

7 - MANAGEMENT MEASURES (ELEMENT C)

A number of Best Management Practices (BMPs) were reviewed for the San Bernard Watershed Protection Plan. These BMPs came from other Watershed Protection Plans, Water Quality Management Plans, and the TSSWCB's list of approved BMPs. A comprehensive list of BMPs were presented to stakeholders to rank based on what they thought was most needed in the watershed and what was likely to be implemented. The BMP activities that were ranked the highest were: feral hog programs, repair and replacement of OSSFs, enforcement of illegal dumping and disposal, and filter strips surrounding agricultural practices. The two BMPs that were identified as most effective in the watershed modeling were vegetated filter strips and grasses waterways.

OSSFs

OSSFs have been identified as a major contributor to the loadings in the San Bernard watershed. When doing SELECT and SWAT modeling it was assumed that 50% of the OSSFs installed prior to 1989 and 15% of the OSSFs installed after 1989 were failing. A lot of the OSSFs in the watershed are older systems that may be malfunctioning and need to be replaced. In many cases the system owners may not be aware that their OSSF is malfunctioning. Malfunctioning systems are the result of over use, lack of maintenance, lack of education by owners, and inappropriate soils for the type of system.

- Updating design criteria and placement for new systems to ensure adequate space and soil types
- Work with Authorized Agents to create a uniform reporting system, use of GPS in placement
- Voluntary repair and replacement of older systems
- Homeowner education workshops

WILDLIFE

Feral hogs have been identified as a major contributor to the bacteria loadings in the watershed. Feral hogs are found throughout the watershed in urban and rural areas and are known to cause a lot of damage. There are not a lot of BMPs that are highly effective in controlling the populations; however programs are being developed in other watersheds that are helping build awareness and effectiveness. In addition to feral hogs there are also a number of other wild animals in the watershed including raccoon, opossums, deer, and avian wildlife.

- Feral Hog Programs with Texas AgriLife Extension Service and Texas Parks and Wildlife
- Hog hunting and trapping programs to help reduce numbers

LIVESTOCK

Modeling has identified cattle as a source of concern in the San Bernard Watershed. A lot of pasture land directly fronts the San Bernard River and its tributaries. Management measures for livestock can voluntarily be implemented to keep cattle and their waste from entering the waterways. The TSSWCB also offers Water Quality Management Plans to landowners in the watershed, and once approved landowners may be eligible for funding to help implement the practices identified in the plan.

- Waste Management by creating temporary storage facilities for animal waste and contaminated water
- Fencing to create a barrier to livestock and wildlife from entering streams and to assist in other conservation efforts

- Alternate Water Sources to provide water sources for livestock
- Prescribed Grazing to manage vegetation with the use of grazing animals to reduce soil erosion

AGRICULTURE

Agricultural lands are not a major contributor to the total loadings in the San Bernard watershed, however agricultural lands do make up the majority of the land cover in the watershed. The TSSWCB offers Water Quality Management Plans to landowners in the watershed, and once approved, landowners may be eligible for funding to help implement the practices identified in the plan.

- Nutrient Management to manage the amount, timing and placement of nutrients
- Crop Residue Management to leave a protective layer of previous crop behind to help reduce erosion
- Conservation Crop Rotation to grow various crops in rotation to reduce erosion and improve soil
- Terracing to create ridges and channels to reduce slope length and reduce erosion and sediment runoff
- Contour Buffer Strips to convey runoff without erosion and protect water quality
- Filter Strips to reduce sediment, organics and pollution from entering the waterway with a grassy strip
- Waste Utilization to apply agricultural waste in an environmentally friendly manner
- Soil Testing to determine the actual amount of nutrients needed

WASTEWATER TREATMENT PLANTS/OUTFALLS

Wastewater Treatment Plants are a point source pollution found in the watershed from which the contribution of pollution can be directly measured. Currently effluent from these outfalls is not being monitored, but bacterial monitoring can be added to monitor outputs and determine if any of the facilities are non-compliant. SELECT and SWAT modeling both used the standards 126 for the Wastewater effluent, however if this number was lower the baseline data for the watershed would be lowered.

- Enforcement and testing of effluent from the 23 area Wastewater Treatment Plants

PETS

Pet waste can be a major contributor to loadings in the watershed, especially in residential areas. As population increases, so do the number of pets. Pet waste collection does not require any a lot of resources and can voluntarily be implemented.

- Pet waste cleanup in residential areas
- Spay and Neuter programs to control number of feral animals in the watershed

LAND MANAGEMENT

Land management in the San Bernard watershed includes a number of BMPs that could be done by land owners and city and county governments. A number of conservation easements exist in the watershed along the waterways, conservation easements are a good way for a landowner to preserve their property and prevent development from occurring adjacent to the waterways. There are concerns in the watershed about vegetation management along the waterways, some areas have been clear cut and are eroding, and some are overgrown to the point where water cannot flow. There are also a number of sites throughout the watershed where trash and appliances have been dumped off of bridges.

Urban Runoff is not a major contributor to the loads in the San Bernard Watershed, especially in the upper part of the watershed. However there is a lot of residential development along the river in the lower part of the watershed, and more areas will develop as the population in the watershed continues to grow. Urban Runoff BMPs are also effective for flooding events which occur in the lower part of the watershed and wash pollutants into the river. A number of dump sites have also been identified in the watershed, where residents are dumping household trash and large appliances.

- Conservation Easements to acquire land along waterways
- City/County enforcement of illegal dumping and disposal
- Brush management would help in the removal of invasive species to help protect soils, control erosion, reduce sedimentation, and improve water quality
- Identification and removal of abandoned boats
- Trash pickup events are sponsored by Friends of the River San Bernard
- Good Housekeeping/Yardcare in residential areas and neighborhoods

MODEL ORDINANCES

Model ordinance could be used by the jurisdictions in the San Bernard watershed to design nonpoint source pollution control ordinances or storm water pollution prevention plans. A number of example ordinances have been collected and posted to the San Bernard Watershed website.

- Storm Water Pollution Prevention Plan
- Non Point Source Pollution Control Ordinance