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BEAVER PROBLEMS ASSOCIATED WTTH CONSERVATION ACTIVITIES

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Introduction

As far back as 1935, the U.S. Department of Agriculture, Soil Conservation Service (SCS) began providing technical assistance to private landowners to build ponds and small lakes. To date in Texas, over 500,00 structures of this type have been built. During the 1940'x, the SCS started construction of Watershed Protection and Flood Control Impoundments in Texas. These flood prevention structures number about 1900. Other programs have brought about construction of over 16,000 grade stabilization structures (GSS) for erosion control. Numerous ponds and lakes have been built without any help from the SCS over the years. All of these impoundments store water.

At one time beaver, Castor *canadensis,* were nearly extinct in Texas. Records show that between 1930 and 1960, beaver were transplanted into the state. Those transplants were successful.

The significance is, that in the past, the availability of surface water was limited. It was once thought the only beaver activity was on major streams and - in large reservoirs in isolated rural areas. This is no longer the case. Surface water is readily available throughout the eastern two-thirds of Texas.

During the late 1960's and early 1970'x, many landowners began expressing concern over beaver damage to their water impoundments. In 1975, a statewide SCS survey of beaver damage to flood prevention structures was performed. This survey was initiated because principal spillway inlets (the first water release opening through the dam embankment) were being plugged by beaver. At that time, 42 flood prevention structures were affected with principal spillway stoppages. No other damages were identified.

Present Situation

Since 1975, beaver damage to flood prevention structures has increased. A second survey was made in 1982 by SCS. Complaints of beaver damage were not limited to principal spillway blockage, but included the presence of dam embankment burrows and damaged trees along shorelines. Texas has 22 SCS administrative areas. Seven of these areas reported problems with principal spillway blockage or embankment damage by beaver in 150 flood prevention structures. There were 109 structures with visible Deaver lodges or burrows, and another 144 structures with damaged or fallen trees. One problem encountered was the inability of SCS personnel to recognize beaver activity or the presence of beaver.

According to the 1982 survey, the local sponsoring organizations, usually the County Commissioner Court, spent over $64,000 in 1 year dealing with beaver damage. Over 2,600 man- days of effort had been expended on flood prevention structures to correct the damage caused by beaver. In one SCS administrative area, there was an increase of 333% in the number of sites with beaver activity as compared to the number of sites in 1975. Also, bank burrows made by beaver were found in 2,168 non-SCS structures, and at 444 damaged public road sites. In 1 county, the Texas Public Transportation and Highway Department

expended over $15,000 at 1 location in 1 year to deal with beaver damage.

Repairs to individual flood prevention structures now exceed $3,000 to remove embankment burrows, replace and compact soil, revegetate, and replace front-toe (the base of the dam) fences. As much as $5,000 per flood prevention structure has been spent to remove stoppage or blockage of trash, sticks, and mud from principal spillways.

More complaints are now being received from landowners, whose pond dams (embankments) have been lost due to burrowing by beaver. Several hundred acres of productive cropland, improved pastures, and pine--hardwood timber have been destroyed by water inundation caused by beaver activity. The beaver also depredate agricultural crops, such as soybeans, corn, grain sorghum, wheat, and timber.

Beaver guards are structural additions or modifications and are being installed to the principal spillway inlets on many older flood prevention structures. One type of guard which has been effective is the use of 4-gauge (1/4 inch diameter) 4-inch X 4-inch mesh galvanized welded wire panels secured to or around the principal spillway. Newly constructed structures have 2-inch X 8-inch steel grates added to the design specifications.

On the downstream side of flood prevention structures, a swinging metal plate is being installed about 6 inches inside the outlet pipe to restrict beaver access to the principal spillway inlet from downstream.

When burrows in dam embankments are repaired, wire mesh panels 60 inches high are installed vertically below ground level to restrict future burrowing. Chain-link fencing is sometimes used. The lateral length of repairs to the base of the dam (front toe) varies, the shortest one being 40 feet and the longest one being 240 feet.

On grade stabilization structures, galvanized 4-inch X 4- inch mesh wire panels secured to trash guards restrict beaver from placing mud, sticks and vegetation in the inlet openings. Normally, the pipe inlet will be encircled with a mud ramp. This mud ramp poses no problem until trash, mud, and sticks restrict the inlet.

Impoundments need continual monitoring for beaver activity, such as burrowing into dam embankments or the presence of trash and sticks in inlet pipes. Early recognition of damage and doing necessary maintenance in a timely manner will reduce the cost of repairs. The use of high water pressure, using an auxillary pump, is an effective way of removing small beaver dams and mud ramps. It is also effective for opening blocked road culverts and, iii some instances, principal spillway inlets.

Safety is becoming a major concern of landowners. Breaching of dam embankments by beaver burrowing activity can cause the weakened dam to "blow out", resulting in damage downstream. Livestock have fallen into burrows and died. Vehicles, such as pickup trucks and tractors, have broken into burrows, resulting in damage to the vehicle and dam. No loss of human life attributed to beaver activity is known at this time.

There is also a human health concern. People are going to use water for fishing and recreation, as well as for drinking. Beaver are carriers of a protozoan parasite, named Giardia, that affects humans by causing an intestinal disorder.

Habitat modification techniques can be used to move beaver from an impoundment or area. These techniques include significantly lowering the water level at least 5 feet to expose the lodge or burrow entrances from January through March, and the removal of trees and shrubs as a source of food and building material. Deterrent techniques include

wire guards which are used to protect trees from gnawing by beaver. Rock rip-rap on a flood prevention structure's front toe (base) designed to reduce wave action have also deterred beaver from burrowing into the embankment. Deer repellents have had some limited use.

Presently, the most effective method for limiting beaver activity is by shooting or trapping. Personnel of the Texas rodent and predatory animal control service have been helpful in reducing some damage and costs to local sponsoring organizations, various public entities and private landowners. This agency is understaffed. Very few other people have the expertise to cope with the beaver. Trapping and shooting, as well as deterrent techniques, are temporary in nature and continual reinfestation is a major concern.

Conclusion

Beaver population numbers are increasing, damages are more widespread, and repair costs have spiraled upward. There are more beaver in Texas now than in the 1960s. This is especially true in urban and rural residential areas with scenic creeks or streams and the eastern half of Texas. By increasing the awareness among SCS personnel, we can more accurately inform soil and water conservation district directors, employees of other public agencies, urban and rural residents, and landowners as to the extent of beaver problems associated with conservation activities. SCS assistance is available in developing alternatives for solving beaver problems.