HYDROLOGIC IMPACTS OF FLOOD TO SPRINKLER CONVERSION[AFS]

Mike Roberts
Montana Department of Natural Resources and Conservation
Water Resource Division
1424 9th Ave., Helena, MT 59620
miroberts@state.mt.us

Flood irrigation techniques have been practiced in Montana for over a hundred years. Nearly half of the irrigated land in Montana still utilizes some form of flood irrigation. The recent trend of converting flood-irrigated land to sprinkler-irrigated lands will have impacts on streamflows. In most cases, by converting to sprinkler, irrigators divert less water to irrigate the same parcel of land that was historically flood irrigated. These conversions can provide benefits to water quality and if the excess water is left in the stream, short-term increases to streamflows. They also may increase hay production through more consistent application of water and by extending their irrigation season in water-short years. In some cases, water leftover by sprinkler conversions, water that typically would return to streams under flood operations, is used to put additional land into production. Consequently, sprinkler conversion projects can increase the overall volume of water consumed, deplete

returns flows, and cause a net depletion of streamflows. If water conservation is the goal of resource managers when conversions are made, they must carefully compare the water balance for the existing flood system to that for the proposed sprinkler system to determine the hydrologic consequences of this action.