NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

SPRING DEVELOPMENT

(No.)

CODE 574

DEFINITION

Collection of water from springs or seeps to provide water for a conservation need.

PURPOSE

Improve the quantity and/or quality of water for livestock, wildlife or other agricultural uses.

CONDITIONS WHERE PRACTICE APPLIES

In areas where a spring or seep will provide a dependable supply of suitable water for the planned use.

CRITERIA

General Criteria Applicable to All Purposes

An investigation of site conditions shall be made, including:

a. Taking soil borings or using other investigative methods as appropriate, to describe the soil and rock material at the spring. Pertinent properties include clay content. erodibility; presence of redoximorphic features, degree of fracturing, and fracture orientation

b. Field estimation or sampling and water quality testing as appropriate, to compare existing water quality with standards for the intended beneficial use

c. Measuring or otherwise estimating springflow discharge, and comparing flows with needs for the intended purpose, including:

   (1) characterizing seasonal fluctuations in springflow discharge; and

   (2) evaluating the impacts of increased discharge on water table elevation and yield to other areas/uses

d. Suitability of the spring location for the intended purpose

e. A determination that the client has the appropriate water rights and any other permits that are required to develop and maintain the spring

f. An assessment to determine existing ecological functions and potential losses from the spring development using the Spring Habitat Worksheet within the Wildlife Habitat Appraisal Guide.

g. A certified wetland determination
Note: This requirement has been removed for California according to the variance approved by NHQ.

h. An assessment of the cultural resource associated with the spring.

Develop springs by removing obstructions to the flow, collecting the water flow and storing the water, if flow from the spring is not sufficient to meet the peak demand of the intended use.

Remove obstructions to spring flow such as fine-grained sediments, rock, slope-wash materials and vegetation to allow the spring to flow freely. Design the development of the spring to prevent obstructions from reoccurring.

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.

Design the collection system to collect sufficient water for the intended purpose of the spring. Minimize the amount of flow diverted from the spring to that necessary to meet the intended use, and redirect as much flow as possible to the original wetted area or watercourse.

Include measures in the collection system to prevent sediment from entering the system and/or provisions to trap and remove sediment that does enter the system.

Include a spring box, if necessary, to allow sediment to settle out of the spring flow or to provide storage to meet peak demands on the water from the spring. Locate the spring box to allow water to flow by gravity from the spring to the spring box. Construct the spring box of a, durable material such as concrete, plastic, galvanized steel, or naturally rot resistant wood.

The spring box shall be of sufficient size to provide for the storage of sediment and any required storage of water. The cross-sectional area of the spring box shall be large enough to allow access for periodic cleaning. A tee and vent pipe should be installed on the pipe within the spring box to reduce plugging from leaves or trash, or the entrance to the pipe should be screened. Provide the spring box with a tight fitting cover to prevent trash and surface runoff from entering. Where appropriate, bury the spring box in the soil to prevent freezing.

The spring development shall have an outlet pipe that carries the water to its intended use. Design the outlet pipe according to Conservation Practice Standard Pipelines, 516, Pipeline. If the outlet is from a spring box, the outlet pipe shall be a minimum of 6 inches off the floor to allow for sediment collection.

A shutoff valve and vent system on the spring outlet pipe shall be included for winter shutdown, flow control, and maintenance.

A pump will be needed if gravity will not carry water from the spring to where the water will be used. Base the type and size of the pump upon available power sources and the water delivery needs.

When flow from the spring, whether intermittent or continuous, will exceed the capacity of the collection system, an overflow is required. Size the overflow to carry the maximum flow expected from the spring during periods of wet weather. Manage the overflow so that it does not create a resource problem.

Design the spring development so that it is protected from damage by freezing, flooding, livestock, excess sediment, vehicular traffic and water quality contamination.

Follow Conservation Practice Standard 614, Watering Facility to design facilities to provide access for livestock and wildlife to water from the developed spring.

Regrade areas disturbed by construction of the spring development to keep surface flow out of the spring. Revegetate disturbed areas as soon as possible after construction.

CONSIDERATIONS

Consider potentially required permits from regulatory agencies such as the US Army Corps of Engineers and California Department of Fish and Game which may be required to disturb the spring development site.

Consider the potential impacts of spring development on long-term groundwater supply for existing and planned uses on adjacent properties.

Consider how diversion of water from spring developments affects stream flows in the watershed.

Consider how other conservation practices properly applied on the spring recharge area may increase infiltration of precipitation in order to conserve the spring’s flows.

Springs may represent islands of unique habitat in the landscape, supporting plant and animal populations that only occur in an area of a high water table. Consider options for developing the spring or seep that preserve or enhance the conditions that support these unique habitats.

Springs are sources of water for fish and wildlife. Maintain fish and wildlife access to water from the spring development where possible.

Native vegetation adapted to wet conditions should be considered on wet sites as an alternative to introduced grasses to stabilize areas after construction.

Aquatic habitat quality may be conserved when a spring is developed near surface waters, or on a floodplain, by incorporating a float valve that shuts off flow to the tank, and returns overflow via a stable outlet to the same watershed where it was collected.

Consider using filter fabric in lieu of an impervious barrier along the wall(s) of the collection trench as a way to minimize disturbance to the impacted wetland associated with spring development.

Brush removal, excavation, clean out and withdrawal of water are manipulations that may affect wildlife habitat and wetland functions and values. However, selective removal of undesirable brush and management for desirable native plants may reduce evaporative losses and conserve biodiversity.

Cultural Resources Considerations

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer.

http://www.nrcs.usda.gov/technical/cultural.html is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental Evaluation CPA-52 also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

Endangered Species Considerations

If during the Environmental Evaluation CPA-52 process NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

PLANS AND SPECIFICATIONS

Plans and specifications shall provide details of planned location, materials and construction requirements for the installation of the practice to meet its intended purpose.

OPERATION AND MAINTENANCE

The O&M plan shall contain a schedule for the periodic monitoring of the following items:

- Sediment buildup in the spring box
- Clogging of outlet and overflow pipes
- Diversion of surface water from the collection area and spring box
- Erosion from overflow pipes
- Rodent damage

Any problems discovered shall be immediately repaired.

REFERENCES

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