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**OKLAHOMA BULLETIN NO. OK210-3-4**

**SUBJECT: ENG – Planning and Designing Conservation Practices**

**Purpose:** Provide additional guidance for planning and designing conservation practices.

**Expiration Date:** September 30, 2003

It is the responsibility of each NRCS employee planning and/or designing conservation practices to ensure practices are correctly applied. NRCS employees should plan and/or design the correct practice for given site conditions and landowner objectives, regardless of cost-share availability or cost-share rates. This applies to all conservation practices. To assist in determining correct practice selection for four commonly used practices, the following guidance is provided for Pond (378), Grade Stabilization Structure (410), Water and Sediment Control Basin (638), and Sediment Basin (350).

**Grade Stabilization Structure (410)** is used to control the advance of a headcut. Selection of site location should place the centerline of the structure on or near the headcut. Alternate site location is to locate the centerline of the structure downstream of the headcut and provide between 2 and 3 feet of permanent water storage above the headcut. Only 2 feet of permanent water storage above the headcut is needed to achieve the GSS objective. Water storage in excess of 3 feet above the headcut should be planned as a pond, unless design or economic analyses document the need to store greater amounts of water. A valid design justification example could be to place the emergency spillway at the only suitable elevation, while a valid economic justification example could be to redesign using a smaller pipe size, providing a lower total cost structure. Any justification used, must be supported by adequate documentation supporting the justification.

**Sediment Basin (350) and Water and Sediment Control Basin (638)** is used to control the release of erosion effects where no headcut can be identified. Selection of site location should place the centerline of the structure far enough downstream of the areas of erosion to be controlled so that 20 years of sediment can be stored below the principal spillway. It is not necessary to store water above the eroding area to achieve the objective of sediment basin. Maximum principal spillway release rate will not exceed the 1-yr, 24-hour peak discharge for the given drainage area. No permanent water is planned for sediment basins. If permanent water storage is desired then a pond should be planned.

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**Pond (378)** is the most versatile water storage practice in Section IV, FOTG. Primarily used to supply water for livestock and wildlife, the practice can also achieve GSS and Sediment Basin objectives. If a producer has a need to add water storage to the GSS or Sediment Basin, then a pond should be planned.

A unique situation may be encountered for existing ponds that have eroding emergency spillways. Typically, these are older ponds that have no principal spillway or inadequate principal spillways and have gullies in the emergency spillway caused by frequent and/or prolonged flows. In many cases, the correct practice to be planned for this situation is **Grade Stabilization Structure**. A principal spillway will be designed for the site, and a new emergency spillway established. If an inadequate principal spillway is present, then it must be removed prior to the installation of a new principal spillway. The following situations are where a GSS should be planned:

- The existing structure no longer serves the intended purpose and there is a headcut still located within the former pool area. An example of this is a pond that no longer holds water due to the gully breaching the crest of the emergency spillway.
- The existing structure is in danger of an imminent breach which will develop a headcut. An imminent breach is defined as a headcut of greater than 1 foot in depth located within 100 feet downstream of the emergency spillway crest elevation and experiences flows during the 1-year, 24-hour storm event.

Reconstruction of a breached embankment where the headcut has advanced upstream of the pool area so the headcut cannot be covered 2 to 3 feet of water will not be planned as a GSS. In this situation, a new GSS should be planned in an area that will control the headcut. This is also a situation for which all alternatives that meet the objective are considered to determine the most economical solution.

NRCS must plan and design the most economical practice that serves the intended purpose. If you have questions concerning the planning and implementation of conservation practices, contact your technical service office.

*/s/ M. Darrel Dominick*

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