KENTUCKY Conservation Practices
A summary of commonly installed NRCS conservation practices in the Commonwealth
"Take care of the land and the land will take care of you." Hugh Hammond Bennett, the first Chief of the Soil Conservation Service (now the Natural Resources Conservation Service or NRCS) spoke those words nearly 80 years ago and they still ring true today. He also said, "...the soil must be conserved ultimately by those who till the land and live by its products." Farmers have the opportunity to be great conservationists and those of us who share the privilege of assisting them with taking care of the soil, water, animals, plants and air are passionate about helping to achieve the conservation and restoration of these natural resources. May you find both inspiration and practical insight in the pages that follow and know that you have a partner in NRCS and our professionals, and that we bring science and experience to help you be a great conservationist.
This book is intended for landowners or other clients unfamiliar with the Natural Resources Conservation Service (NRCS) or common agricultural practices. It provides a brief description of various conservation practices used in Kentucky. Each practice description includes information on its lifespan, common uses, possible additional practices, and an example photo. It does not contain every conservation practice in the Field Office Technical Guide, and many practices may be implemented differently depending upon the needs and resource concerns. Always consult a certified conservation planner to determine the best conservation practice to address a resource concern.
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Access control includes temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.

Controlling access is often used to protect, maintain, or improve the quantity and quality of natural resources in an area. This may include aesthetic resources as well as human health and safety.

Controlling the access of people or livestock is often critical to maintaining vegetation and conserving other natural resources.

The barriers constructed for access control must be adequate to prevent intrusion of the target animals, vehicles, or people. Barriers are usually fences but may also be natural and artificial structures such as logs, boulders, earth fill, gates, signs, or similar structures.

Access Control

NRCS Practice Code: 472
Practice Lifespan: 10 years
Associated Conservation Practices (typical):
- Fence (382)
- Riparian Forest Buffer (391)
- Wetland Restoration (657)
- Prescribed Grazing (528)
An access road is an established route for equipment and vehicles. It is applied for various land uses, including headquarters areas, cropland, pasture, and forestland.

An access road is installed to provide a fixed route for vehicular travel to allow management of timber, livestock, agriculture, wildlife habitat, and other conservation enterprises. Access roads range from single purpose, seasonal use roads, designed for low speed and rough driving conditions, to all-purpose, all-weather roads.

The design of an access road is based on the soils, climate, topography, drainage patterns, and anticipated operating conditions. Surface treatments vary from bare earth to a hardened surface such as asphalt or gravel. Drainage features associated with the practice could include culverts or surface cross drains.

Operation and maintenance of the access road includes inspection of the road surface and the drainage features after every major runoff event and prompt repair or replacement of damaged components.
**Brush Management**

**NRCS Practice Code:** 314  
**Practice Lifespan:** 10 years  
**Associated Conservation Practices (typical):**
- Conservation Cover (327)  
- Herbaceous Weed Treatment (315)  
- Forest Stand Improvement (666)  
- Tree/Shrub Establishment (612)  
- Pasture and Hay Planting (512)  
- Prescribed Grazing (528)

In Kentucky, brush management is efficiently applied using a masticator on large areas with heavy infestations of woody species such as bush honeysuckle.

The operation and maintenance requirements include frequent monitoring and follow-up treatments to control regrowth. The success of this practice is determined by evaluating post-treatment regrowth after enough time has passed. Operations must always comply with all local, state, and federal laws and ordinances. Always dispose of herbicides and herbicide containers in accordance with the label directions and comply with all federal, state, and local regulations.

Brush management involves the removal or control of woody plants in grasslands, forestlands, and other areas where these species are not desired. Often these species are noxious or invasive, such as autumn olive, bush honeysuckle, or multiflora rose. This practice may be utilized to facilitate future silvicultural activities and/or restore and enhance wildlife habitat. It should not be utilized for removal of vegetation where a land-use change is desired or for removal of native woody species.

Control of woody species can be through mechanical methods such as bush hoggling, masticators, or even chainsaws and weedeaters. Brush management may also be accomplished by chemical applications. In rare instances, livestock grazing may be used to control some species. Brush management is typically a combination of mechanical and chemical methods.

The methods and the timing of the application depend on the species being controlled. Frequently brush management must be applied for two to four consecutive years to be effective. The timing of the application will depend on upon the species to be controlled.

Hand cutting and treatment of the stump with herbicide is a common method of applying this practice.

In some instances, where infestations are heavy, herbicides may be applied using basal bark spray or other methods.
A composting facility is a structure or device to contain and facilitate an aerobic microbial ecosystem for the decomposition of manure and/or other organic material into a final product sufficiently stable for storage, on farm use and application to land as a soil amendment.

A composting facility is designed to produce an amendment that adds organic matter and beneficial organisms to the soil, provides slow-release plant-available nutrients, and improves soil condition. This amendment can be applied to the land or marketed to the public.

Composting is accomplished by mixing a carbon material with a nitrogen-rich material in a manner that encourages the growth of aerobic bacteria. Bins, windrows, or in-vessel structures, such as a rotary drum, can be used.

Design information for this practice includes site location, design sizing, storage period, and safety/biosecurity features. It may also include fabricated structure criteria.

Operation requirements for the facility depend on the type of facility chosen by the producer. For every system, the temperature and moisture content of the compost will be monitored frequently. Bin or windrow compost must be turned at least once during the composting process. The operation and maintenance plan includes provisions for proper utilization of residual material. Utilization of composted material will be handled in accordance with Nutrient Management (590). Routine maintenance is needed to ensure that the facility operates as designed.
Conservation cover is frequently used to establish wildlife habitat.

Conservation cover is planting and maintaining vegetative cover to protect soil and water resources on lands needing permanent protective cover that will not be used for forage production. In most instances this practice is used to establish wildlife habitat. Conservation cover reduces soil erosion and sedimentation, enhances wildlife habitat, and improves water quality. Conservation cover is applied on all lands needing permanent vegetative cover. It does not apply to critical area plantings.

Conservation cover is used in Kentucky frequently to establish wildlife habitat. This often means planting native grasses such as switchgrass, big bluestem, and Indiangrass. It also includes planting forbs and wildflower species for certain species of wildlife. If wildlife habitat enhancement is a goal, maintenance practices and activities must not disturb cover during the reproductive period for the desired species. To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds will be done on a “spot” basis to protect forbs and legumes that benefit native pollinators and other wildlife.

Operation and maintenance of the conservation cover includes mowing, spraying, disking, or rarely grazing to control weeds and maintain vegetative cover. Additional measures may be necessary to control noxious weeds and other invasive species.

This practice can be used for a variety of wildlife plantings, including pollinators.

A mixture of forbs and native grasses provide excellent habitat for bobwhite quail and a variety of songbirds.
Cover crop is growing a crop of grass, small grain, or legumes primarily for seasonal protection and soil improvement. It is grown primarily for the benefit of the soil rather than the crop yield. Cover crops are commonly used to suppress weeds, manage soil erosion, help build and improve soil fertility and quality, control diseases and pests, and promote biodiversity.

Cover crops may consist of a single species or a mix of several species depending upon the purpose of the cover crop. As an example, many people in Kentucky use winter wheat as a cover crop.

This practice is used to control erosion, add fertility and organic material to the soil, improve soil tilth, increase infiltration and aeration of the soil, and improve overall soil health. The practice may also be used to increase populations of bees for pollination purposes. Cover and green manure crops have beneficial effects on water quantity and quality. Cover crops have a filtering effect on movement of sediment, pathogens, and dissolved and sediment-attached pollutants.

Operation and maintenance of cover crops include controlling weeds, managing for the efficient use of soil moisture, and terminating the cover crop before excessive transpiration. Use of the cover crop as a green manure crop to cycle nutrients will impact when to terminate the cover to match release of nutrient with uptake by following cash crop.
Critical Area Planting

NRCS Practice Code: 342
Practice Lifespan: 10 years
Associated Conservation Practices (typical):
• Mulching (484)
• Herbaceous Weed Treatment (315)
• Diversion (362)
• Obstruction Removal (500)
• Subsurface Drain (606)
• Underground Outlet (620)

A critical area slope that is being revegetated with erosion control blanket material in Barren County, KY.

Critical area planting establishes permanent vegetation on sites that have, or are expected to have, high erosion rates and on sites that have conditions preventing the establishment of vegetation with normal practices.

Erosion control is the primary consideration for plant material selection. However, a broad choice of grasses, trees, shrubs, and vines is usually available and adapted for most sites. Wildlife and beautification are additional considerations that influence planning decisions on a site needing this practice.

Conservation benefits may include reduced sheet and rill erosion, reduced transport of sediment, and stabilized slopes, road banks, stream banks and shorelines. Depending on method of implementation, other conservation benefits may also be achieved.

The following decisions must be made when planning this practice:
• species of plants to establish
• methods and rates of planting
• fertilizer and soil amendments necessary for establishment and growth
• mulching requirements
• planting site preparation
• irrigation requirement
• site management following establishment of the vegetation

Installation of practices such as Diversion (362), Obstruction Removal (500), Subsurface Drain (606), or Underground Outlet (620) may be necessary to prepare the area or ensure vegetative establishment.
A diversion is an earthen channel installed across a slope with a supporting ridge on the downhill side. The primary purpose of a diversion is to direct excess water in a new direction for use or safe disposal. Uses include interception of concentrated water that is flowing down long slopes; collection of water for storage; diversion of water away from gullies, farmsteads, or animal waste systems; and supplementing water management on conservation cropping systems.

The design criteria for a diversion depend on its purpose. Diversions that divert water away from buildings, roads, or animal waste systems will be larger than ones used to protect agricultural land.

A diversion can be parabolic, V-shaped, or trapezoidal in cross-section. The ridge located on the downhill side will typically be about 4-feet wide at the top and will have stable side slopes. The channel and ridge will be vegetated in most cases. If needed for erosion protection, the channel may be lined with gravel, concrete, or similar material.

The diversion must drain into a stable channel such as a grassed waterway, a lined waterway, a grade stabilization structure, an underground outlet, or a stable water course. The location of a diversion is determined by outlet conditions, topography, land use, farming operations, and soil type.

Maintenance requirements include regular inspections, removal of sediment, repair and revegetation of eroded areas and outlets, and re-grading the diversion to maintain the planned capacity.
Early Successional Habitat Development/Management

NRCS Practice Code: 647
Practice Lifespan: 1 year
Associated Conservation Practices (typical):
• Field Border (386)
• Forage Harvest Management (511)
• Tree/Shrub Establishment (612)
• Upland Wildlife Habitat Management (645)

Native grasses provide habitat for many species of wildlife.

Early successional habitat development/management involves manipulating a stand of plants to create and maintain early successional attributes that benefit desired wildlife and/or natural communities. This practice is used to create young forest habitats or set back natural succession in grassland fields for various species of wildlife. Early successional habitat is used by northern bobwhite quail, cottontail rabbits, ruffed grouse, and many other wildlife species.

There are many ways to set back the natural vegetation. Herbicides are effective in grasslands to kill some of the vegetation and make the resulting stand less dense. This creates areas for wildlife to move freely and forage.

Disking in strips or in blocks to create open areas through dense stands of vegetation is another method of setting back succession.

Young forest is needed for many species of wildlife including many rare and declining species like eastern whippoorwill. Young forest can be created by cutting openings in large blocks of less desirable tree species. This patch clear-cut area regrows and creates a thick dense shrubby cover that wildlife use for nesting and escape. Patch clear cuts are usually small (2–10 acres) and are cut along the contour in an irregular shape.

Operation and maintenance for this practice includes periodic disturbance, which may be required to maintain the condition of the habitat. That may include everything from periodic diskling to periodic mowing or woody vegetation removal.

Patches of clear-cut area are created by cutting irregularly shaped blocks within stands of less desirable tree species. — Photo courtesy of Randall Alcorn, Kentucky Department of Fish and Wildlife Resources.

Clear-cut areas may also be cut along land contours.
The farmstead energy improvement practice is applied as part of a conservation management system to reduce energy use. The practice involves developing and implementing improvements to the farmstead that increase energy efficiency and reduce on-farm energy use. Improvements may include measures such as replacing or retrofitting agricultural equipment systems and/or related components or devices.

Farmstead energy improvement is used exclusively to implement recommendations for components of a current energy audit. The practice applies to any agricultural equipment system, nonresidential structure, or component that consumes energy as long as that system or component has been identified in the accepted on-farm energy audit.

Replacement or retrofit systems and related components or devices must meet or exceed currently applicable federal, state, and local standards and guidelines, as well as appropriate NRCS or industry standards.

Applications covered by this practice may include, but are not limited to, automatic environmental controllers, insulation, circulation fans, plate coolers, heat recovery systems, efficient lighting fixtures, and systems to improve the efficiency of maple syrup production.

Operation and maintenance requirements will include periodic inspections with prompt repair of damaged components and monitoring to ensure the continued success of the practice. It may also include the maintenance of energy records.

Identifying areas where energy efficient improvements are possible, like improved lighting or ventilation systems, can reduce on-farm energy consumption.

1 The audit is performed in accordance with the American Society of Agricultural and Biological Engineers ANSI/ASABE Standard S 612, Performing On-farm Energy Audits.
Additional insulation added to agricultural facilities can improve energy efficiency and reduce energy usage.

The purpose of this practice is to implement improvements to improve efficiency of on-farm energy use. Agricultural facilities are often high moisture, dusty environments. The requirements for insulation and vapor barriers installed in agricultural facilities can differ from those of residential buildings due to temperature extremes and the moisture and dust present in agricultural buildings.

Professionally installed sealant can be effective in reducing seasonal heat loss and heat gain in agricultural buildings. Sealing gaps in exterior walls serves to reduce the need to operate heating and cooling equipment, resulting in a decrease in energy consumption.

Mechanically operated energy screens consist of a system of motors, controls, support cables, and screening materials for greenhouses. These systems can be operated to improve greenhouse heating and cooling efficiency. In the winter or at night they can be used to reduce the amount of space inside of the building that requires heating and decrease heat loss from the greenhouse. These systems can also be used to reduce solar heat gain by providing shade in the summer.

Cellulose or bubble type insulation can be installed in greenhouses to reduce seasonal heat loss or heat gain from uninsulated buildings.

In Kentucky this practice is usually recommended in conjunction with an energy audit performed by a certified NRCS technical service provider (TSP). Operation and maintenance requirements will vary widely and depend upon recommendations and practices installed in response to the plan developed by the TSP.
The purpose of this practice is to implement improvements to reduce or improve efficiency of on-farm energy use. Agricultural facilities are often high moisture, dusty environments. Lighting fixtures installed in these facilities should contain appropriate moisture or dust resistant features to withstand the conditions where they are used.

Compact fluorescent bulbs use about 25 percent less energy and have a longer life than incandescent bulbs. They are designed to be compatible with traditional incandescent fixtures, so replacing incandescent bulbs with more energy efficient compact fluorescent lamps may consist of simply switching the bulbs if the existing fixture is appropriate for the conditions where it is installed.

Improved lighting systems allow for better management of poultry.

2 Illuminance level recommendations are provided in ASAE EP344.4, Lighting Systems for Agricultural Facilities. A copy of the standard can be purchased from the American Society of Agricultural and Biological Engineers website at http://elibrary.asabe.org/
A woven wire fence is installed for containing livestock and excluding a water way. Woven wire fences have a board, energized top wire, or barbed wire to prevent pushing down on the fence.

A high tensile fence is installed adjacent to a field that is flood prone. High tensile fences are planned in locations where tree limbs fall or collect debris from flooding because the wire stretches and resists breaking.

A barbed wire fence is installed to exclude livestock from pasture and hay fields to allow the forages time to recover between grazing or haying rotations.

A fence is a constructed barrier to livestock, wildlife, or people. This practice may be applied to any area where livestock and/or wildlife control is needed, or where access to people is to be regulated.

A wide variety of fences exist; however, fencing material and construction quality is always designed and installed to ensure the fence will meet the intended purpose. The standard fence is constructed of either barbed or smooth wire suspended by posts with support structures. Other types include woven wire for small animals, electric fence, and plank fence for equine operations.

Things to consider when planning a fence:
- avoidance of irregular terrain as much as possible
- impact on wildlife movement
- state and local laws
- livestock handling, watering, and feeding requirements

Operation and maintenance for this practice include regular inspections after storms and other disturbance events. Maintain and repair as needed, including tree/limb removal and water-gap replacement.

A barbed wire fence is installed for containing livestock and excluding a water way. Woven wire fences have a board, energized top wire, or barbed wire to prevent pushing down on the fence.
Field borders are strips of permanent vegetation (grasses, legumes, forbs, or shrubs) established on one or more sides of a field. The field containing the border is usually, but not necessarily, cropland. The border is generally converted from cropland but may be created by removing large trees at the edge of woodland, leaving a transition zone of herbaceous and small woody plants. Field borders are functional and aesthetically pleasing.

This is a multipurpose practice that will serve one or more of the following functions:

- reduce erosion
- protect soil and water quality
- assist in management of harmful insect populations
- provide wildlife food and cover
- provide tree or shrub products
- increase carbon storage in biomass and soils
- improve air quality

The functions listed above should be considered when selecting the plant species for this practice.

The maintenance of field borders might consist of periodic rejuvenation of planted species through prescribed burning, disking, mowing, or some other appropriate disturbance.

In Kentucky, field borders often supply late season food for wildlife and bees.
**Firebreak**

**NRCS Practice Code:** 394  
**Practice Lifespan:** 5 years  
**Associated Conservation Practices (typical):**  
- Prescribed Burning (338)  
- Forest Trails and Landings (655)  
- Forest Stand Improvement (666)  
- Tree/Shrub Establishment (612)

A firebreak is a permanent or temporary strip of bare or vegetated ground designed to allow for the removal and management of fuel to prevent the progress of forest fires and provide access to inner areas of the forest to fight such fires.

This practice is best designed with a qualified/certified forester. It is applied on forestland where protection from fire is needed or prescribed burning is recommended. The vegetation in the firebreak should be fire resistant and noninvasive. An alternative is to maintain the firebreak as bare ground.

The firebreaks need to be of sufficient length and width to contain a possible fire.

Knowledge of forest fire history and behavior is helpful in locating the break. Erosion control measures must be incorporated into the design where the firebreaks will be installed on sloping ground.

Vehicle access should be limited as much as possible to prevent damage to the firebreak that would hinder access during emergencies.

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*Photo courtesy of Randall Alcorn, Kentucky Department of Fish and Wildlife Resources*
A filter strip is an area of vegetation established for removing sediment, organic material, and other pollutants from runoff and wastewater. Filter strips are generally located at the lower edge(s) of a field and are designed to serve as a buffer between a field and environmentally sensitive areas such as streams, lakes, wetlands, and other areas susceptible to damage by sediment and waterborne pollutants.

In addition to serving as a buffer, with proper plant selection and management, filter strips can provide additional benefits such as improved fish and wildlife habitat, and improved water quality.

Operate and maintain filter strips by mowing, controlling weeds, and reseeding (as needed) to promote dense vegetative growth. After storm events, inspect filter strips and, if needed, fill in gullies and remove accumulated sediment to keep filter strips functioning effectively.

Exclude livestock and vehicular traffic from filter strips during wet periods of the year to reduce compaction that will limit infiltration.

Filter strips act as buffers between fields and environmentally sensitive areas.

Filter Strip

NRCS Practice Code: 393
Practice Lifespan: 10 years
Associated Conservation Practices (typical):
• Nutrient Management (590)
• Pest Management Conservation System (595)
• Waste Recycling (633)
• Residue and Tillage Management (329 and 345)

This filter strip provides both a buffer between the field and the stream, and assists in improving water quality.

— Photo courtesy Brian Clark, Kentucky Department of Fish and Wildlife Resources.
Forage Harvest Management

NRCS Practice Code: 511
Practice Lifespan: 1 year
Associated Conservation Practices (typical):
• Prescribed Grazing (528); and when nutrients or other soil amendments are applied:
• Nutrient Management (590)
• Waste Recycling (633)

Forage harvest management includes timely cutting and removal of forages and biomass from the field as hay, greenchop, or silage. Forage is harvested at a frequency and height that optimizes the desired forage stand, plant community, and stand life.

When harvesting for feed, consider the health of specific plant and animal species. Depending on the plant material, drought conditions may increase nitrate levels in forages to the point of possible toxicity, while prussic acid poisoning may be an issue with frosted material.

In addition to harvest considerations, storage and feeding options may be needed to maintain the quality of the forage.

When weather impacts the harvest, use of mechanical or chemical conditioners, forced-air barn curing, and ensiling may be required. Harvest may be delayed if prolonged or heavy precipitation is forecast that would reduce forage quality.

Green chopping or ensiling the forage to reduce or eliminate field-drying time may be necessary in regions where rainfall and/or humidity levels cause unacceptable forage quality losses. Other options include the use of desiccants, preservatives, or macerating implements to reduce field-drying time.

The timing of the harvest may affect the quality of the forage as well as the quantity, depending on the species.

Hay being cut in Clark County, KY.
Forest stand improvement involves the manipulation of forest species composition and structure by cutting or killing selected trees and understory vegetation.

This practice applies to forestland where competing vegetation interferes with the growth of preferred tree and understory species. Preferred plants are identified and retained to achieve the desired composition and structure of the forest stand. It is often the central practice for forestry management plans in Kentucky.

Specifications for this practice include defining the spacing, density, and number or area of preferred plants. Timing of treatment and retaining dead or dying trees will help minimize impacts on nesting birds and other wildlife. Food and cover for desired wildlife species may be enhanced by modifying tree and understory composition and spacing.

Conservation benefits may include improved plant health and productivity by promoting improved forest structure and desirable species such as white oak, reduced susceptibility to pests and moisture stress, reduced wildfire hazard, improved wildlife habitat, improved water quality, and increased carbon storage.

Basal application of herbicides labeled for forestry use provides a safe method to remove undesirable species and release crop trees.

A forestry management plan should be developed by a forestry professional prior to application of this practice.

Forest Stand Improvement

NRCS Practice Code: 666
Practice Lifespan: 10 years
Associated Conservation Practices (typical):
• Woody Residue Treatment (384)
• Pest Management Conservation System (595)
• Brush Management (314)
• Herbaceous Weed Treatment (315)
• Access Control (472)
• Firebreak (394)
• Access Road (560)
• Prescribed Burning (338)
• Upland Wildlife Habitat Management (645)
• Early Successional Habitat Development/Management (647)
• Restoration and Management of Rare and Declining Communities (643)
Grade Stabilization Structure

NRCS Practice Code: 410
Practice Lifespan: 15 years
Associated Conservation Practices (typical):
• Grassed Waterway (412)
• Critical Area Planting (342)

A grade stabilization structure at the end of a grassed waterway (NRCS Practice Code 412) in Barren County, KY.

A grade stabilization structure is used to control the grade and head cutting in natural or artificial channels.

Grade stabilization structures are installed to stabilize the channel grade and control erosion to prevent the formation or advance of gullies and head cuts. The practice is used in areas where structures are necessary to stabilize the site. Grade stabilization structures are not designed to regulate flow or water levels in a channel area.

Special attention is given to enhancing fish and wildlife habitat where enhancement is practical. The practice is also helpful in reducing pollution from sedimentation.

Grade stabilization structures are located so that the elevation of the inlet of the spillway is set at an elevation that will control upstream head cutting.

Several alternative types of structures are available for this practice, and an intensive site investigation is required to plan and design an appropriate grade stabilization structure for a specific site. Structures can consist of rock, concrete, or metal. Some alternative methods involve the use of cattle panel structures, treated wood, geotextiles, or large precast concrete blocks.
A grassed waterway is a shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity, using a broad and shallow cross section to a stable outlet.

Waterways are constructed to convey runoff from concentrated-flow areas, terraces, or diversions where erosion control is needed. Waterways can be used to control gullies and/or improve the water quality by reducing the sediment carried by runoff water.

Grassed waterways are usually parabolic or trapezoidal in shape and are designed to allow farm equipment to cross without damaging the waterway or the equipment.

When possible, species of vegetation should be selected that can serve multiple purposes, such as benefiting wildlife, while still meeting the basic criteria needed for providing a stable conveyance for runoff. Tall bunch grasses and perennial forbs may also be planted along waterway margins to improve wildlife habitat. Including diverse legumes or other forbs that provide pollen and nectar will have the added benefit of providing habitat for native bees.

Some maintenance will be needed to maintain the waterway capacity, vegetative cover, and outlet stability. This will include mowing (or controlled grazing), fertilizing, and sediment removal. Most of the damage that occurs to grassed waterways is caused by equipment or herbicides and can be avoided by careful management. Vegetation that is damaged by machinery, herbicides, or erosion must be repaired promptly.
Heavy Use Area Protection

NRCS Practice Code: 561
Practice Lifespan: 10 years
Associated Conservation Practices (typical):
• Watering Facility (614)
• Access Control (472)
• Fence (382)
• Roofs and Covers (367)
• Waste Storage Facility (313)
• Prescribed Grazing (528)

A heavy use area protection can create a stable surface where livestock concentrations may create a resource concern.

Heavy Use Area Protection (HUAP) is a way to stabilize a ground surface that is frequently and intensively used by people, animals, or vehicles. This practice is installed to protect and improve water quality by providing a stable, non-eroding surface for areas frequently used by animals, people, or vehicles.

Commonly used surface treatments include concrete, bituminous concrete, and gravel. In some places, it may be necessary to provide a roofed structure over the treated surface to achieve the desired resource protection.

This practice is often used to provide surface stability in areas where concentration of livestock is causing a resource concern. This includes feeding areas, portable hay rings, watering facilities, feeding troughs, and mineral areas. In these areas, provision must be made for the collection, storage, utilization, and treatment of manure and contaminated runoff.

This practice may be installed alone or with other conservation practices. Maintenance requirements for the practice will depend upon the type of surface chosen by the producer and its intended use. Routine maintenance will be needed to ensure that the facility operates as designed.

Heavy use area protection may also be used around livestock gate openings to create a stable access point.
Herbaceous weed treatment involves the removal or control of nonwoody plants in grasslands, forestlands, and other areas where these species are not desired. These species are often noxious or invasive, such as Japanese stiltgrass, kudzu, or sericia lespedeza. This practice may be utilized to facilitate future activities and/or restore and enhance wildlife habitat.

Control of herbaceous species can be through mechanical methods such as bush hogging, mowing, or removal by hand. Herbaceous weed treatment may also be accomplished by chemical applications. In some rare instances, livestock grazing may be used to control some species. Herbaceous weed treatment is typically a combination of mechanical and chemical methods.

The methods and the timing of the application depends on the species being controlled. Frequently herbaceous weed treatment must be applied for 2 to 4 consecutive years to be effective. The timing of the application will be different depending upon the species to be controlled.

The operation and maintenance requirements include frequent monitoring and follow-up treatments to control regrowth. The success of this practice is determined by evaluating post-treatment regrowth after enough time has passed. Operations must always comply with all local, state, and federal laws and ordinances. Always dispose of herbicides and herbicide containers in accordance with the label directions and comply with all federal, state, and local regulations.

Chemical application of herbicides can be achieved using a rope wick applicator.
High Tunnel System

NRCS Practice Code: 325
Practice Lifespan: 5 years (minimum)
Associated Conservation Practices (typical):
• Critical Area Planting (342)
• Mulching (484)
• Roof Runoff Structure (558)
• Underground Outlet (620)

A high tunnel system is an enclosed polyethylene, polycarbonate, plastic, or fabric covered structure used to cover and protect crops from sun, wind, excessive rainfall or cold to extend the growing season in an environmentally safe manner.

This practice applies to land capable of producing crops. This practice applies where sun or wind intensity may damage crops, or where an extension of the growing season is needed due to climatic conditions. The practice does not apply to crops not grown in the natural soil profile. Raised beds are limited to 12 inches in height.

The high tunnel structure must be constructed of metal, wood, or durable plastic; and be at least 6 feet in height at the peak of the structure. The high tunnel covering material shall have a 5-year-minimum lifespan. For polyethylene covers, a minimum 6-mil greenhouse grade, UV-resistant material should be used.

This practice has a minimum expected life of 5 years. Operation requirements for the facility depend on the type of facility chosen by the producer and will include provisions for proper disposal of residual material. Routine maintenance is needed to ensure that the facility operates as designed.
A microirrigation system, also known as drip or trickle irrigation, is used to make frequent application of small quantities of water on or below the soil surface, as drops, tiny streams or miniature spray through emitters or applicators placed along a water delivery line. Microirrigation systems are installed to efficiently and uniformly apply irrigation water and/or chemicals directly to the plant root zone and maintain soil moisture for optimum plant growth.

Microirrigation is also used to provide irrigation water to establish desired vegetation such as windbreaks, living snow fences, riparian forest buffers, and wildlife plantings.

Microirrigation is suited to virtually all agricultural crops, as well as residential and commercial landscape systems. It is also suited to steep slopes where other methods would cause excessive erosion and areas where other application devices interfere with cultural operations.

Local water test results should be obtained and used to determine irrigation suitability and plan for potential treatment needs.

The movement of dissolved substances below the root zone may affect groundwater quality. As with all irrigation, there may be effects to downstream flows or aquifers and the amount of water available for other water uses.

Operation and maintenance of a microirrigation system involves periodic inspections and the prompt repair or replacement of clogged or damaged components. Additionally, the operator will need to determine and control the volume, frequency, and application rate of irrigation water in a planned, efficient manner.
A lined waterway or outlet is a waterway or outlet structure having an erosion resistant lining of concrete, stone, or other permanent material. The purpose of the practice is to provide protection to the structure when grass cover would not be sufficient or sustainable. Properly designed linings also control seepage, piping, and sloughing or slides. This practice applies to waterways or outlets that need a lining of nonreinforced, cast in place concrete, rock riprap, or similar permanent linings. This practice often becomes necessary when the location is such that people or animals make vegetative protection impractical, or when high value property or adjacent facilities warrant the extra cost of this relatively expensive method of protecting a waterway ordinarily protected with grass.

The lining material will cover the entire wetted perimeter of the structure. Extra freeboard will be designed into the lining if a protective grass cover cannot be established and maintained immediately above the design high water line.

Operation and maintenance involve periodic inspections and the prompt repair and replacement of storm damaged areas, including replacement of concrete or stone if needed. Additionally, the area providing drainage should be periodically inspected to ensure erosion is not occurring and proper runoff measures are installed.
**Livestock Pipeline**

NRCS Practice Code: 516  
Practice Lifespan: 20 years  
Associated Conservation Practices (typical):

- Water Well (642)
- Spring Development (574)
- Pond (378)
- Prescribed Grazing (528)
- Fence (382)
- Watering Facility (614)
- Heavy Use Area Protection (561)

A livestock pipeline is a pipeline installed to convey water for livestock or wildlife.

The purpose of this practice is to convey water from the source of supply to the point(s) of use. Normally, the objective is to decentralize the location of drinking or water storage facilities. The practice is applicable where water must be piped to another location(s) for management purposes, to conserve the supply, or for reasons of sanitation.

Pipelines installed under this practice are generally for livestock management purposes. A single water source can provide livestock water to several locations and be very effective in improving management of a grazing unit.

Livestock pipelines are also used to provide or distribute drinking water facilities for wildlife. The livestock pipeline will require maintenance over the expected life of the practice.
Mulching is applying plant residues or other suitable materials to the land surface. This practice is used on all lands subject to erosion and high runoff that need the additional protection. Mulching can be applied to achieve one or more purposes. Purposes include controlling soil erosion, protecting crops, improving soil moisture irrigation energy reduction, maintaining or increasing organic matter, and improving productivity and health of the crop.

Mulch materials may consist of natural or artificial materials of sufficient dimension (depth or thickness) and durability to achieve the intended purpose for the required period.

Applying rolled mulch can quickly provide protection to lands susceptible to erosion.
Implementation of Nutrient Management requires careful planning.

This practice manages rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts. Nutrient management may be used on any area of land where plant nutrients and soil amendments are applied. Nutrient management may also be used to improve crop productivity and soil organic matter. Sources of nutrients include, but are not limited to, commercial fertilizers (including starter and in-furrow starter/pop-up fertilizer), animal manures, legume fixation credits, green manures, plant or crop residues, compost, organic by-products, municipal and industrial biosolids, wastewater, organic materials, estimated plant available soil nutrients, and irrigation water.

Nutrients are managed based on the 4Rs of nutrient stewardship—apply the Right nutrient source at the Right rate at the Right time in the Right place—to improve nutrient use efficiency by the crop and to reduce nutrient losses to surface water and groundwater and to the atmosphere.

Operation and maintenance provide that nutrient management plans must be reviewed and revised, as needed, with each soil test cycle; changes in manure management, volume or analysis, plants and crops; or plant and crop management. Records must be maintained for at least 5 years to document plan implementation.

All nutrient management activities must adhere to federal, state, and local water quality regulations.
Pasture and Hay Planting

NRCS Practice Code: 512
Practice Lifespan: 5 years
Associated Conservation Practices (typical):
• Forage Harvest Management (511)
• Herbaceous Weed Treatment (315)
• Nutrient Management (590)
• Prescribed Grazing (528)

Pasture and hay planting establishes adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production.

This practice applies to all lands suitable to establishment of annual, biannual, or perennial species for forage and biomass production. This practice does not apply to establishment of annually planted and harvested food, fiber, or oilseed crops.

Pasture and hay planting can help improve or maintain livestock nutrition and/or health, provide or increase forage supply during periods of low forage production, reduce soil erosion, and improve soil and water quality. This practice can also be used to produce feedstock for biofuel or energy production.

Considerations for plant species selection can include climatic conditions such as annual precipitation and its distribution, growing season length, temperature extremes, and the USDA Plant Hardiness Zone.

Soil condition and landscape position attributes such as pH, available water-holding capacity, aspect, slope, drainage class, fertility level, salinity, depth, flooding and ponding, and levels of phytotoxict elements may be important considerations. Resistance to disease and insects common to the site or location may also be important.

Recommended planting rates, methods, and dates are available from the University of Kentucky extension agencies.

The timing of the harvest may affect the quality of the forage as well as the quantity, depending on the species.

This field in southwestern Kentucky has had herbicide applied and is ready to be planted.
A pond is a water impoundment made by constructing an embankment, by excavating a dugout, or by a combination of both. NRCS defines ponds constructed by the first method as embankment ponds, and those constructed by the second method as excavated ponds.

The purpose of a pond is to store water for livestock, fish and wildlife, recreation, fire control, erosion control, flow detention, and other uses such as improving water quality.

The pond practice standard applies where failure of the embankment and resulting release of water will not result in loss of life, damage to homes, commercial buildings, main highways, railroads, or interruption of public utilities; the product of the storage (acre/feet) times the effective height of the dam is less than 3,000 and the effective height of the dam is 35 feet or less.

The site must be designed so that runoff from storms can pass through a natural or constructed spillway at a safe velocity. The drainage area must be protected from erosion that would significantly reduce the expected life of the structure and be large enough so that surface runoff and groundwater flow will normally maintain an adequate supply of water in the pond. The water quality must be suitable for the intended use of the water. The topography and soil must be suitable for the pond.

The pond will require maintenance over the expected life of the practice.

This pond was constructed in Barren County, KY, showing companion practices access control (NRCS Practice Code 472) and fence (NRCS Practice Code 382).
Prescribed Burning

NRCS Practice Code: 338
Practice Lifespan: 1 year
Associated Conservation Practices (typical):
- Conservation Cover (327)
- Forest Stand Improvement (666)
- Pasture and Hay Planting (512), and other associated harvesting, planting, and seeding practices

Native grass burns in the Commonwealth are performed by specially trained personnel. Prescribed burning is a good method to create disturbance, and the regrowth provides excellent wildlife habitat.

Application of this highly specialized practice requires intensive training and sufficient support personnel and equipment. A safe, successful burn must be timed for proper humidity, wind conditions, air temperature, and fuel conditions (ignitable vegetation). Safety precautions are planned before the burn and monitored during the burn.

Prescribed burning is applying controlled fire to a predetermined area of land. This practice can be applied for several purposes including the rejuvenation of stands of native grasses. This is a great way to remove thatch, saplings, and plant matter that eventually smother the stand.

Prescribed burning is often the best way to manage native grasses. It should not be attempted without training and without a detailed burn plan. Prescribed burning may be performed in forested settings for specific purposes.

All burn plans must address the following:
- location and description of the burn area
- resource management objectives
- preburn vegetation cover
- preburn preparation
- required weather conditions
- equipment checklist
- personnel needs and assignments
- safety requirements
- firing sequence and ignition method
- notification checklist
- approval signatures
- postburn evaluation criteria

Prescribed burns are periodically used to remove thatch that builds up in native grass stands like this one in Adair County, KY.

— Photo courtesy Angela Watson, Farm Service Agency.
Prescribed grazing manages the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives. This practice is part of a conservation management system to achieve one or more of the following:

- improve or maintain desired forage composition, structure, and/or vigor of plant communities
- improve or maintain the quantity and/or quality of forage for grazing and browsing animals' health and productivity
- improve or maintain surface and/or subsurface water quality and/or quantity
- improve or maintain riparian and/or watershed function
- reduce soil erosion and maintain or improve soil health
- improve or maintain the quantity, quality, or connectivity of food and/or cover available for wildlife

This practice is essentially planning and managing the growth of forages through grazing and browsing livestock. There are many varieties of prescribed grazing including intensive grazing, continuous grazing, flash grazing, and mob grazing. The type of grazing prescribed is dependent upon many factors including the forage available, the carrying capacity, available water and infrastructure, capital and available labor, and the goals and objectives of the client.
Pumping Plant

NRCS Practice Code: 533
Practice Lifespan: 15 years (minimum)
Associated Conservation Practices (typical):
• Water Well (642)
• Waste Transfer (634), or
• Drainage Water Management (554)

A pumping plant is a facility that delivers water at a designed pressure and flow rate to meet a conservation need. Components of the facility include the required pump, associated power unit, plumbing, and necessary appurtenances. It also may include on-site fuel or energy sources and protective structures.

A pumping plant may be installed for a wide variety of conservation purposes. This includes, but is not limited to, delivery of water for irrigation or livestock water, maintenance of critical water levels in wetland sites, transfer of wastewater for utilization as part of a waste management system, and facilitation of drainage by removal of surface runoff or groundwater.

The power supply for a pumping plant may come from line power, fossil fuel, photovoltaic panels, windmills, or water-powered pumps (hydraulic rams). To improve air quality, new or replacement pumping plants will use non-combustion power sources or technologies that are more efficient in fuel use or fuel type.

When planning the installation of a pumping plant, it is important to consider the potential effects on ground and surface water from water removal or delivery. Other things to consider include ways to protect the pumping plant from freezing, flooding, vandalism, and other events.

Operation requirements for the facility will depend upon the type of system chosen by the operator. Maintenance will include routine testing and inspection of the components, removal of debris, protection against freezing, and periodic inspection of safety features.
The residue and tillage management, no till practice addresses the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round. Crops are planted and grown in narrow slots or tilled strips established in the untilled seedbed of the previous crop.

This practice includes maintaining most of the crop residue on the soil surface throughout the year, commonly referred to as no till. The common characteristic of this practice is that the only tillage performed is a very narrow strip prepared by coulters, sweeps, or similar devices attached to the front of the planter.

Benefits to soil include increasing organic matter, improving soil tilth, and increasing productivity as the constant supply of organic material left on the soil surface is decomposed by a healthy population of earthworms and other organisms.

Operation and maintenance for this practice includes evaluating the crop-residue cover and orientation for each crop to ensure the planned amounts, orientation, and benefits are being achieved. Weeds and other pests must be monitored to ensure pest populations do not exceed thresholds.

Residue and Tillage Management, No Till

NRCS Practice Code: 329
Practice Lifespan: 1 year
Associated Conservation Practices (typical):
• Conservation Crop Rotation (328)
• Nutrient Management (590)
• Pest Management Conservation System (595)
• Irrigation Water Management (449)
Riparian Forest Buffer

NRCS Practice Code: 391
Practice Lifespan: 15 years
Associated Conservation Practices (typical):
- Riparian Herbaceous Cover (390)
- Stream Habitat Improvement and Management (395)
- Streambank and Shoreline Protection (580)
- Tree/Shrub Establishment (612)

A riparian forest buffer is an area of trees and/or shrubs located adjacent to a body of water.

The vegetation extends outward from the water body for a specified distance necessary to provide a minimum level of protection and/or enhancement. This practice applies to areas adjacent to permanent or intermittent streams, lakes, ponds, wetlands, and areas associated with groundwater recharge.

The riparian forest buffer is a multipurpose practice designed to accomplish one or more of the following:
- create shade to lower water temperatures and improve habitat for aquatic animals
- provide a source of debris necessary for healthy robust populations of aquatic organisms and wildlife
- act as a buffer to filter out sediment, organic material, fertilizer, pesticides, and other pollutants that may adversely impact the water body, including shallow groundwater

Dominant vegetation consists of existing or planted trees and shrubs suited to the site and purpose(s) of the practice. Grasses and forbs that come in naturally further enhance the wildlife habitat and filtering effect of the practice. Head cuts and streambank erosion should be assessed and treated appropriately before establishing the riparian forest buffer.

Specifications for each installation are based on a thorough field investigation of individual sites.
Riparian herbaceous cover is establishment and maintenance of grasses, grass-like plants, and forbs that are tolerant of intermittent flooding or saturated soils and that are established or managed in the transitional zone between terrestrial and aquatic habitats.

This practice is used on lands along watercourses or at the boundary of water bodies or wetlands where the natural or desired plant community is dominated by herbaceous vegetation; the ecosystem has been disturbed and the natural plant community is missing, changed, or has been converted to agricultural crops, lawns, or other high maintenance vegetation; or invasive species dominate. The purposes of this practice include:

- provision of food, shelter, shading
- access to adjacent habitats
- nursery habitat and pathways for movement by resident and nonresident aquatic, semiaquatic, and terrestrial organisms
- improvement and protection of water quality
- stabilization of streambanks and shorelines
- increased net carbon storage in the biomass and soil

NRCS Practice Code: 390
Practice Lifespan: 5 years
Associated Conservation Practices (typical):

• Conservation Cover (327)
• Fence (382)
• Access Control (472)
• Wetland Wildlife Habitat Management (644)
• Prescribed Grazing (528)
• Streambank and Shoreline Protection (580)
• Stream Crossing (578)
• Watering Facility (614)

Riparian Herbaceous Cover

A riparian herbaceous cover in Madison County, KY.
— Photo courtesy Randall Alcorn, Kentucky Department of Fish and Wildlife Resources
Roof Runoff Structure

NRCS Practice Code: 558
Practice Lifespan: 15 years (minimum)
Associated Conservation Practices (typical):
- Waste Storage Facility (313)
- Composting Facility (317)

A roof runoff structure capturing water on a high tunnel system (NRCS Practice Code 325) in Barren County, KY.

A roof runoff structure is made of various components that will collect, control, and convey precipitation runoff from a roof.

The practice applies where roof runoff from precipitation needs to be diverted away from structures or contaminated areas. Roof runoff water that becomes contaminated by contact with animal waste must be stored and transported to the field for land application. Diverting clean water away from animal waste concentration areas reduces the amount of liquid that must be stored and utilized.

Uncontrolled roof runoff can also cause soil erosion. Collecting the runoff and transporting it to a stable outlet will reduce soil erosion and improve water quality.

Roof runoff water can also be collected and used for other purposes. Nonpotable water can be used for irrigation. Potable water storage structures must be constructed of materials and in a manner that will not cause the contamination of the stored water. Roof runoff that is collected and stored for potable use must be treated prior to consumption. It must be tested periodically to assure that adequate quality is maintained. The use of roof runoff water for livestock water must be evaluated on an individual basis.

Components of this practice can include gutters, downspouts, rock-filled trenches or pads, and subsurface drains or outlets and can be applied to new or existing roofs.

Roof runoff structures must be kept clean and free of obstructions that reduce flow. Maintenance requirements include regular inspections and repair of damaged components.
Roofs and Covers

NRCS Practice Code: 367
Practice Lifespan: 10 years
Associated Conservation Practices (typical):

- Anaerobic Digester (366)
- Waste Treatment Lagoon (359)
- Waste Storage Facility (313)
- Composting Facility (317)
- Agrichemical Handling Facility (309)
- On-Farm Secondary Containment Facility (319)

A roofs and covers system consists of a rigid, semirigid, or flexible manufactured membrane, composite material, or roof structure placed over a waste management facility or an agrichemical handling facility.

The roofs and covers practice is a component of an agricultural waste management system.

Roofs and covers are installed to prevent the escape of gases from waste facilities and to exclude precipitation from these facilities. This practice can also use a roof to divert clean water from animal management areas and/or waste storage facilities. Roofs and covers can improve air and water quality and facilitate the capture of biogases for energy production. The gases captured include methane, ammonia, and others that cause odors. The methane can be captured and burned for fuel or flared to prevent it from entering the atmosphere as a greenhouse gas. The partial pressures created by placing a cover over a liquid storage or treatment facility allows more nitrogen to be retained in the waste that can be used for crop production.

Operation and maintenance requirements include periodic inspections with prompt repair of damaged components and monitoring to ensure the continued success of the practice.

When covers are used for biogas collection, additional safety precautions may be required.
A spring development is a way of collecting water from a spring or seep so it can be used for livestock, wildlife, or other agricultural uses. In Kentucky, spring development is typically used for collecting subsurface water seeps.

A spring development can be installed where a spring or seep will provide a dependable supply of suitable water for the planned use. Springs are developed by removing obstructions to the flow and collecting the water. The type of collection system used for the spring development is dependent upon the type of spring and site geology. Collection systems generally consist of a restrictive barrier that forces water to collect in a perforated pipe that flows to an outlet. It may also be necessary to provide a means of storing the water if flow from the spring is not sufficient to meet the peak demand of the intended use.

A spring box can be made of concrete, plastic, galvanized steel, or naturally rot-resistant wood. The spring box also functions as a sediment trap. Installation of a spring development may also affect the nearby plant and wildlife communities.

Operation and maintenance of a spring development includes periodic removal of sediment from the spring box, keeping outlets and overflow pipes clear, and repairing rodent damage and erosion from overflow pipes. It also includes keeping surface water diverted away from the spring.
Stream Crossing

NRCS Practice Code: 578
Practice Lifespan: 10 years
Associated Conservation Practices (typical):
- Trails and Walkways (575)
- Riparian Forest Buffer (391)
- Access Road (560)
- Prescribed Grazing (528)
- Fence (382)

A stream crossing is a stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment, or vehicles.

Stream crossings can be used to provide access to another land unit, improve water quality by reducing sediment and nutrient loading of the stream, or reduce streambank and streambed erosion. This practice applies where an intermittent or perennial water course exists and a ford, bridge, or culvert-type crossing is needed.

A ford crossing is best suited for a wide, shallow watercourse with a firm streambed. Typical materials used for a ford crossing are concrete or rock. Ford crossings have the least detrimental effect on water quality when their use is infrequent. If the stream crossing will be used often, as in a dairy operation, a bridge or culvert crossing should be used.

Culverts and bridges work best on sites where the stream channel is relatively narrow or where the banks are steep. Culvert crossings are usually more economical to install than bridges, however, culverts have some potential to impede passage of fish and other aquatic organisms.

Evaluate the need for safety features such as guard rails and reflectors on culvert or bridge crossings, and water-depth signage on ford crossings.

Rock being installed on a stream crossing.

Grading and bank protection installed for stream crossing.

Rock and fencing installed to support stream crossing.
Streambank and Shoreline Protection

NRCS Practice Code: 580  
Practice Lifespan: 20 years  
Associated Conservation Practices (typical):
  • Channel Bed Stabilization (584)  
  • Critical Area Planting (342)  
  • Fence (382)  
  • Open Channel (582)  
  • Riparian Forest Buffer (391)  
  • Riparian Herbaceous Cover (390)  
  • Stream Crossing (578)  
  • Tree/Shrub Establishment (612)

Streambank and shoreline protection is used to stabilize and protect the banks of streams or constructed channels and the shorelines of lakes, or reservoirs, with vegetative or structural measures. It may be used to prevent the loss of land and damage to land uses or facilities adjacent to the banks of streams, constructed channels, or shorelines. Streambank and shoreline protection may also be used to maintain the flow capacity of streams or channels, reduce the downstream effects of bank erosion, and improve or enhance the stream corridor for fish and wildlife habitat, aesthetics, and recreation.

Permits or permissions may be required from local, state, and federal agencies. These may include a Kentucky Division of Water 401 Clean Water Certification, Floodplain Construction Permit, nationwide or individual permit under Section 404 of the Clean Water Act from the US Army Corps of Engineers, and approval from the Kentucky Department of Fish and Wildlife Resources. Any local requirements must be incorporated into the proposed plans.

This is one of the more complex conservation practices because of the amount of analysis needed to determine the cause of the problem. When the cause of the streambank or shoreline instability is within the control of the landowner, treatment will also include ways to address the cause. Any proposed treatments will be compatible with the bank materials, water chemistry, and local watershed hydrology as well as account for any anticipated ice or wave action and fluctuating water levels.

All disturbed areas and streambank and shoreline protection areas must be protected against erosion. Vegetation must be planted that is suitable for the site conditions and achieves the intended purpose of the protection. Vegetation may need to be planted multiple times to ensure good establishment.

Operation and maintenance requirements will vary depending on the type to the type of treatments selected for the site. Management considerations include controlling tree and brush growth as needed, prompt repair of eroded areas in or adjacent to protected area, and reestablishment of vegetative cover immediately where scour erosion has removed established seeding. The site must be inspected periodically and after storm events.
A structure for water control is a structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation, or measures water.

A structure for water control may be installed for a wide variety of conservation purposes. These structures are often installed in a planned irrigation or drainage system. Flashboard risers, check dams, division boxes, water measurement devices, and pipe drop inlets are examples of structures that could be used.

The structure may be part of a wildlife project that requires modification of the water flow with chutes or cold-water releases. Sluices to provide silt management; debris screens to keep trash, debris, or weed seeds out of pipelines; and tide gates to prevent backflow into a channel are examples of other uses of this practice. Culverts, flumes, inverted siphons, and long span pipes can be used to convey water over, under, or along a ditch, canal, road, railroad, or other barrier.

Operation requirements for the facility will depend upon the type of system chosen by the operator. The operation and maintenance plan will describe the amount and timing of water level management needed for the planned system. Semiannual maintenance will include inspection of the components and removal of debris. Additional inspection will be needed after major storm events.

Structure for Water Control

NRCS Practice Code: 587
Practice Lifespan: 20 years (minimum)
Associated Conservation Practices (typical):
- Wetland Creation (658)
- Dike (356)
- Subsurface Drain (606)
- Open Channel (582)
- Wetland Restoration (657)
Structures for wildlife can come in many different varieties. Commonly these structures are rock piles for reptiles and amphibians or brush piles for upland small game like rabbits or quail. Structures can also be created for nesting for bees, bats, or birds.

Structures for wildlife are structures installed to replace or modify a missing or deficient wildlife habitat component.

Artificial wildlife structures are constructed and applied to the land to provide loafing, escape, nesting, rearing, roosting, perching and/or basking habitat when the natural habitat structures are lacking. These artificial structures are typically installed to provide temporary missing habitat until more permanent natural habitat can be established. Common examples of structures for wildlife are avian nesting structures, rock piles, brush piles, and raptor perches. The modification of an existing structure (e.g., fences and watering facilities) that poses an immediate danger or threat to at-risk species would also fall under this national conservation practice.

Examples of modifications of existing structures are the addition of fence markers to existing fences, adding or removing wire to facilitate safe passage of wildlife, and adding wildlife escape ramps to existing water troughs. The application of this practice is limited to non-domesticated species and populations.
A subsurface drain is a conduit, such as corrugated plastic tubing, tile, or pipe, installed beneath the ground surface to collect and convey drainage water.

Subsurface drains are used to improve the environment for crops, reduce erosion, improve water quality, regulate water tables, collect groundwater for beneficial uses, or to remove salts and other contaminants from the soil profile.

Subsurface drainage is used in areas having a high water table where the benefits of lowering the water level are worth the expense. The practice also applies to areas that will benefit from controlling groundwater and surface runoff. The soil must meet certain suitability requirements and an adequate outlet must be available to assure proper drain function.

The operation and maintenance of a subsurface drainage system includes periodic inspections and prompt repair of system components (e.g., structures for water control, underground outlets, vents, drain outlets, and trash and rodent guards). In cold climates, winterization protection from freezing conditions is necessary.
Trails and Walkways

NRCS Practice Code: 575
Practice Lifespan: 10 years (minimum)
Associated Conservation Practices (typical):
- Fence (382)
- Prescribed Grazing (528)
- Critical Area Planting (342)
- Heavy Use Area Protection (561)
- Stream Crossing (578)

A trail is a constructed path with a vegetated or earthen surface. A walkway is a constructed path with an artificial surface. A trail or walkway is used to facilitate the movement of animals, people, or off-road vehicles. It is used where there is a need to:

- provide or improve animal access to forage, water, working/handling facilities, or shelter
- facilitate improved grazing efficiency and distribution
- protect ecologically sensitive, erosive, or potentially erosive sites
- provide pedestrian or off-road vehicle access to agricultural, construction, or maintenance operations
- provide trails/walkways for recreational activities or access to recreation sites

A trail or walkway is designed to accommodate the expected frequency of use and the type of user. It also has a surface that matches the usage. An infrequently used trail can be vegetated with grass. A walkway that is used daily would have a hardened surface. If it is necessary to locate the walkway in a wet area, an elevated boardwalk might be used.

Maintenance of a trail or walkway can include periodic grading or reshaping to maintain the designed grade or dimensions, replacement of surface materials, reseeding damaged vegetation, and removal of manure accumulations.
Tree/shrub establishment involves planting seedlings or cuttings, seeding, or creating conditions that promote natural regeneration.

Trees and shrubs can be established for a variety of purposes. Conservation benefits may include, but are not limited to:

- enhancing wildlife habitat
- establishing forest cover
- controlling erosion
- improving water quality
- capturing and storing carbon
- conserving energy

Species selection, site preparation, planting date and method, and tree spacing will vary depending on the planned purpose and site conditions. Once planted, trees and shrubs need to be inspected periodically and protected from insects, diseases, competing vegetation, fire, and damage from livestock or wildlife.

Depending on the site, supplemental water may be required to ensure survival during the establishment period, typically 1 to 3 years. Periodic applications of nutrients may be needed to maintain plant vigor.
Tree/shrub site preparation involves the treatment of areas to improve site conditions for establishing trees and/or shrubs.

Apply tree/shrub site preparation conservation practice to control undesirable vegetation, remove slash and debris, or alter site conditions in order to provide optimum site conditions for planting or seeding of woody species, or to encourage natural regeneration of desirable trees and shrubs.

This practice applies to understocked areas, areas planned for tree planting following harvest, areas where a land-cover change to woody plants is desired, or areas having undesirable vegetation that inhibits or competes with the establishment of preferred woody species. Application of this practice requires consideration of:

- protection of existing desirable vegetation
- treatment of remaining slash and debris so it does not harbor harmful levels of pests, hinder needed equipment operation, or create a fire hazard
- control of erosion and/or runoff
- cost-effectiveness of chosen method
- protection of cultural resources, springs, seeps, wetlands, and other unique areas
- impacts on wildlife habitat

Tree/Shrub Site Preparation

NRCS Practice Code: 490
Practice Lifespan: 1 year
Associated Conservation Practices (typical):
• Tree/Shrub Establishment (612)
• Woody Residue Treatment (384)
• Upland Wildlife Habitat Management (645)
• Windbreak/Shelterbelt Establishment (380)

Abandoned mine land prepared for tree planting.
An underground outlet (UGO) is a conduit installed beneath the surface of the ground to convey runoff to a suitable outlet.

The purpose of the UGO is to carry excess water to a suitable outlet from terraces, water and sediment control basins, diversions, waterways, subsurface drains, surface drains, or other similar practices without causing damage by erosion or flooding. An underground outlet can be installed when surface outlets are impractical because of stability problems, climatic conditions, land use, farmability, or equipment traffic. A UGO can be used as the only outlet for a structure or practice, or it may be used in combination with other types of outlets.

The conduit for a UGO can be either solid or perforated pipe depending on the site-specific design. The inlet to a UGO can be constructed of many different types of materials, but the most common are heavy-duty perforated plastic risers. The outlet of a UGO should have either a 10-foot section of solid heavy-duty pipe or headwall. The UGO must drain into a stable watercourse that is protected from erosion caused by flows from the UGO. Both the inlet and outlet of a UGO should be protected from the entry of small animals. The outlet animal guard should be installed so that it does not impede the flow from the UGO.

UGOs can provide a direct conduit to receiving waters for contaminated runoff from crop land. UGOs and the accompanying structure or practices should be installed as part of a resource management plan that addresses issues such as nutrient and pest management, residue management, and filter areas.
An agricultural waste storage impoundment or containment is made by constructing an embankment, excavating a pit or dugout, or by fabricating a structure.

The waste storage facility provides temporary storage of manure, agricultural by-products, wastewater, and/or contaminated runoff. The facility allows agricultural operation management flexibility for waste recycling. Storage structure types include liquid waste storage ponds or tanks, and solid waste stacking structures.

Facility planning should incorporate environmental concerns, economics, the overall waste management system plan, safety, and health factors.

The design of waste storage structures depends on the intended storage period; the site location; federal, state, and local laws and regulations; waste type and production rate; equipment limitations; and safety concerns.

An operation and maintenance plan is developed to specify requirements for emptying the storage facility. The plan specifies timing, rates, and volume of waste applications. For ponds, the plan also includes requirements for timely removal of waste material to accommodate subsequent storms.
Waste Transfer

NRCS Practice Code: 634
Practice Lifespan: 15 years
Associated Conservation Practices (typical):
• Waste Storage Facility (313)
• Pumping Plant (533)
• Waste Recycling (633)
• Nutrient Management (590)
• Irrigation Ditch Lining (428)
• Sprinkler System (442)

Waste transfer is a system using structures, pipes, or conduits installed to convey wastes or waste byproducts from the agricultural production site to storage, treatment, or application. The purpose of the practice is to transfer animal waste, bedding material, spilled feed, process wastewater, and other residues associated with animal production to a treatment facility or to agricultural land for application. Generated material is conveyed from the source to a storage/treatment facility or a loading area, and/or from storage/treatment to an area for utilization.

This practice is only one component of a manure management system. Waste transfer may involve one or more conservation practices such as various types of structures, pipelines, and pumps.

The system design will include items necessary for the safety of humans and animals, including fence, ventilation, and warning signs. The design should also prevent tractors or other equipment from slipping into waste collection, storage, or treatment facilities.

Operation and maintenance requirements will include periodic inspections with prompt clean out, and repair or replacement of damaged components.
A water and sediment control basin (WASCOB) is an earth embankment or a combination ridge and channel constructed across the slope of a minor drainageway.

The purpose of this practice is to reduce gully erosion, trap sediment, and reduce and manage runoff. WASCOBs are constructed across small drainageways where they intercept runoff. The basin detains runoff and slowly releases it allowing sediment to settle. WASCOBs generally use an underground outlet to control the release and carry the runoff in a pipe to a receiving stream or ditch.

This practice applies to sites where:

- the topography is generally irregular
- gully erosion is a problem
- other conservation practices control sheet and rill erosion
- runoff and sediment damages land and works of improvement
- stable outlets are available

WASCOBs alone may not be sufficient to control sheet and rill erosion on sloping upland areas. In addition, outlets from water and sediment control basins can provide a direct conduit to receiving waters for contaminated runoff from cropland. For these reasons, additional practices may be needed to adequately protect sloping upland areas from erosion and to protect downslope water quality.
A water well is a hole drilled, dug, driven, bored, or otherwise constructed into an aquifer to provide access to a groundwater supply.

This practice is used to provide water for livestock, wildlife, irrigation, fire control, and other agricultural uses.

This practice requires proper design and installation to function properly. If practicable, wells should be located on higher ground and up-gradient from sources of contamination or flooding. The potential for adverse interference with existing nearby production wells should be evaluated in planning. Other concerns that should be considered in planning include the potential for groundwater overdraft; the long-term safe yield of the aquifer and potential effects of installation; and operation of the well on cultural, historical, archeological, or scientific resources at or near the site.

Operation and maintenance of a water well includes record keeping of identified problems, corrective action taken, date, and specific capacity (yield per-unit drawdown) of the water well before and after corrective action was taken.

Once a well has been installed, a distribution system, watering system, and/or irrigation system is usually needed.
A watering facility is a means of providing drinking water to livestock or wildlife. Proper location of the trough will improve animal distribution and vegetation. A watering facility is sometimes installed to keep livestock out of streams and other surface water areas where water quality is a concern.

This practice applies to all land uses where there is a need for a watering facility for livestock and/or wildlife, where there is a source of water that is adequate in quantity and quality, and where soils and topography are suitable for a facility.

The water source may be a well, spring, stream, pond, municipal water supply, or other source, including water hauled from off-site, in some situations. A tank can be installed to store water to supply the trough. A watering ramp can be used to provide a controlled access to a pond or stream.

Operation and maintenance of the watering facility will include cleaning, repair, or replacement of damaged components, ensuring adequate inflow and outflow, and winterizing. If a portable trough is used, there will be a plan for moving the trough and for monitoring the condition of the vegetation.
Wetland creation is the establishment of a wetland on a site that was historically not a natural wetland. These sites contain soils that are not hydric.

The purpose of this practice is to create wetland functions and values that include providing wildlife habitat for amphibians, migratory waterfowl, and to mitigate for converted wetlands.

In Kentucky, this practice is used to make two types of created wetlands. The first are shallow water areas, which are usually in more open settings like grasslands or cropland. The second is ephemeral pools, which are usually created in forested settings. Both structures may be dry for portions of the year.

Native vegetative species should be used whenever possible. Water levels can be controlled for vegetation management and wildlife objectives.

Operation and maintenance requirements will include review of structural items such as water control structures, periodic inspections with prompt repair or replacement of damaged components, monitoring to ensure the continued success of the wetland, control of undesirable plant species and pests, and the potential removal of accumulated sediment.
References

Find more information about Conservation Practices and NRCS programs and services visit online at:

Field Office Technical Guide (Kentucky):
Instructions: Click on Section IV - Practice Standards and Supporting Documents
https://efotg.sc.egov.usda.gov/#/state/KY

NRCS National Website - Conservation Practices:

Learn about NRCS Programs and Services in Kentucky at:

Find a USDA Service Center near you at:
https://offices.sc.egov.usda.gov/locator/app

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Associated Conservation Practices (typical):
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