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).

**Consider Weather Forecasts When Planning Nutrient Applications**

As we head into spring planting season, it’s always a good time to review the best practices for use of crop nutrients – and one of the best tools farmers and agricultural retail advisors have at their fingertips is the weather forecast. That information can help avoid surface applications that are likely to be subjected to heavy rainfall events. Nutrient losses from agricultural fields primarily occur when high concentrations of nutrients are transported off the field via water. These nutrients may be attached to soil particiles or they may be dissolved in the water carrying them off the field. Controlling soil erosion is important to limit the transport of nutrients attached to soil particles, but addressing dissolved nutrient losses is an increasing focus of water protection efforts.

Today in the Lake Erie basin, upwards of 80% of P losses can be tracked to just 10% of loss events, driven by heavy rainfalls. This is becoming a greater risk, though, as extreme rainfall events persist. Not only was 2019 Michigan’s wettest year on record, we’re in the wettest three- and five-year rolling averages in our state. Much of that precipitation is driven by heavy rainfall events. While these heavier storm events undoubtedly make nutrient management more complex, taking weather considerations into account when making fertilizer and manure applications can minimize the potential for storms to transport nutrients off fields and into water bodies.

Phosphorus in surface applied fertilizers and manures can easily be dissolved in runoff water, leading to significant nutrient losses – another reason to avoid application when heavy rain is forecast. Within around ten days, surface phosphorus will chemically bind to soil particles and will have a decreased loss potential. Tillage can speed this process further by increasing soil to nutrient contact, as well as moving nutrients off the soil surface where they don’t directly interact with heavy rainfall, but tillage must also be carefully planned between the farmer and retailer to prevent erosion losses. Still, research results have indicated when a moderate rainfall event occurs within 24 hours of a nutrient application, nutrient losses are decreased if the nutrients have been incorporated.

Several steps can be taken to minimize dissolved nutrient losses off fields. When tillage is already a planned part of field operations, timing those tillage operations to be performed shortly after nutrient applications is likely to minimize nutrient losses. In no-till environments, ensuring several days between applications and forecasted storm events can significantly reduce losses. Avoiding nutrient applications altogether before forecasted storm events is advised. Taking the simple steps of considering weather forecasts and adjusting the timing of field operations as a result can play a significant role in minimizing nutrient losses.