Enhanced field borders to reduce soil erosion along the edge(s) of a field	Enhance existing field borders to a width of at least 30 feet and establish a single species or mixture of species that provide a dense ground cover along the edge(s) of the field.	acre	10	1
E386B	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X	X				X		Enhanced field borders to increase carbon storage along the edge(s) of the field	Enhance existing field borders to a width of at least 30 feet and establish a single species or mixture of species that provide a dense ground cover and dense rooting system along the edge(s) of the field.	acre	10	1
E386C	AIR	Emissions of Particulate Matter (PM) and PM Precursors	X	X				X		Enhanced field borders to decrease particulate emissions along the edge(s) of the field	Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that decrease the particulate emissions along the edge(s) of the field.	acre	10	1

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E386D	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X				X		Enhanced field borders to increase food for pollinators along the edge(s) of a field	Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that provide food for pollinators along the edge(s) of the field.	acre	10	1
E386E	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X				X		Enhanced field borders to increase wildlife food and habitat along the edge(s) of a field	Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that provide wildlife food and habitat along the edge(s) of the field. The extended field border will also provide enhanced wildlife habitat continuity.	acre	10	1
E390A	WATER	Nutrients Transported to Surface Water; Sediment Transported to Surface Water	X	X						Increase riparian herbaceous cover width for sediment and nutrient reduction	Where an existing herbaceous riparian buffer is located along a river, stream, pond, lake, or other waterbody, increase the width of the buffer in order to allow a greater percentage of sediment and nutrient removal from surface and subsurface flows.	acre	5	1
E390B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X		X	X	Increase riparian herbaceous cover width to enhance wildlife habitat	Where an existing herbaceous riparian buffer is located along a river, stream, pond, lake, or other waterbody, increase the diversity of native species, control invasive species, install fencing and relocate equipment operations, trails, and livestock, and increase the width of the buffer.	acre	5	1
E391A	WATER	Nutrients Transported to Surface Water; Sediment Transported to Surface Water	X	X						Increase riparian forest buffer width for sediment and nutrient reduction	Where an existing forested riparian area is located along a river, stream, pond, lake, or other waterbody, increase the width of the buffer in order to allow a greater percentage of sediment and nutrient removal from surface and subsurface flows.	acre	15	1
E391B	WATER	Elevated Water Temperature	X	X	X	X	X	X	X	Increase stream shading for stream temperature reduction	Riparian area tree canopy cover density is increased and the extent of the forested riparian area is increased to provide greater stream shading.	acre	15	1
E391C	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X		X	X	Increase riparian forest buffer width to enhance wildlife habitat	Where an existing riparian forest buffer is located along a river, stream, pond, lake, or other waterbody, increase the diversity of native species, control invasive species, install fencing and relocate equipment operations, trails, and livestock to increase the functional width of the buffer.	acre	15	1
E393A	WATER	Nutrients Transported to Surface Water; Pathogens and Chemicals from Manure, Bio-solids or Compost Applications Transported to Surface Water	X	X				X		Extend existing filter strip to reduce water quality impacts	Extend existing filter strips for water quality protection. Extend the existing buffer for a total of 60 feet or more to enhance water quality functions. The extended buffers must be composed of at least 5 species of non-noxious, wildlife friendly grasses and/or perennial forbs best suited to site conditions. Include species that provide pollinator food and habitat where possible.	acre	10	1
E395A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X		Stream habitat improvement through placement of woody biomass	Flexible placement of wood (unanchored/unpinned) in small, 1st and 2nd order streams to improve stream habitat conditions for aquatic species and natural stream processes.	acre	5	1

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E399A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X	X	Fishpond management for native aquatic and terrestrial species	Pond rehabilitation, buffer, and watershed management actions are taken to improve habitat for native species of fish, amphibians, and shorebirds.	acre	1	5
E447A	WATER	Inefficient Irrigation Water Use	X	X	X					Advanced Tailwater Recovery	This enhancement is for a recovery system that capture 100% of excess irrigation and drainage runoff water from the contiguous land where the activity is implemented. Runoff water is conveyed through properly designed recovery ditches to a storage structure. Each recovery ditch and storage structure must have adequate capacity to store excess irrigation water and reasonable runoff water. The system shall be designed to incorporate the collected water back into the delivery system so that excess water is reused. The system is fully automated to operate the recovery pumps, valves, and collection system. Key elements in the system are sensors that can evaluate data and operate devices through the system in opening/closing or on /off based on scientifically determined parameters.	No	1	1
E449A	WATER; ENERGY	Inefficient Irrigation Water Use; Energy Efficiency of Farming/Ranching Practices and Field Operations	X	X	X			X	X	Complete pumping plant evaluation for water savings	Evaluation of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to improve water delivery efficiency 10% or more. Evaluate to determine if a Variable Frequency Drive motor controller(s) is recommended and the simple payback in terms of energy savings is less than 10 years.	acre	1	1
E449B	WATER	Inefficient Irrigation Water Use	X							Alternated Wetting and Drying (AWD) of rice fields	Rice fields are drained and allowed to "dry down" to a saturated soil condition prior to re-flooding the field. System is installed in year 1 with Scenario E449144Z8 and this scenario used in years 2-5.	acre	1	5
E449C	WATER	Inefficient Irrigation Water Use	X	X	X					Advanced Automated IWM – Year 2-5, soil moisture monitoring	Advanced automated irrigation water management using soil moisture or water level monitoring (installed as per IWM plan) with data loggers.	acre	1	5
E449D	WATER	Inefficient Irrigation Water Use	X	X	X					Advanced Automated IWM – Year 1, Equipment and soil moisture or water level monitoring	Installing and monitoring soil moisture or water leveling equipment for advanced automated irrigation water management	acre	1	1
E449E	WATER	Inefficient Irrigation Water Use	X							Convert from Cascade to Furrow Irrigated Rice Production – reduce irrigation water consumption	Field currently flooded through a cascade levee system will be converted to furrow irrigation.	acre	1	5
E449F	WATER	Inefficient Irrigation Water Use	X	X	X					Intermediate IWM— Year 1, Equipment with Soil or Water Level monitoring	This activity involves monitoring soil moisture or water levels within a irrigated field for intermediate irrigation water management include installation of equipment year 1.	acre	1	1

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E449G	WATER	Inefficient Irrigation Water Use	X	X	X					Intermediate IWM— Years 2-5, Soil or Water Level monitoring	Field currently flooded through a cascade levee system will be converted to furrow irrigation. It is required that field is leveled on the lower end and approximately 25% up the sides for furrow irrigation prior to implementing the enhancement. After the previous year's crop is harvested, elevated planting beds and furrows will be reshaped as needed to guarantee proper irrigation of the rice crop. Layflat tubing will be utilized with the correct holes or gates installed to advance water down the furrows at the appropriate rate across the length of the field as prescribed by an NRCS "PHAUCET" design, Delta Plastic® Pipe Planner® or similar.	acre	1	5
E472A	WATER	Nutrients transported to surface water, Pathogens and chemicals from manure, bio-solids or compost applications transported to surface water	X	X	X	X	X	X	X	Manage livestock access to waterbodies to reduce nutrients or pathogens to surface water	Installation of structures and implementation of grazing management actions that restrict livestock access to streams, ditches, and other waterbodies in order to reduce nutrient loading or reduce the introduction of pathogens from manure, bio-solids or compost to surface waters.	ft.	10	1
E484A	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X							Mulching to improve soil health	Implement a crop rotation which utilizes mulch and addresses all four principle components of soil health: increases diversity of the cropping system; maintains residue throughout the year; keeps a living root; and minimizes soil chemical, physical and biological disturbance. Plant-based mulching materials will be applied at least once during the rotation. The rotation will include at least 4 different crops and/or cover crops grown in a sequence that will produce a positive trend in the Organic Matter (OM) subfactor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.	acre	1	5
E484B	AIR	Emissions of Particulate Matter (PM) and PM Precursors		X						Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch	Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch. At least 90% of all woody materials are to be used as mulch on the operation. <i>An exception may be made when it is determined that infected material must be burned to preserve crop health.</i>	acre	1	5
E484C	PLANTS	Plant Pest Pressure	X	X						Mulching with natural materials in specialty crops for weed control	Application of straw mulch or other state approved natural material (such as wood chips, compost, green chop, dry hay or sawdust) for weed control in specialty crops.	Acre	1	5

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E511A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X						Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape	Harvest of crops (hay or small grains) using conservation measures that allow desired species to flush or escape. (For species list see State Wildlife Action Plan) Conservation measures include timing of harvest, idling land during the nesting or fawning period, and applying harvest techniques that reduce mortality to wildlife.	acre	1	5
E511B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X				Forage harvest management that helps maintain wildlife habitat cover, shelter or continuity	The timely cutting and removal of forages from the field as hay, green-chop, or ensilage in such a way, and in time frames, to optimize both forage yield/quality and wildlife cover and shelter and/or continuity between otherwise disconnected habitats.	acre	1	5
E512A	SOIL	Sheet and Rill Erosion; Wind Erosion	X	X						Cropland conversion to grass-based agriculture to reduce soil erosion	Conversion of cropped land to grass-based agriculture to reduce soil erosion. Mixtures of perennial grasses, forbs, and legume species are established on cropland where annually-seeded cash crops have been grown.	acre	5	1
E512B	SOIL	Sheet and Rill Erosion			X					Forage plantings that help increase organic matter in depleted soils	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can provide for reduced soil erosion, improving soil health.	acre	5	1
E512C	SOIL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability	X	X						Cropland conversion to grass for soil organic matter improvement	Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.	acre	5	1
E512D	SOIL	Organic Matter Depletion	X	X	X					Forage plantings that help increase organic matter in depleted soils	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can help improve soil quality of depleted sites through increase or conservation of the organic matter in the soil.	acre	5	1
E512E	PLANT	Plant Productivity and Health	X	X						Forage and biomass planting that produces feedstock for biofuels or energy production.	Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.	acre	5	1
E512F	PLANT, ANIMALS	Plant productivity and Health, Plant Structure and Composition, Terrestrial Habitat for Wildlife and Invertebrates			X			X		Establishing native grass or legumes in forage base to improve the plant community	Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide the structure and composition needed to enhance livestock and wildlife habitat, particularly when targeted forage supply and quality, cover, and shelter are not available in other pastures.	acre	5	1

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E512G	ANIMALS	Feed and Forage Imbalance		X	X			X		Native grasses or legumes in forage base	Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide the structure and composition needed to enhance livestock and wildlife habitat, particularly when targeted forage supply and quality, cover, and shelter are not available in other pastures.	acre	5	1
E512H	PLANTS AND ANIMALS	Plant Structure and Composition, Terrestrial Habitat for Wildlife and Invertebrates			X			X		Forage plantings that enhance bird habitat cover and shelter or structure and composition	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can provide cover and shelter or structure and composition to b	acre	5	1
E512I	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates			X			X	X	Establish pollinator and/or beneficial insect and/or monarch habitat	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species that can provide nectar for Monarch butterflies and/or pollinators and forage and other habitat values for wildlife and livestock, particularly at times when targeted nectar, forage supply and quality, cover, and shelter are not available in other pastures.	acre	5	1
E512J	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates			X			X	X	Establish wildlife corridors to provide habitat continuity or access to water	Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide cover needed for wildlife species of concern to move from food/cover/water sources to other food/cover/water sources as needed for their life cycles, and/or to enhance the utility of underused wildlife habitat areas.	acre	5	1
E528A	ANIMALS	Feed and Forage Imbalance			X	X		X		Maintaining quantity and quality of forage for animal health and productivity	Managing the harvest of vegetation with grazing and/or browsing animals for the purposes of maintaining desired pasture composition/plant vigor and improving/maintaining quantity and quality of forage for the animals' health and productivity following the recommendations of a qualifying professional, as detailed in the documentation and implementation requirements.	acre	1	5
E528C	ANIMALS	Feed and Forage Imbalance, Terrestrial Habitat for Wildlife and Invertebrates			X	X				Incorporating wildlife refuge areas in contingency plans for wildlife.	A prescribed grazing plan that includes 12 month (or longer) rest (non-grazing period equal or greater than one year) of a grazing unit that consists of native grasses and/or legumes and/or perennial forbs for the purpose of meeting the needs for drought/disaster contingency plans that will also provide wildlife habitat or wildlife access to water for a period of time.	acre	1	5
E528D	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates			X	X	X			Grazing management for improving quantity and quality of food or cover and shelter for wildlife	Grazing management employed will provide the plant structure, density and diversity needed for improving the quantity and quality of cover, shelter and food for the desired wildlife species of concern.	acre	1	5

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E528E	PLANTS	Plant Structure and Composition, Terrestrial Habitat for Wildlife and Invertebrates			X	X	X	X		Improved grazing management for enhanced plant structure and composition for wildlife	Managing the harvest of vegetation with grazing and/or browsing animals for the purpose of improving the quantity and quality of the structure and composition of the plant community that is available for wildlife.	acre	1	5
E528F	PLANTS	Plant Productivity and Health, Plant Structure and Composition			X			X		Stockpiling cool season forage to improve structure and composition or plant productivity and health	Grazing management employed to stop grazing events of selected paddock(s) to allow pasture forages to grow to maximum vegetative biomass accumulation before the end of the growing season.	acre	1	5
E528G	PLANTS	Plant Productivity and Health			X					Improved grazing management on pasture for plant productivity and health with monitoring activities	Managing the harvest of vegetation with grazing and/or browsing animals as adjusted when following recommendations of a qualifying professional, as detailed in the enhancement criteria, generated through pasture condition scoring (PCS).	acre	1	5
E528I	WATER	Nutrients transported to surface water, Nutrients transported to ground water			X	X				Grazing management that protects sensitive areas -surface or ground water from nutrients	Grazing management employed will provide cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations with plants that cannot tolerate defoliation.	acre	1	5
E528J	WATER	Nutrients transported to surface water, Pathogens and chemicals from manure, bio-solids or compost applications transported to surface water, Sediment transported to surface water			X					Prescribed grazing on pastureland that improves riparian and watershed function.	Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.	acre	1	5
E528K	SOIL	Compaction			X					Improved grazing management for soil compaction on pasture through monitoring activities	Manage the harvest of vegetation with grazing and/or browsing animals as adjusted when following recommendations of a qualifying professional, as detailed in the enhancement criteria, generated through pasture condition scoring (PCS).	acre	1	5
E528L	SOIL	Bank erosion from streams, shorelines or water conveyance channels			X	X	X			Prescribed grazing that improves or maintains riparian and watershed function-erosion	Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.	acre	1	5
E528M	SOIL	Classic Gully Erosion			X	X				Grazing management that protects sensitive areas from gully erosion	Grazing management employed will provide vegetative cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations that cannot tolerate plant defoliation.	acre	1	5

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E528O	ANIMAL, PLANT	Feed and Forage Imbalance, Plant productivity and health			X					Clipping mature forages to set back vegetative growth for improved forage quality	Plant maturity is the most important factor that determines forage quality. Timely clipping through mowing, swathing or some other mechanical cutting will occur on grazing lands after plants mature. This enhancement will promote increased forage palatability by setting forages that have matured back to a vegetative state for improved grazing management and forage quality.	acre	1	5
E528P	SOIL, WATER	Pathogens and chemicals from manure, bio-solids or compost applications transported to surface water, Nutrients transported to surface water, Organic Matter Depletion	X	X	X	X				Implementing Bale or Swath Grazing to increase organic matter and reduce nutrients in surface water	Improve organic matter, aggregate stability and soil organism habitat in the soil by leaving the biomass harvested from the field on site for animal use, or supplementing organic matter needs with off-field forages. Grazing harvested forages in this manner, will help to incorporate organic matter, feed and diversify the soil microbiome, build better aggregation and increase soil health and critical functions such as infiltration, nutrient cycling, and weather resilience. Forages should be placed evenly throughout the field, but can be concentrated in areas where particular concerns, such as bare ground, need to be remedied. Decisions of forage placement must take into account areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion.	acre	1	5
E528Q	ANIMALS	Feed and Forage Imbalance	X	X	X	X	X	X	X	Use of body condition scoring for livestock on a monthly basis to keep track of herd health	Body condition scoring (BCS) serves as a useful management tool to monitor livestock performance with respect to current and recent feeding or grazing programs. Body condition scoring is a numeric scoring system, producers can use to consistently evaluate animals' estimated body energy reserves through degree of fatness. This information can be used to adjust nutritional strategies to reach optimal BCS. Since body condition is closely associated with reproductive performance as well as feed efficiency, monitoring body condition can help producers reach production goals and increase the operation's bottom line. Knowledge and understanding of BCS will assist producers to adjust a supplemental feeding program to maintain animal health and nutrition on a-monthly-basis.	acre	1	5
E528R	PLANTS	Plant Productivity and Health, Plant Structure and Composition			X	X				Management Intensive Rotational Grazing	Management intensive, multi-paddock grazing system where livestock are regularly and systematically moved to fresh forage to optimize quantity and quality of forage growth, improve manure distribution, improve wildlife cover, and improve soil health.	acre	1	5

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E533A	WATER	Inefficient Irrigation Water Use	X	X	X					Advanced Pumping Plant Automation	This enhancement consists of installing a control device to a pump station that allows the user to remotely monitor and operate the pump station based on field measured data. Pumping stations may have either a combustible or electric power unit that are compatible with the control device or sensor. These devices/sensors collect field-measured data and provide this data in real time to the landowner to make irrigation decisions and adjustments to the pump operation	No	1	1
E533B	ENERGY	Energy Efficiency of Farming/Ranching Practices and Field Operations; Energy Efficiency of Equipment and Facilities	X	X	X			X	X	Complete pumping plant evaluation for energy savings	Evaluation of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to improve water delivery efficiency 10% or more. Evaluate to determine if a Variable Frequency Drive motor controller(s) is recommended and the simple payback in terms of energy savings is less than 10 years.	acre	15	1
E550A	SOIL	Organic Matter Depletion	X	X		X	X			Range planting for increasing/maintaining organic matter	Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees for the purpose of increasing or maintaining organic matter levels in the soil.	acre	5	1
E550B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X		X				Range planting for improving forage, browse, or cover for wildlife	Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees for the purpose of improving forage, browse, or cover for wildlife on areas that have been degraded beyond recovery via ecological principles, or old crop fields and pastures devoid of desirable, native rangeland species that fit within an ecological site description steady state.	acre	5	1
E570A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X				X	X	Enhanced rain garden for wildlife	Seed or plug nectar and pollen producing plants into rain gardens to provide wildlife habitat.	sq. ft.	1	1
E578A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X	X	Stream crossing elimination	Existing stream crossings on an operation are consolidated into fewer crossings in order to reduce impacts to stream habitat.	no	10	1
E580A	SOIL	Streambank, Shoreline, Water Conveyance Channels	X	X	X	X	X	X	X	Stream corridor bank stability improvement	Stream corridor bank vegetation components are established to provide additional streambank stability.	acre	20	1
E580B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X	X	Stream corridor bank vegetation improvement	Stream corridor bank vegetation components are established to improve ecosystem functioning and stability.	acre	20	1

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E590A	WATER; AIR	Nutrients Transported to Surface Water; Nutrients Transported to Ground Water; Emission of Greenhouse Gases (GHGs)	X	X						Improving nutrient uptake efficiency and reducing risk of nutrient losses	Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses to surface and groundwater and reduce risks to air quality by reducing emissions of greenhouse gases (GHGs).	acre	1	5
E590B	WATER	Nutrients Transported to Surface Water; Nutrients Transported to Ground Water	X	X						Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies	Precision application technology and techniques are utilized to plan and apply nutrients to improve nutrient use efficiency and reduce risk of nutrient losses.	acre	1	5
E590C	WATER	Nutrients Transported to Surface Water; Nutrients Transported to Ground Water			X					Improving nutrient uptake efficiency and reducing risk of nutrient losses on pasture	Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses on pasture.	acre	1	5
E595A	WATER	Pesticides Transported to Surface Water	X	X						Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques	Utilize precision application techniques to reduce risk of pesticides in surface water by reducing total amount of chemical applied and reducing the potential for delivery of chemicals into water bodies.	acre	1	5
E595B	WATER, AIR	Pesticides Transported to Surface Water; Emissions of Ozone Precursors/Pesticides	X	X	X					Reduce risk of pesticides in water and air by utilizing IPM PAMS techniques	Utilize integrated pest management (IPM) prevent, avoidance, monitoring, and suppression (PAMS) techniques to reduce risk of pesticides in water and air. Reduce the potential for delivery of chemicals into water or ozone precursor emissions.	acre	1	5

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E595D	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Increase the size requirement of refuges planted to slow pest resistance to Bt crops	Bacillus thuringiensis (Bt) plant incorporated protectants are plants that have been genetically altered to produce proteins that are harmful to certain insect pests. Widespread implementation of Bt crops has decreased insecticide use and increased crop yields, but it must be used as part of an integrated pest management (IPM) approach to protect the crop from pest species that are not susceptible to the Bt toxin and to manage pest resistance. Crop rotation, scouting and resistance management strategies, such as planting and creating refuges of non-Bt crops, are essential when farming Bt crops. Insects have developed resistance to Bt proteins. To mitigate the development of further resistance, growers are required to plant refuges of non-transgenic crops. These refuges produce numbers of susceptible insects that will help sustain populations of non-resistant insects. The size of Refuge requirement depends on the environment, pest and strain of the crop. Size of refuge is determined by resistance risk. Most Bt corn requires that 20% of the total Bt crop planted be non-Bt. Cotton can require 50% of the crop be planted to non-Bt. A recent study published in the Journal of Integrated Pest Management revealed, compliance has been a challenge. Nearly 40% of growers surveyed did not plant the required refuge (Reisig 2017). They credit non-compliance, in part, to lack of understanding by small-scale farmers about the need for refuges.	acre	1	5
E595E	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates			X	X				Eliminate use of chemical treatments to control pests and to increase the presence of dung beetles	Pests and parasites can have a significant impact on the economic viability of livestock operations, by affecting the performance and health of animals. The use of broad-spectrum insecticides, pour-ons and avermectins have been shown to have a detrimental effect on dung beetle populations. Having a healthy population of dung beetles facilitates the recycling of nutrients and promotes soil and grassland health. By eliminating the application of broad-spectrum insecticides, pour-ons, and avermectins, including injectable avermectins, for pest control in and on livestock along with rotational grazing and higher stock densities has shown to increase the dung beetle population. Use of natural or alternative methods of pest control over multiple years is encouraged.	acre	1	5
E612A	WATER	Sediment Transported to Surface Water	X	X						Cropland conversion to trees or shrubs for long term improvement of water quality	Cropland conversion to trees and shrubs for long term erosion control and improvement of water quality. Trees and shrubs are established on cropland where annually-seeded cash crops have been grown. Tree and/or shrub species are selected for their efficacy in holding soil, and the planting design is configured to control runoff and trap sediment.	acre	15	1

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E612B	AIR	Emission of Greenhouse Gases (GHGs)	X	X	X	X	X	X	X	Planting for high carbon sequestration rate	Plant tree species and use stocking levels for higher growth to increase the rate of carbon sequestration (capture). Use species with a longer life span as well as relatively fast growth, and species suitable for durable manufactured products. Increase stocking levels in forests that are not fully stocked. Implement afforestation on appropriate open lands.	acre	15	1
E612C	Plants Animals	Plant Productivity and Health; Plant Structure and Composition Terrestrial Habitat for Wildlife and Invertebrates				X	X	X		Establishing tree/shrub species to restore native plant communities	Establish trees and/or shrubs to restore elements of plant diversity that have been lost through past diseases or improper management. For example, disease-resistant varieties of elm and chestnut can be established to restore the ecological functions of American elm and American chestnut. At the stand level, past forest management may have eliminated certain native tree species. Restoring stand-level diversity and function addresses a wide array of resource concerns and strengthens ongoing management activities. This enhancement improves a forest that is already in good condition by increasing plant diversity, and improving health and vigor through adding plants with resistance to disease, pests, or other local hazards. Additional benefits include contributing to carbon storage, and providing diversity in wildlife habitat and food sources.	acre	15	1
E612D	PLANTS	Plant Structure and Composition	X	X	X	X	X	X	X	Adding food-producing trees and shrubs to existing plantings	Plant food-producing trees and shrubs for wildlife or human consumption within windbreaks, alley cropping, multi-story cropping, silvopasture systems, and/or riparian forest buffers.	acre	15	1
E612E	PLANTS	Plant Structure and Composition			X	X	X	X	X	Cultural plantings	Plant trees and shrubs that are of cultural significance, such as those species utilized by Tribes in traditional practices, medicinal plants, species used in basket-making, etc. (e.g., paper birch, slippery elm, witch hazel).	acre	15	1
E612F	PLANTS	Plant Structure and Composition					X	X	X	Sugarbush management	Establish or maintain species diversity in a sugarbush to enhance pollinator and wildlife needs. Maintain at least 20% of basal area in species other than sugar maple (<i>Acer saccharum</i>) to provide species diversity. Half of the trees that are not sugar maples (10%) will be mast producing species (hard or soft mass). Use maple tree tapping guidelines that minimize tree damage.	acre	15	1
E612G	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X	X	Tree/shrub planting for wildlife food	Tree or shrub planting to enhance habitat for native wildlife. A minimum of five tree or shrub species will be used; they will be species that provide food and/or cover for identified wildlife species.	acre	15	1

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E643A	PLANTS	Plant Structure and Composition				X	X			Restoration of sensitive coastal vegetative communities	Enhance the level of restoration in unique and diminishing coastal ecosystems by establishing native herbaceous and woody plants. Protect established vegetation, and manage to maintain floristic quality and the provision of environmental services. This enhancement is applied on unique areas with rare and declining habitat conditions, where vegetation has been detrimentally altered by human or natural events. Targeted sites are those that formerly supported vegetative communities that are now declining and/or becoming rare. The sites will vary across the continent. The enhancement will expand and elevate the process of restoring these unique areas, increasing their ecological value and benefits to wildlife. It re-establishes a select group of trees and/or shrubs that are key components in this ecosystem.	acre	5	1
E643B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates					X			Restoration and management of rare or declining habitat	Provide protection from adverse environmental conditions to create refugia for documented occurrences of sensitive plant communities.	acre	5	1
E643C	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates					X	X		Restore glade habitat to benefit threatened and endangered species and state species of concern	Restore Glade natural communities as shown by the Ecological Site Description to conserve biodiversity. Enhancement requires reducing woody canopy cover and applying at least one prescribed fire to treated acres. Restoration of glade communities provide habitat for rare and declining species. Sites that previously or currently support the rare and declining habitat will be targeted for restoration.	acre	5	1
E644A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X					Managing Flood-Irrigated Landscapes for Wildlife	Developing and implementing a conservation plan that supports maintenance of flood-irrigation in key landscapes to provide important foraging habitat for local breeding and migratory waterfowl and waterbirds.	acre	1	5
E645A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X	X	Reduction of attractants to human-subsidized predators in sensitive wildlife species habitat	Reduction of artificial perching sites, nest sites, food, and water available to subsidized predators in areas where human-subsidized predators are a threat to sensitive wildlife species. Human-subsidized predators may include ravens, crows, magpies, coyotes, foxes, skunks, raccoons, and other species. Activities under this enhancement may include removal of non- native or invasive trees; removal of unused power poles, corrals, windmills, buildings, and other vertical structures; and/or removal or management of watering facilities, dead livestock, road kill, garbage, animal feed, dumps, and other non-natural food sources.	Each	1	1

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E645C	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X	X	X	X	X	X	X	Edge feathering for wildlife cover	Selected trees are cut, and brush clipped along the border between a wooded area and a grassland, cropland, or idle land, creating a dense woody cover of interlocking branches at ground level. The feathered edge will be an average of 30 feet wide and a minimum of 50 feet long, resulting in an area of 1500 square feet. The width of the strip will vary to follow topographic features and to create a wavy border; the design will also consider aesthetics. Vegetative composition and cover will vary within the edge, ranging from areas with no trees and shrubs to areas with scattered trees and extensive shrub cover. The variation in vegetation structure along with variable width of the edge will create feathering. The edge may include shrub plantings for wildlife food and aesthetics.	Acre	1	1
E646A	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Close structures to capture and retain rainfall for waterfowl and wading bird winter habitat	When flooded to shallow depths during fall and winter, agricultural fields provide ideal foraging habitat for myriad species of waterfowl and wading birds. In addition, flooded conditions promote establishment of aquatic invertebrate populations, thus providing protein-rich food sources for shorebirds as well as waterfowl and wading birds.	acre	5	1

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E646B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Extend retention of captured rainfall for migratory waterfowl and wading bird late winter habitat	When flooded to shallow depths during fall and winter, agricultural fields provide ideal foraging habitat for myriad species of waterfowl and wading birds. Harvested and idled agricultural lands, notably those occurring within rice rotations, contain high densities of residual (i.e., waste) grain and natural seeds following harvest. In addition, flooded conditions promote establishment of aquatic invertebrate populations, thus providing protein-rich food sources for shorebirds as well as waterfowl and wading birds. Benefits may become greatest during late winter and early spring as birds are assimilating nutrient and fat reserves in preparation for northward migration. However, agricultural fields flooded during fall-winter are typically drained during late January or February in advance of spring planting. This often results in a rapid reduction in available habitat, and may constrain ability of migratory birds to adequately prepare for migration, with greatest impacts likely occurring during years of low winter precipitation. Retention of water on agricultural lands into early spring will produce maximum benefits to migratory waterfowl and shorebirds by providing high quality habitat during a time when habitat may otherwise be in low abundance.	acre	5	1
E646C	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Manipulate vegetation and maintain closed structures for shorebirds mid-summer habitat	Suitable shorebird habitat is limited during the summer and fall as birds migrate south post-breeding and providing shallow water and mud flat habitat will benefit a variety of shorebird species. Optimal conditions are created when water levels are slowly reduced through evaporation, which allows for propagation of invertebrates (typically insect larvae) used as food by shorebirds. Manipulation of vegetation, preferably through rolling, creates open conditions required by this suite of birds as a means to detect and avoid predators, and provides nutrient inputs for invertebrate production.	acre	5	1
E646D	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Manipulate vegetation and maintain closed structures for shorebird late summer habitat	Suitable shorebird habitat is limited during the summer and fall as birds migrate south post-breeding. Providing shallow water and mud flat habitat will benefit a variety of shorebird species. Optimal conditions are created when water levels are slowly reduced through evaporation, which allows for propagation of invertebrates (typically insect larvae) used as food by shorebirds. Manipulation of vegetation, preferably through rolling, creates open conditions required by this suite of birds as a means to detect and avoid predators, and provides nutrient inputs for invertebrate production.	acre	5	1

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E647B	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Provide early successional shorebird habitat between first crop and ratoon crop	Many declining suites of wildlife species rely on early successional habitats for at least part of their life cycle needs. Migratory shorebird species in particular rely on open, moist soil or shallowly flooded conditions for foraging and security. Rice farms support many migratory and resident water bird species. The first rice crop harvest often coincides with the arrival of early migrating shorebirds. This time of year is also the highest rainfall months. If standing rice stubble from the first crop is rolled to push above-ground stalks level with the soil surface, the first component of this type of habitat is met. When moisture is added to this situation, short-term habitat is available until the ratoon crop initiates growth to a height beyond that which would provide benefit to the early successional species.	acre	5	1
E647C	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Maintain moist soil vegetation on cropland edges to enhance waterfowl and shorebird habitat	The wetter or more water saturated portions of cropland fields such as areas adjacent to field drains, have the potential to produce a significant amount of moist soil plants which are a tremendously valuable source of forage and cover for many waterfowl, shorebird and wading bird species, especially during a period of time when such plants may be limited. Under normal cropland production, the native vegetation is restricted on these sites through mechanical and/or chemical control. These maintained moist soil plants also will provide filtering and improve water quality.	acre	5	1

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E647D	ANIMALS	Terrestrial Habitat for Wildlife and Invertebrates	X							Establish and maintain early successional habitat in ditches and bank borders	This enhancement is to encourage the establishment of early successional, naturally occurring vegetation in ditches, side slope and bank borders to provide cover, critical nesting and brood rearing habitat as well as filtering overland flow and improving water quality. Ditches perform the critical function of removing water from agricultural lands. Allowing naturally occurring vegetation to develop along ditches, including side slopes, banks and borders, will help provide food and cover for wildlife while enhancing aquatic habitat and improving water quality. Ditches and ditch borders provide a foundation that supports a diverse wildlife community including Northern Bobwhite (<i>Colinus virginianus</i>) and other birds preferring early successional cover. Rabbits, furbearers, amphibians and many other species that inhabit agriculture areas will use this vegetative cover. These areas can also provide critical nesting habitat for the Mottled Duck (<i>Anas fulvigula</i>).	acre	5	1
E666A	SOIL, AIR	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability; Compaction; Emission of Greenhouse Gases (GHGs);					X			Maintaining and improving forest soil quality	Adopts guidelines for maintaining and improving soil quality on sites where forest management activities are practiced. These guidelines will increase soil organic matter content, improve nutrient cycling, and increase infiltration and retention of precipitation. Avoiding soil compaction will allow for greater root development and tree growth, limit windthrow, and reduce drought stress. Increasing carbon storage on site will maintain the soil microbial community and provide wildlife benefits.	acre	10	1
E666B	PLANT, ANIMAL, WATER	Plant Structure and Composition; Terrestrial Habitat for Wildlife and Invertebrates; Naturally Available Moisture Use;					X			Converting loblolly and slash pine plantations to longleaf pine	Longleaf pine has greater wildlife habitat value, is more resistant to insects and disease, and is better able to withstand hurricane-force winds than other southern pines, particularly loblolly and slash pines. Because of rapid early growth, loblolly and slash pines have often been planted on soils and sites better suited to longleaf. Loblolly and slash pine plantations can be converted to longleaf by clearcutting and planting seedlings but mature tree cover is then lost for 20 or more years. This enhancement will gradually convert an existing loblolly or slash pine plantation to longleaf while at the same time maintaining mature tree cover with the associated benefits of wildlife habitat and visual quality, and moderating effects on soil temperature, soil moisture and understory plants.	acre	10	1

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E666C	SOIL, ANIMAL	Organic Matter Depletion; Soil Organism Habitat Loss or Degradation; Aggregate Instability; Terrestrial Habitat for Wildlife and Invertebrates					X	X		Implementing sustainable practices for pine straw raking	Adopts guidelines for sustaining soil quality and wildlife habitat on sites where pine straw raking is currently practiced. Raking and removal of pine needles ("pine straw") provides valuable landscaping material but at a high cost to soil fertility, soil organic matter, wildlife habitat, and in some cases, soil compaction, soil erosion and water quality degradation. Straw removal also makes prescribed burning less feasible by removal of the fine fuels needed to carry frequent surface fires that maintain longleaf pine and its characteristic understory. This enhancement is most applicable to longleaf pine forestland because: (1) longleaf-dominated ecosystems with their characteristic suite of flora and fauna historically predominated in most places where pines are currently grown in the Southeast, and (2) longleaf is the favored species for pine straw operations.	acre	10	1
E666D	PLANT, ANIMAL, WATER	Plant Pest Pressure; Terrestrial Habitat for Wildlife and Invertebrates; Naturally Available Moisture Use; Nutrients Transported to Surface Water; Nutrients Transported to Ground Water;					X			Forest management to enhance understory vegetation	This enhancement provides for management of the understory vegetation in a forested area by mechanical, chemical, and/or manual methods to improve the plant species mix and the health of the residual vegetation. Managing the understory vegetation increases available water to the plants, minimizes runoff and erosion, and improves water quality. An adequately stocked forest provides inputs of leaves, needles, and woody twigs and stems to the forest floor, adding to soil organic matter and contributing to forest soil health. Desirable tree species and understory vegetation, with spacing that allows ground cover to develop, will allow moisture to infiltrate and be stored in the soil, releasing moisture over longer periods of time.	acre	10	1

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E666E	PLANT	Wildfire Hazard from Biomass Accumulation					X			Reduce height of the forest understory to limit wildfire risk	Forest stand improvement that manages forest structure to reduce the risk of wildfire, and creates conditions that facilitate prescribed burning. The fire risk reduction is accomplished by reducing the height of the woody understory and midstory, creating space between the ground cover and the tree canopy. This enhancement provides for management of the understory vegetation in a forested area, using mechanical, chemical or manual methods to improve the plant species mix and the health of the residual vegetation, and reduce the risk of wildfire. In appropriate stands, the treatment creates conditions that favor prescribed burning. Forest stand improvement (FSI) activities are used to remove trees of undesirable species, form, quality, condition, or growth rate. The quantity and quality of forest for wildlife and/or timber production will be increased by manipulating stand density and structure. These treatments can also reduce wildfire hazards, improve forest health, restore natural plant communities, and achieve or maintain a desired native understory plant community for soil health, wildlife, grazing, and/or browsing.	acre	10	1
E666F	PLANT, ANIMAL	Plant Productivity and Health; Terrestrial Habitat for Wildlife and Invertebrates					X			Reduce forest stand density to create open stand structure	Reducing forest stand density creates open forest conditions with a low basal area which promotes the health and vigor of the residual trees. The open stand structure allows a significant amount of sunlight to reach the forest floor and stimulates the growth of understory vegetation. Understory vegetation management, along with the wide spacing between trees or clumps of trees, provides visual appeal, lowers the risk of wildfire, and provides habitat for many at-risk and listed wildlife species. The enhancement creates conditions that facilitate a follow-up treatment with prescribed burning.	acre	10	1
E666G	PLANT, ANIMAL	Wildfire Hazard from Biomass Accumulation; Terrestrial Habitat for Wildlife and Invertebrates					X			Reduce forest density and manage understory along roads to limit wildfire risk and improve habitat	Opening the tree canopy along roads ("daylighting"), and providing space between ground vegetation and tree crowns minimizes the spread of wildfires that often start along roads, and improves wildlife habitat and food sources for many species. Some trees near a forest road are removed through harvesting, cutting, mulching, or another option available at the site, with the objective of creating a partially open forest canopy bordering the road. A semi-open canopy allows more sunlight to reach the forest floor to promote herbaceous understory plants, and reduces maintenance needs by allowing moisture to evaporate from roads. The reduced canopy and herbaceous understory limit woodland fuel buildup and reduce fire intensity.	acre	10	1

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E666H	SOIL, AIR	Emission of Greenhouse Gases (GHGs), Organic Matter Depletion					X	X	X	Increase on-site carbon storage	Use forest management techniques to maintain and increase on-site carbon storage. These include, but are not limited to, applying uneven-aged management, using longer rotations, retaining cavity/den trees, snags, and down woody debris, and protecting or increasing soil organic material.	acre	10	1
E666I	PLANT, ANIMAL	Plant Productivity and Health; Terrestrial Habitat for Wildlife and Invertebrates					X	X	X	Crop tree management for mast production	Forest stand improvement using crop tree management techniques to increase mast production	acre	10	1
E666K	PLANT, ANIMAL	Plant Structure and Composition; Terrestrial Habitat for Wildlife and Invertebrates					X	X	X	Creating structural diversity with patch openings	Forest stand improvement that creates patch openings. Size, shape, and arrangement of patches will be based on natural features, and emulate patches that would result from natural disturbance regimes of wind or fire, varying geographically and by forest type, and by tree species desired from natural regeneration. The treatment will create diversity in stand composition and structure, increase pest resistance, and enhance wildlife food availability. Openings may provide regeneration sites and restore natural plant communities, and achieve or maintain a desired understory plant community for wildlife habitat.	acre	10	1
E666L	PLANT, ANIMAL	Plant Structure and Composition, Terrestrial Habitat for Wildlife and Invertebrates					X			Forest Stand Improvement to rehabilitate degraded hardwood stands	Hardwood forestland has been subject to poor logging practices (“high-grading”) for decades. Without professional forestry assistance the best species and individual trees are removed, often before maturity (“diameter-limit cutting”), leaving the poorest species and individual trees to regenerate the stand. Reversing this process requires cutting or killing poor quality trees while retaining any desirable species that might still be present. A combination of 3 silvicultural methods are applied: crop tree release, group selection (all trees removed from an area 0.25 to 1.0 acre in size) and small clear-cuts (all trees removed from an area 1-3 acres in size).	acre	10	1

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E666M	PLANT, ANIMAL	Wildfire Hazard from Biomass Accumulation, Terrestrial Habitat for Wildlife and Invertebrates					X	X		Maintaining structural diversity in dry Western forests	This enhancement retains the beneficial effects of treatments that have been applied to restore ecological function in dry Western forests. It is implemented following a forest stand improvement treatment designed to restore variable and patchy conditions typical of benchmark ecological sites. After a restoration treatment, young trees often regenerate in numbers higher than desired, leading to increased fire risk and loss of wildlife habitat. The enhancement will address follow-up activities needed for maintaining forest structure. Site conditions will be monitored and follow-up treatments recommended as needed. The enhancement protects investments in habitat creation by providing for follow-up activities that require the expertise of a forester or wildlife biologist.	acre	10	5
E666N	PLANT, ANIMAL	Wildfire Hazard from Biomass Accumulation, Terrestrial Habitat for Wildlife and Invertebrates					X	X		Creating structural diversity in dry Western forests	Restore natural stand structure in dry Western forests by creating openings characteristic of reference ecological site conditions in stands where even thinning treatments have already been applied to reduce wildfire risk. Thinning treatments are effective in reducing fuels, but typically do not restore forest structural diversity to emulate benchmark or reference conditions. Applying this enhancement as a follow-up treatment will create a patchy structure that provides open areas where grasses and forbs can thrive and produce wildlife food and cover. The size, shape, and arrangement of openings will be based on moisture availability and site physiography, to emulate structural conditions that would result from natural disturbance regimes of wind and/or fire.	acre	10	1
E666O	ANIMAL	Terrestrial Habitat for Wildlife and Invertebrates					X	X	X	Snags, den trees, and coarse woody debris for wildlife habitat	Improve wildlife habitat through creation and retention of snags, den trees, forest stand structural diversity, and coarse woody debris on the forest floor, to provide cover/shelter for native wildlife species.	acre	10	1
E666P	ANIMAL	Terrestrial Habitat for Wildlife and Invertebrates					X	X	X	Summer roosting habitat for native forest-dwelling bat species	Create new potential roost trees within upland and riparian forests to achieve desired summer habitat for forest-dwelling bat species.	acre	10	1
E666Q	PLANT, ANIMAL	Terrestrial Habitat for Wildlife and Invertebrates					X	X	X	Increase diversity in pine plantation monocultures	Create small openings to provide diversity in pine plantations, which are typically monocultures and inhospitable to wildlife. Small openings are one-half (0.5) to three (3) acres in size. The cleared area will have the vegetation removed through cutting, mulching, or other means compatible with the site.	acre	10	1

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E666R	ANIMAL	Terrestrial Habitat for Wildlife and Invertebrates					X	X	X	Forest songbird habitat maintenance	Adopts guidelines and methods developed by the Forest Bird Initiative of the Vermont Audubon Society, to preserve habitat features following a forest stand improvement treatment designed to create habitat for a suite of forest-dwelling neotropical migratory songbirds. It includes developing or updating a forest management plan, inspecting and tending forest habitat, and monitoring bird populations. It protects investments in habitat creation by providing for follow-up activities that require the expertise of a professional forester or biologist. This enhancement is appropriate for states in the Atlantic Flyway and the Upper Midwest.	acre	10	5