

MAPLE PRODUCERS AND WATER QUALITY



Maple Syrup is deeply rooted in Vermont's working landscape. However, producers need to be mindful of the potential impact that maple operations can have on water quality through excessive contributions of nutrients including phosphorus, and elevated erosion rates. Producers should minimize the volume of nutrients likely to enter waterways and wastewater should not be discharged directly into surface water, such as a lake, pond, stream, or any conveyance to a surface water.

Maple Byproducts

As the Biological Oxygen Demand (BOD) of effluent increases, the amount of oxygen in the stream decreases, negatively impacting aquatic organisms. VAAFM recommends the collection and storage of byproducts until they can be responsibly land applied as outlined in the RAPs.

Byproduct	Description	Risk Factors for Water Quality
Evaporator Pan Wash Water	Created when phosphoric acid is used to clean the evaporator pan and remove niter.	Low volume but high concentration of nutrients & BOD (most important effluent stream to manage)
Reverse Osmosis (RO) Wash Water	Created when rinsing the RO, can contain sugar, organic materials, and various acids.	High volume of effluent with varying nutrient & BOD concentration
Permeate	The effluent produced from Reverse Osmosis (RO).	Very high volume of effluent but very low nutrient & BOD concentration

Maple regulations

Maple production is considered agriculture. Therefore, maple producers:

1. Must comply with Required Agricultural Practices (RAP) regulations including:
 - construction of farm structures
 - effluent management
 - land application; and
2. May receive water quality inspections from the Vermont Agency of Agriculture, Food & Markets (VAAFM)

Learn More

For the full list of RAPs that may apply to your operation, visit agriculture.vermont.gov/rap. For more information or if you have any questions about water quality and maple operations, contact Jason Bradley at (802) 461-3065.

Note that options for managing effluent streams from sugar houses are currently being researched. The results of this research will be publicized and inform future recommendations.



Wash Water Best Practices

- Wash water sanitizers must be used and disposed of according to their labels.
- Neutralize pH of evaporator wash water after use and before land application.

FACT: Neutralizing wash acid pH with baking soda does not get rid of phosphorous or other nutrients in the effluent.

- Avoid evaporator wash water reaching surface water or mixing with the permeate.
- If your sanitizer does not include instructions on disposal, at minimum, discharge sanitizers in a manner that avoids entry into surface or ground water.
- During the winter months use storage such as a tank or an engineered holding pond meeting NRCS standards for evaporator wash water, and other byproducts if possible. Store byproducts until the ground has thawed and they can be land applied without run off.
- Look into alternative solutions for washing evaporator pans or disposing of wash water, such as systems using pressurized permeate or non-phosphorus acid cleaner that reduces negative impacts to water quality.

Land application

Wash water systems should prevent a direct flow of process wash water into surface or ground water. This can be done through conscientious land application. Ideal spreading areas are **large grass/sod areas with deep enough soils to facilitate absorption by soil and nutrient uptake by vegetation.** Do not spread byproducts on frozen ground or where bedrock or shallow groundwater may be present. Land application should follow RAP guidelines, be recorded, and be based on up-to-date soil and wastewater analysis.