The objective of this document is to provide you with current and helpful information regarding water protection, and the Michigan Agriculture Environmental Assurance Program (MAEAP).

**Improvements to Tile Drainage Systems can Improve Resiliency to Extreme Weather**

Many fields in Michigan went unplanted in 2019 due to excessive spring rains. Those fields are now prime candidates to upgrade tile drain systems utilizing the latest technologies to improve water handling capability and minimize environmental impacts. Controlled drainage and blind inlets are options that not only provide improvements to water quality, but can improve the profitability of farms.

Controlled drainage systems use an edge of field water control structure to control soil water table elevations and the timing of water discharges, providing not just improvements to water quality, but also the potential for increased crop yields. During the winter months and periods of greater crop water demands during the summer, the water table can be kept high. During the winter, this reduces water transport from the field, easing the burden on drain networks and increasing groundwater recharge. During the growing season, the higher water table increases total soil water available for plant uptake, offsetting the impacts of drought, In the spring and fall when water demands of the crop are less and field trafficability is important, the water table can be dropped to the normal drainage level. Field layout and slope are important for controlled drainage system operation, and systems operate most efficiently in newly installed tile drain systems. Still, existing systems can be retrofitted in many instances, while new technology expands the range of field conditions applicable for controlled drainage.

Blind inlets can replace existing tile riser surface inlets, eliminating surface obstacles in the field while better filtering water before it enters the tile system. Tile risers are direct conduits for surface water into the tile system, and while they are effective at quickly removing water from a field, they can carry high levels of sediment and nutrients into tiles. Excessive sediment can plug tile lines, while P and N in drainage water impairs water quality. Blind inlets consist of a perforated pipe laid in an aggregate bed, covered by a textile barrier and topsoil. These inlets provide the same water removing capability as traditional surface inlets without an obstacle on the soil surface.

Technical and financial assistance is available for both of these practices. Crop advisors are good resources for producers to better understand the agronomic benefits of these technologies, while conservation districts can provide additional technical information and options to support installation costs including EQIP.

Weather extremes like those that impacted the 2019 planting season can be expected to become more regular occurrences. Steps to upgrade tile drain systems not just to better handle extreme precipitation, but also improve the longevity of tile systems, boost in-season crop performance, and mitigate off-site movement of valuable sediment and nutrients can improve the resiliency of farms in the face of extreme weather, ultimately improving farm profitability.