💧 Understanding Septic Systems: Innovative/Alternative (I/A) and Enhanced I/A 💧

Not all septic systems are created equally! In a previous Water Wednesday, we described how a standard Title 5 septic system works. Those systems only provide limited treatment and are not designed to reduce nitrogen levels. Read on to learn about more advanced systems that have been approved by the Massachusetts Department of Environmental Protection (MassDEP).

⚙️ Innovative/Alternative System – aka "I/A"

- **What it is**: A system approved by MassDEP that uses advanced treatment technologies to produce cleaner wastewater.
- **How it works**: An extra treatment component (like aeration or media filters) is added to a standard septic system to reduce nitrogen and pathogen concentration in the final wastewater effluent. Requires and operation & maintenance agreement with a wastewater operator.
- **DEP approval status**:
    - **General Use**: Approved for widespread use with a Title 5 system.
    - **Provisional Use**: Some types of system are approved under performance review parameters including site-specific or monitoring requirements.
- **Why these matter**: A useful tool that can reduce nitrogen to 19-25 mg/L in wastewater and protect sensitive environments like estuaries and drinking water supplies.

🌿 Enhanced I/A System – aka "e I/A"

- **What it is**: A newer generation of I/A systems with even greater nitrogen reduction that is often required in nitrogen-sensitive areas.
- **How it works**: Uses multi-stage treatment, often including recirculation, denitrification chambers, or carbon dosing to achieve ultra-low nitrogen levels. Requires and operation & maintenance agreement with a wastewater operator.
- **DEP approval status**:

    - Most Enhanced I/A systems are currently under Provisional Use as they demonstrate long-term performance.
- **Why these matter**: Can reduce nitrogen to <11 mg/L or lower, helping towns meet TMDL (Total Maximum Daily Load) nitrogen goals and protect water quality in our estuaries.

📍 **Why It Matters for Truro & Beyond**

Nitrogen Sensitive Areas (NSAs) are regions where excess nitrogen from septic systems can impact groundwater and coastal ecosystems. To address this, the MassDEP has updated Title 5 regulations to require action in these areas.

That's why Truro is currently developing a Comprehensive Wastewater Management Plan (CWMP) - a long-term strategy to identify and implement solutions that reduce nitrogen pollution and protect public health and the environment.

I/A and e I/A systems are important tools that will play a significant role in the town's future wastewater management strategy.

📍 To learn more, join us at The Public Report on Wastewater Planning in Truro on Thursday September 25, 2025 at 3pm at the Community Center (7 Standish Way, Truro).