# Appendix K

# NRCS Conservation Practice Standards

# U.S. Department of Agriculture, Natural Resources Conservation Service Conservation (USDA-NRCS) Practice Standards

This appendix describes selected conservation practice standards developed by USDA-NRCS that NPDES permit writers and inspectors might encounter in their review of CAFO nutrient management plans. USDA-NRCS maintains the most recent national version of many of the standards along with their associated job sheets and statements of work in its National Handbook of Conservation Practice Standards (available at *http://www.nrcs.usda.gov/Technical/Standards/nhcp.html*).

Each state's NRCS office adopts and may modify those practices that are applicable in that state. Some state NRCS offices also develop state-specific standards that are not found in the national handbook. NPDES permit writers and inspectors should refer to the practice standards that are applicable in their state. All state-specific conservation practice standards are available in the Electronic Field Office Technical Guide (eFOTG, available at *http://www.nrcs.usda.gov/technical/efotg/*). To find a specific standard, use the interactive maps on eFOTG to select the appropriate state and county. Then select Section IV from the menu at the left side of the screen for a list of practice standards available in that state.

### Conservation Practice: Access Control (Code 472)
### Application: Production Area

Barriers can be used to prevent, restrict, or control access to an area to maintain or improve the quantity and quality of natural resources or to minimize liability and human health concerns. Barriers consist of natural or artificial structures such as logs, vegetation, earth fill, boulders, fences, gates, electronic and sonic devices, and signs. In those cases where a waterbody is present in the feedlot area of the operation, the NMP should address the installation and maintenance of a fence, or similar barrier, to prevent animals from entering the water. In addition, the slope of the feedlot should be contoured to divert runoff away from the waterbody.

### Conservation Practice: Access Road (Code 560)
### Application: Production Area

The standard establishes a travel-way for equipment and vehicles constructed as part of a conservation plan.

The purpose of this practice is to provide a fixed route for vehicular travel for resource activities involving the management of timber, livestock, agriculture, wildlife habitat, and other conservation enterprises while protecting the soil, water, air, fish, wildlife, and other adjacent natural resources where access is needed from a private or public road or highway to a land use enterprise or conservation measure, or where travel ways are needed in a planned land use area.

Access roads range from seasonal use roads, designed for low speed and rough driving conditions, to all-weather roads heavily used by the public and designed with safety as a high priority. Some roads are constructed for a single purpose only; i.e., control of forest fires, logging and forest management activities, access to remote recreation areas, or access for maintenance of facilities.

Access roads should be located so as to minimize adverse effects on wetlands, waterbodies, wildlife habitat, and air quality. Considerations should be given to the following:

- Effects on downstream flows or aquifers that would affect other water uses or users.
- Effects on the volume and timing of downstream flow to prohibit undesirable environmental, social or economic effects.
- Short-term and construction-related effects of this practice on the quality of on-site downstream water courses.
- Overall effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances that would be carried by runoff from construction activities.
- Effects on wetlands and water-related wildlife habitats that would be associated with the practice.
- Establishing vegetation on road shoulders wider than 2-4 feet.
- Limiting the number of vehicles and vehicle speed will reduce the potential for generation of particulate matter and decease safety and air quality concerns.

## Conservation Practice: Agrichemical Handling Facility (Code 309)
## Application: Production Area

An agrichemical handling facility has an impervious surface to provide a safe environment on farm and ranch operations for the storage, mixing, loading and cleanup of agrichemicals. The practice is also used to retain incidental spillage, retain leakage, and reduce pollution to surface water, groundwater, air, and/or soil.

The practice applies where

- The handling of agrichemicals creates significant potential for pollution of surface water, groundwater, air or soil and a facility is needed to properly manage and handle the chemical operation.
- An adequate water supply is available for filling application equipment tanks, rinsing application equipment and chemical containers as needed for the operation.
- Soils and topography are suitable for construction.

The standard does not apply to the handling or storage of fuels or to commercial or multi-landowner agrichemical handling operations.

## Conservation Practice: Anaerobic Digester (Code 366)
## Application: Production Area

An anaerobic digester is a component of a waste management system that provides biological treatment in the absence of oxygen. Anaerobic digesters are designed to treat manure and other by-products of animal agricultural operations for one or more of the following reasons:

- To capture biogas for energy production.
- To manage odors.
- To reduce the net effect of greenhouse gas emissions.
- To reduce pathogens.

The practice applies where

- Biogas production and capture are components of a planned animal waste and by-product(s) management system.
- Sufficient and suitable organic feedstocks are readily available.
- Existing facilities can be modified to the requirements of this standard or for new construction.
- The operator has the interest and skills to monitor and maintain processes or contracts with a consultant to provide the services.

## Conservation Practice: Animal Mortality Facility (Code 316)
## Application: Production Area

Animal mortality facilities treat and dispose of livestock and poultry carcasses for routine or catastrophic mortality events. Such facilities reduce effects on surface and groundwater resources, reduce odors, and decrease the spread of pathogens. The planning and design of animal mortality facilities or processes must conform to all federal, state, and local laws, rules, and regulations.

This conservation practice applies to livestock and poultry operations where animal carcass treatment or disposal is needed. This practice, however, might not be applicable to catastrophic mortality resulting from disease, unless directed by the appropriate state or federal authority (the state veterinarian or USDA APHIS).

## Conservation Practice: Composting Facility (Code 317)
## Application: Production Area

A composting facility is a structure or device to contain and facilitate the controlled aerobic decomposition of manure or other organic material by microorganisms into a biologically stable organic material that is suitable for use as a soil amendment.

The purpose of this practice is to reduce the pollution potential and improve the handling characteristics of organic waste solids. Composting facilities can also be used to produce a soil amendment that adds organic matter and beneficial organisms, provides slow-release plant-available nutrients, and improves soil condition.

This application applies where

- Organic waste material is generated by agricultural production or processing.
- The facility is a component of a planned waste management system.
- The facility can be constructed, operated, and maintained without polluting air or water resources.
- The compost can be applied to the land or marketed to the public.

**Conservation Practice:** Conservation Buffers
Contour Buffer Strips – (Code 332)
Contour Stripcropping – (Code 585)
Filter Strip – (Code 393)
Grassed Waterways – (Code 412)
Riparian Forest Buffer – (Code 391)
Stripcropping – (Code 586)
Terrace – (Code 600)
Windbreak – (Code 380)

**Application:** Land-Application Areas/Production Area

All the conservation practices identified in the USDA *CNMP Technical Guidance* are considered together because they all function to intercept sediment and other pollutants to prevent them from reaching surface waters. Buffers function by intercepting runoff containing nutrients, sediments and other potential pollutants; storing the runoff; and then releasing it slowly into the waterbody. Buffers also reduce and contain flooding by slowing water discharge into streams and providing an area for surplus water. Windbreaks also can be used to reduce wind erosion and the deposition of soil into surface water. Some of the conservation buffers can be applied in the land-application areas and to the production area. Those practices include filter strips, contour buffer strips, and grassed waterways. The use of such conservation practices around the production area would likely be limited to those instances where surface water is near the production area.

**Contour Buffer Strips:** Contour buffer strips are strips of perennial vegetation, such as grass, alternated with wider cultivated strips that are farmed on the contour. Contour buffer strips allow runoff and trap sediment. Because the grass buffer strip is established on the contour, runoff flows evenly across the entire surface of the strip, reducing sheet and rill erosion. The grass slows runoff, helping the water soak into the soil and reducing erosion. Sediment, nutrients and other pollutants are filtered from the runoff as it flows through the strip thereby improving surface water quality. Buffer strips should be at least 15 feet wide and usually make up one-fifth to one-third of the slope. The specific recommendations

for establishing buffers vary from site to site. Cultivated strip widths are determined by variables such as slope, soil type, field conditions, climate, and erosion potential. Contour buffer strips are unsuitable in fields where irregular, rolling topography makes following a contour impractical.

**Contour Stripcropping:** In stripcropping, crops are arranged so that a strip of grass or forage is alternated with a strip of row crop (such as corn). The crops are planted across the slope of the land, as in contour buffer strips. Less than half the field should be planted in row crops. The grass or forage strips reduce erosion, slow runoff water, and trap sediment. The practice combines the benefits of contouring and crop rotation. Strip cropping is not as effective if the crop strips are too wide, especially on steep slopes. Maximum crop strip widths range from 130 feet, for 1 to 2 percent slopes down, to 50 feet for 21 to 25 percent slopes.

**Grassed Waterways:** Grassed waterways are natural or constructed vegetated channels designed to direct surface water, flowing at non-erosive velocities, to a stable outlet (another vegetated channel, earth ditch, or the like). Grassed waterways usually are used to control gully erosion. In concentrated flow areas, grassed waterways can act as an important component of erosion control by slowing the flow of water and filtering sediment. Other benefits of grassed waterways include the safe disposal of runoff water, improved water quality, improved wildlife habitat, reduced damage associated with sediment, and an improvement in overall landscape aesthetics. Grassed waterways are typically used to control runoff in a field. There might be circumstances, however, where they are used to control runoff from the production area of an operation. Grassed waterways are usually planted with perennial grasses, preferably native species where possible. Some common grass species used in waterways are timothy, tall fescue, and Kentucky bluegrass. Grassed waterways are generally constructed to be either trapezoid or parabolic in cross section, with the requirement that the bottom (shorter) width of trapezoidal waterways not exceed 100 feet unless multiple or divided waterways are provided to control the meandering of low flows.

**Filter strips:** Filter strips are areas of grass or other permanent vegetation that intercept runoff, trapping sediment and pesticides before they reach a body of water. A properly installed buffer can effectively trap 90 percent of sediment and nitrate moving from a farm field. A filter strip can be 20 to 120 feet wide and is usually planted with native grasses. Filter strips are one type of conservation buffer that is often applied to the area between the production area and an adjacent waterbody. In those areas, a filter strip is a gently sloping grass area that is planted between the livestock yard and drainage ways to streams and is managed to filter runoff from the livestock yard. Influent waste is distributed uniformly across the high end of the strip and allowed to flow through the strip. Nutrients and suspended material remaining in the runoff water are filtered through the grass, absorbed by the soil, and ultimately taken up by the plants. Filter strips should be designed and sized to match the characteristics of the livestock yard. A typical practice is to make the filter strip area about equal to the livestock yard area.

**Riparian Buffers:** Riparian buffers are streamside vegetation consisting of trees, shrubs, and grasses. They are used to intercept pollutants from an adjacent farm field. Riparian buffers provide many important benefits by reducing the amounts of both eroded soil sediment and nonpoint source pollutants (such as pesticides, herbicides, and surplus nutrients) that enter surface water.

**Terraces:** Although terraces are not true buffer strips, they are linear conservation practices that perform similar functions (e.g., water diversion, sediment trapping). They are more commonly installed as a diversion measure. A diversion is an earthen embankment, channel, or combination ridge and channel that is built across a slope to intercept and store water runoff. Pollutants in terraces can leach into groundwater. Some terraces are built level from end to end to contain water used to grow crops and recharge groundwater. Others, known as gradient terraces, are built with some slope or grade from one end to the other and can slow water runoff. Both help to reduce soil erosion. In the production area, terraces can be used as a part of an overall diversion system based on the topography of the feedlot. An earthen ridge or terrace can be constructed across the slope upgrade from a production area to prevent runoff from entering the area or to direct runoff from one area of the yard to a common collection area.

**Windbreaks:** The main purpose of windbreaks is to reduce wind erosion of soil from agricultural fields and to protect farmsteads from severe wind. Windbreaks redirect the wind and modify its force. They also provide habitat, food, and migration corridors for wildlife; aesthetic benefits; livestock protection; and energy conservation. (Adapted from NRCS's *National Handbook of Conservation Practices*, at *http://www.nrcs.usda.gov/technical/standards/nhcp.html*.)

## Conservation Practice: Conservation Crop Rotation (Code 328)
## Application: Land-Application Area

Crop rotation combined with recommended tillage practices can play an important role in reducing wind and water erosion. Solid-seed crops such as small grains provide more protection against water erosion than row crops, and permanent crops like hay or pasture provide even more protection. Managing crops to provide sufficient residue throughout the year is essential for satisfactory control of both wind and water erosion.

No-till or minimum-till farming is highly desirable as a conservation practice, but crop rotation must be used to reduce the buildup of insects, weeds and disease-causing organisms. Crop rotation also means that succeeding crops are of a genus, species, subspecies, or variety different from that of the previous crop. Examples are barley after wheat, row crops after small grains, and grain crops after legumes. The planned rotation sequence could be for a 2- or 3-year period or longer. Legumes in the rotation can be used to increase the available soil nitrogen. Symbiotic nitrogen-fixing bacteria called *Rhizobia* form nodules on the roots of leguminous plants and fix atmospheric nitrogen or convert it to organic nitrogen. The amount of nitrogen fixed varies with species, available soil nitrogen, and many other factors. Fixed nitrogen not removed from the land by harvest becomes available to succeeding crops as the legume tissues undergo microbial

decomposition. A well-planned rotation can contribute to more efficient use of plant nutrients. In a 3-year corn/alfalfa rotation, for example, manure can be applied during the corn rotation, resulting in efficient use of nitrogen and often a buildup phosphorus and potassium levels. During the alfalfa phase of the rotation, when manure is not applied, the forage crop uses the soil phosphorus and potassium that were built up during the corn phase of the rotation. The combination of nutrient management and crop rotation can reduce or eliminate the need for purchased fertilizer. If conservation cropping is used in the plan, the inspector should check that the sequence and types of crops being grown are consistent with the plan. The nutrient application rates identified in the plan are based on the specific crop rotation used in the calculations. (Adapted from NRCS *National Handbook of Conservation Practices*, at *http://www.nrcs.usda.gov/technical/standards/nhcp.html*.)

### Conservation Practice: Cover Crop (Code 340)
### Application: Land-Application Areas

A cover crop is a close-growing crop that temporarily protects the ground from wind and water erosion during times when cropland is not adequately protected against soil erosion. Common cover crops include cereal rye, oats, clover, crown vetch, and winter wheat. Cover crops are most often recommended when low residue-producing crops such as soybeans or corn silage are grown on erodible land. Note that if the cover crop is a legume, the nutrient budget calculated in the operation's NMP should account for the addition of nitrogen provided by the crop to the soil.

### Conservation Practice: Critical Area Planting (Code 342)
### Application: Production Area

The USDA standard is for establishing permanent vegetation on sites that have or are expected to have high erosion rates and on sites that have physical, chemical, or biological conditions that prevent the establishment of vegetation with normal practices.

The purpose of this practice is to

- Stabilize areas with existing or expected high rates of soil erosion by water.
- Stabilize areas with existing or expected high rates of soil erosion by wind.
- Rehabilitate and revegetate degraded sites that cannot be stabilized through normal farming practices.
- Stabilize coastal areas, such as sand dunes and riparian areas.

If gullies or deep rills are present, they will be treated, if feasible, to allow equipment operation and ensure proper site and seedbed preparation. On the basis of a soil test, soil amendments will be added, as necessary, to ameliorate or eliminate physical or chemical conditions that inhibit plant establishment and growth. Required amendments should be

included in the site specification with amounts, timing, and method of application. Such required amendments include

- Compost or manure to add organic matter and improve soil structure and water holding capacity.
- Agricultural limestone to increase the pH of acid soils.
- Elemental sulfur to lower the pH of calcareous soils.

### Conservation Practice: Diversion (Code 362)
### Application: Production Area

A diversion is an earthen channel with a supporting ridge constructed across a slope to collect runoff water and safely divert it to a stable outlet, thereby preventing erosion of an area below. Diversions are effective in intercepting storm runoff and directing it away from fields susceptible to erosion, preventing water from flowing over areas where high concentrations of pollutants are present (such as feedlots), and diverting runoff water away from gullies to a stable outlet. The practice can also be applied in land-application areas to reduce nutrient loss.

Diversions can be used to move surface water away from the production area to a clean-water drainage system independent of the water-handling system. Such an approach reduces the amount of water to be handled, reduces the amount of solids eroded from the lot, and maintains available common diversion practices:

- Waterways, small terraces, and roof gutters to direct water away from the production area.
- An earthen ridge or diversion terrace constructed across the slope to prevent runoff from entering the production area.
- A catch basin with a pipe outlet installed above the production area if a diversion terrace is not practical.

All roofs that would contribute to runoff from the production area should have gutters, downspouts, and outlets that discharge water away from the confinement area. The design of the diversion should be based on a 25 year, 24-hour storm.

### Conservation Practice: Fence (Code 382)
### Application: Production Area/Land-Application Area

An area of land can be enclosed or divided with a suitable permanent structure that acts as a barrier to livestock.

### Conservation Practice: Field Border (Code 386)
### Application: Land-Application Areas

The USDA standard defines a field border as a strip of permanent vegetation established at the edge or around the perimeter of a field.

The practice can be applied to accomplish one or more of the following:

- Reduce erosion from wind and water.
- Protect soil and water quality.
- Manage pest populations.
- Provide wildlife food and cover.
- Increase carbon storage.
- Improve air quality.

The practice is applied around the perimeter of fields. Its use can support or connect other buffer practices within and between fields. The practice can also apply to recreation land or other land uses where agronomic crops including where forages are grown.

### Conservation Practice: Heavy-Use Area Protection (Code 561)
### Application: Production Area

The USDA standard establishes the stabilization of areas frequently and intensively used by people, animals, or vehicles by any combination of establishing vegetative cover, surfacing with suitable materials, or installing needed structures.

The purpose of the practice is to provide a stable, non-eroding surface for areas frequently used by animals, people or vehicles. It also helps to protect and improve water quality.

The treated area can include all areas where livestock congregate and cause surface stability problems. That includes feeding areas, portable hay rings, watering facilities, feeding troughs, mineral boxes, and other facilities where livestock concentrations cause resource concerns.

To reduce the negative water quality impact of heavy-use areas, consider locating them as far as possible from waterbodies or water courses. In some cases, it could require relocating the heavily used area rather than armoring an area that is already in use.

### Conservation Practice: Irrigation Water Management (Code 449)
### Application: Land-Application Area

Irrigation water management is controlling the rate, amount, and timing of irrigation water in a planned and prudent manner. The purpose of the practice is to manage soil moisture for crop production and erosion control, minimize leaching of soluble plant nutrients, and protect groundwater and surface water quality. Without proper management, fields are often irrigated too often and at excessive rates. If irrigation water is over-applied, the excess water can cause soil erosion and leaching of nutrients and pesticides. Over-application also wastes water, energy, and money. The volume of water applied and the frequency of applications should determined by crop needs and soil conditions. Soil moisture should be monitored to predict when irrigation is needed. When crops are irrigated, the volume applied should not exceed the available water-holding capacity of the soil in the root zone

or the moisture control zone. In addition, the infiltration rate of the soil should not be exceeded. This practice should be applied in conjunction with other erosion and sediment control practices. (Adapted from NRCS's *National Handbook of Conservation Practices*, at *http://www.nrcs.usda.gov/technical/standards/nhcp.html*.)

**Conservation Practice:** Livestock Shade Structure (Code 717)
**Application:** Pasture

This standard is available in some states but is not included in the *National Handbook of Conservation Practices*. The standard describes a livestock shade structure as a portable, metal frame structure with a mesh fabric roof that is to provide shade for livestock. The practice can be applied as part of a resource management system to protect livestock from excessive heat and also to protect surface waters from pollution by excluding livestock from existing shade on streambanks. The standard includes considerations for the design, placement, construction, operation, and maintenance of livestock shade structures.

**Conservation Practice:** Nutrient Management (Code 590)
**Application:** Land Application

The USDA *CNMP Technical Guidance* uses NRCS Conservation Practice Standard 590, Nutrient Management, to guide the proper land application of nutrients. The standard states that nutrient application rates are to be established considering current soil tests, realistic yield goals and management capabilities. In cases where manure is the source of applied nutrients, the rate also shall be based on an analysis of the nutrient value of the manure, NRCS book values, or historical documented records.

**Conservation Practice:** Residue Management (Code 344)
No-Till and Strip Till (Code 329A)
Mulch Till (Code 345)
Ridge Till (Code 346)
**Application:** Land Application

These cropping practices retain crop residues on or near the surface of a field. As a group these practices are often referred to as conservation tillage. Conservation tillage is any tillage system that leaves at least 30 percent of the field surface covered with crop residue after cropping is completed, and it involves reduced or minimum tillage. The residue can reduce soil detachment by absorbing the impact of falling raindrops. The remaining residue might form small dams that can retard runoff and create puddles of water that absorb raindrop energy, thus reducing soil erosion. Such practices require use of some specialized equipment.

**No-till/strip till:** In these systems, the soil is left undisturbed from harvest to planting except for strips up to one-third of the row width. (The strips could involve only residue disturbance or could include soil disturbance.) Planting or drilling is accomplished using disc openers, coulter(s), row cleaners, in-row chisels, or rototillers. Weeds are controlled

primarily with crop protection products; cultivation can be used for emergency weed control. Other common terms used to describe no-till, include row-till, and slot-till.

**Ridge-till:** Ridge-till is a system in which seeds are planted into a seedbed prepared by scraping off the top of the ridge. The scraped-off ridge usually provides an excellent environment for planting. Ridges are formed during cultivation of the previous year's crop. Ridge-till operations consist of planting in the spring and at least one cultivation to recreate the ridges for the next year. Rows remain in the same place each year and any crop residue on the ridges at planting is pushed between the rows.

**Mulch-till:** This system uses full-width tillage involving one or more tillage strips, which disturbs the entire soil surface and is done before or during planting. Tillage tools such as chisels, field cultivators, discs, sweeps, or blades are used. Weeds are controlled with crop protection products or cultivation or both.

### Conversation Practice: Roof Runoff Management (Code 558)
### Application Area: Production Area

This USDA Conservation Practice Standard is not identified in the *CNMP Technical Guidance*; however, it can be used to address roof runoff entering the production area.

This USDA standard establishes the plans and specifications for designing, constructing, and operating roof runoff management facilities. Such facilities include erosion-resistant channels or subsurface drains with rock-filled trenches along building foundations below eaves, roof gutters, downspouts, and appurtenances.

The purpose of this practice is to prevent roof runoff water from flowing across concentrated waste areas, barnyards, roads and alleys; reduce pollution and erosion; improve water quality; prevent flooding; improve drainage; and protect the environment.

### Conversation Practice: Roofs and Covers (Code 367)
### Application Area: Production Area

The practice standard addresses a rigid, semi-rigid, or flexible manufactured membrane, composite material, or roof structure placed over a waste management facility to provide a roof or cover for

- Improving water quality.
- Diverting clean water from animal management areas (i.e., barnyard, feedlot or exercise area) or waste storage facilities.
- Capturing biogas for energy production.
- Reducing net effect of greenhouse gas emissions.
- Improving air quality and reducing odor.

The practice criteria address the structure's service life, materials, loads, design, access, repair, and safety. Operation and maintenance requirements are included.

## Conservation Practice: Sediment Basin (Code 350)
## Application: Production Area/Land-Application Area

The USDA standard defines this practice as a basin constructed with an engineering outlet, formed by an embankment or excavation or a combination of the two.

The purpose of the practice is to capture and detain sediment laden runoff, or other debris, for a sufficient length of time to allow it to settle out in the basin.

This practice applies to urban land, construction sites, agricultural land, and other disturbed lands where

- Physical conditions or land ownership precludes treatment of a sediment source by installing erosion-control measures.
- A sediment basin offers the most practical solution.
- Failure of the basin will not result in loss of life, damage to homes, commercial or industrial buildings, main highways or railroads, or in the use of public utilities.
- The product of the storage times the effective height of the dam is less than 3,000. Storage is the volume, in acre-feet, in the reservoir below the elevation of the crest of the auxiliary spillway.
- The effective height of the dam is 35 feet or less. The effective height of the dam is the difference in elevation, in feet, between the auxiliary spillway crest and the lowest point in the cross section taken along the centerline of the dam.
- The Hazard Class of the dam is low.

## Conservation Practice: Solid/Liquid Waste Separation Facility (Code 632)
## Application: Production Area

A solid/liquid waste separation facility is a filtration or screening device, settling tank, settling basin, or settling channel used to separate a portion of solids from a liquid waste stream.

The practice is used to partition solids, liquids and their associated nutrients as part of a conservation management system to improve or protect air and water quality and animal health, or to meet other management objectives.

This practice applies where solid/liquid separation will

- Remove solids from the liquid waste stream as a primary treatment process and allow further treatment processes to be applied such as composting and anaerobic digestion.
- Allow partly digested feed to be separated from the liquid waste stream so that it can be used as a feed supplement or for bedding.
- Reduce problems associated with solids accumulation in liquid storage facilities.

- Reduce solids in stored liquids so liquids can be recycled for other uses (i.e. flush water).
- Reduce solids in stored liquids to better facilitate land application of liquids using irrigation techniques.
- Assist with partitioning nutrients in the waste stream to improve nutrient management.

## Conservation Practice: Structure for Water Control (Code 587)
## Application: Production Area

The USDA standard establishes 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.

The practice can be applied as a management component of a water management system to control the stage, discharge, distribution, delivery, or direction of water flow.

The practice applies wherever a permanent structure is needed as an integral part of a water-control system to serve one or more of the following functions:

- Convey water from one elevation to a lower elevation within, to, or from a water conveyance system such as a ditch, channel, canal, or pipeline designed to operate under open channel conditions. Typical structures are drops, chutes, turnouts, surface water inlets, head gates, pump boxes, and stilling basins.
- Control the elevation of water in drainage or irrigation ditches. Typical structures are checks, flashboard risers, and check dams.
- Control the division or measurement of irrigation water. Typical structures are division boxes and water measurement devices.
- Keep trash, debris or weed seeds from entering pipelines. A typical structure is a debris screen.
- Control the direction of channel flow resulting from tides and high water or back-flow from flooding. Typical structures are tide and water management gates.
- Control the water table level, remove surface or subsurface water from adjoining land, flood land for frost protection, or manage water levels for wildlife or recreation. Typical structures are water level control structures, flashboard risers, pipe drop inlets, and box inlets.
- Convey water over, under, or along a ditch, canal, road, railroad, or other barriers. Typical structures are bridges, culverts, flumes, invented siphons, and long span pipes.
- Modify water flow to provide habitat for fish, wildlife, and other aquatic animals. Typical structures are chutes, cold water release structures, and flashboard risers.
- Provide silt management in ditches or canals. A typical structure is a sluice.

- Supplement a resource management system on land where organic waste or commercial fertilizer is applied.
- Create, restore, or enhance wetland hydrology.

## Conservation Practice: Waste Storage Facility (Code 313)
## Application: Production Area/Land-Application Area

The USDA standard defines this practice as a waste storage impoundment made by constructing an embankment or excavating a pit or dugout, or by fabricating a structure. The purpose of the standard is to temporarily store wastes such as manure, wastewater, and contaminated runoff as a storage function component of an agricultural waste management system.

Conditions where this practice applies include

- Where the storage facility is a component of a planned agricultural waste management system.
- Where temporary storage is needed for organic wastes generated by agricultural production or processing.
- Where the storage facility can be constructed, operated, and maintained without polluting air or water resources.
- Where site conditions are suitable for constructing the facility.
- Facilities using embankments with an effective height of 35 feet or less where damage resulting from failure would be limited to damage of farm buildings, agricultural land, or township and county roads.
- Where fabricating structures including tanks, stacking facilities, and pond appurtenances.

## Conservation Practice: Waste Treatment Lagoon (Code 359)
## Application: Production Area

A waste treatment lagoon is an impoundment made by constructing an embankment or excavating a pit or dugout.

The purpose of the practice is to biologically treat waste, such as manure and wastewater, and thereby reduce pollution potential by serving as a treatment component of a waste management system.

Lagoons should be outside floodplains to minimize the potential for stream contamination and should have as little drainage area as possible.

The practice can be applied under the following conditions:

- The lagoon is a component of a planned agricultural waste management system.

- Treatment is needed for organic wastes generated by agricultural production or processing.
- On any site where the lagoon can be constructed, operated, and maintained without polluting air or water resources.
- At lagoons using embankments with an effective height of 35 feet or less, where damage resulting from failure would be limited to damage of farm buildings, agricultural land, or township and country roads.

## Conservation Practice: Waste Utilization (Code 633)
## Application: Land-Application Areas

This practice applies where agricultural wastes that include animal manure and wastewater from livestock and poultry operations are generated or used. The standard recommends sampling and analysis requirements for the manure and wastewater as well as record-keeping requirements. In addition to general criteria, the standard includes specific criteria to protect water quality.

All agricultural waste shall be utilized in a manner that minimizes the opportunity for contaminating surface and groundwater supplies. Agricultural waste shall not be applied on soils that are frequently flooded, as defined by the National Cooperative Soil Survey, during the period when flooding is expected. When liquid wastes are applied, the application rate must not exceed the infiltration rate of the soil, and the amount of waste applied must not exceed the moisture-holding capacity of the soil profile at the time of application.

The standard also includes criteria to reduce atmospheric losses and the reduction of odors from spreading operations. (Adapted from NRCS's *National Handbook of Conservation Practices*, at *http://www.nrcs.usda.gov/technical/standards/nhcp.html*.)

## Conservation Practice: Water and Sediment Control Basin (Code 638)
## Application: Production Area/Land-Application Area

The USDA standard defines the practice as an earth embankment or a combination ridge and channel constructed across the slope of minor watercourses to form a sediment trap and water detention basin with a stable outlet.

The practice can be applied as part of a resource management system for one or more of the following purposes:

- To reduce watercourse and gully erosion.
- To trap sediment.
- To reduce and manage onsite and downstream runoff.

This practice applies to sites where

- The topography is generally irregular.

- Watercourse or gully erosion is a problem.
- Sheet and rill erosion is controlled by other conservation practices.
- Runoff and sediment damages land and works of improvements.
- Adequate outlets can be provided.

Do not use this standard in place of terraces. When the ridge or channel extends beyond the detention basin or level embankment, use Conservation Practice Standard (600), Terrace or (362) Diversion, where appropriate.