Prepared by:

JonesEdmunds

www.jonesedmunds.com

2025

SEPTIC TO SEWER CONVERSION

An Extensive Overview

For:

Florida Water Environment Association

UTILITY COUNCIL

INTRODUCTION

The transition from septic systems to centralized sewer systems is crucial in Florida due to its unique environmental challenges like porous limestone geology and sensitive water bodies. With around 2.6 million septic systems in operation, the potential for environmental degradation is significant.

This guide provides an introductory overview of converting from septic systems to centralized wastewater treatment. It covers essential information for homeowners, local governments, and other stakeholders involved in managing and mitigating the impacts of septic systems on the state's water resources. It includes key terms, legislation, reasons for conversion, septic system alternatives, costs, funding opportunities, and resources for further information.

CONTENT

This document is a living document that is updated as available.
It is tailored to Florida's specific environmental and legislative context.
Diagrams within this document are not shown to scale.

TERMINOLOGY

Definitions of key terms and concepts for understanding the shift from septic to sewer systems.

Onsite Sewage Treatment and Disposal System (OSTDS)

Commonly known as **septic systems**, these systems treat and dispose of wastewater onsite in areas without centralized sewer systems. They are typically individual on-lot systems sized for a home, multi-family building, or a small business.

Septic Tank

An underground chamber made of concrete, fiberglass, or plastic where sewage is collected and allowed to decompose. Solids settle at the bottom as sludge, while oils and grease float to the top as scum.

Drainfield (Leachfield)

A system of buried pipes that distribute effluent (liquid from the septic tank) into the soil for further treatment and absorption. It typically consists of an arrangement of trenches containing perforated pipes and porous material (often gravel) covered by a layer of soil to prevent animals (and surface runoff) from reaching the wastewater distributed within those trenches.

A septic tank, drainfield, and associated piping compose a septic system.

Wastewater Treatment Plant (WWTP)

A wastewater treatment plant is a facility designed to remove contaminants from sewage and industrial wastewater, so that it can be safely returned to the environment. Processes result in removal of solids and pollutants, breaking down organic matter, and protecting public health and water quality.

Contaminants of Emerging Concern (CECs)

CECs are substances that may pose newly identified or re-emerging risks to human health, aquatic life, or the environment. These include per- and poly-fluoroalkyl substances (PFAS), pharmaceuticals, and personal care products (PPCPs). Septic systems and other contaminants can release CECs into groundwater, especially in areas with high water tables and porous soils. Although these contaminants are recognized by the Florida Department of Environmental Protection (FDEP), current regulations do not mandate their removal.

Watershed

A watershed is an area of land where water flows into a body of water. It carries organic materials, which support aquatic life, but also pollutants such as fertilizers and pesticides. To manage and improve water quality, FDEP organizes the state's water resources into 29 major watersheds within five basin groups.

Outstanding Florida Springs (OFS)

Florida Springs identified by Florida Legislature that require additional protections to ensure their conservation and restoration for future generations. In 2016, the Florida Legislature identified 30 OFS.

Total Maximum Daily Load (TMDL)

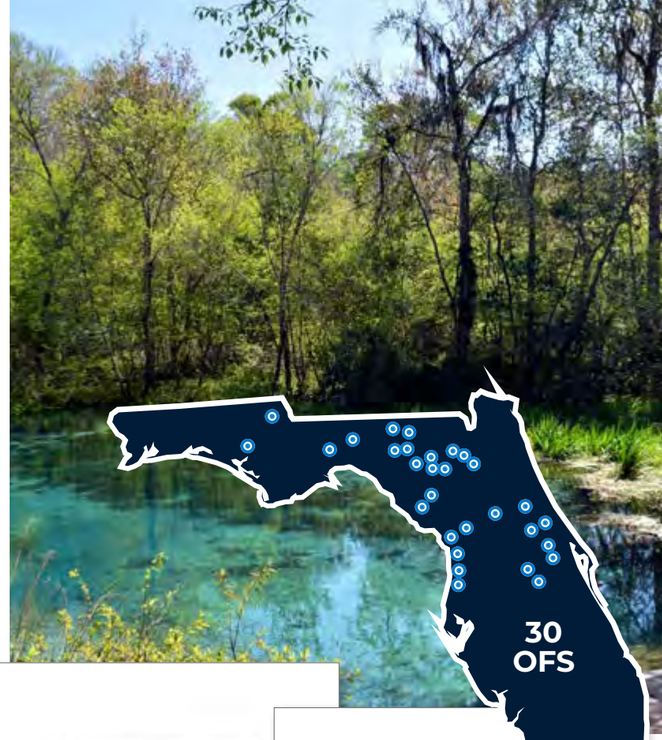
The maximum amount of a pollutant that a water body can receive while still meeting water quality standards. Septic systems can contribute to exceeding these limits.

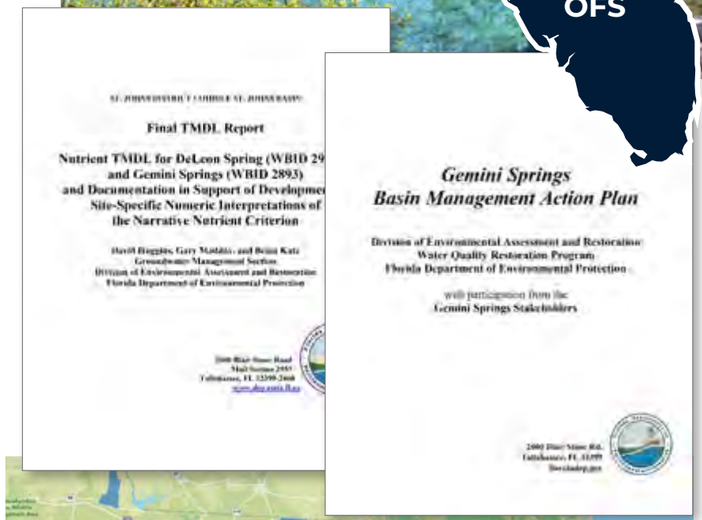
Basin Management Action Plan (BMAP)

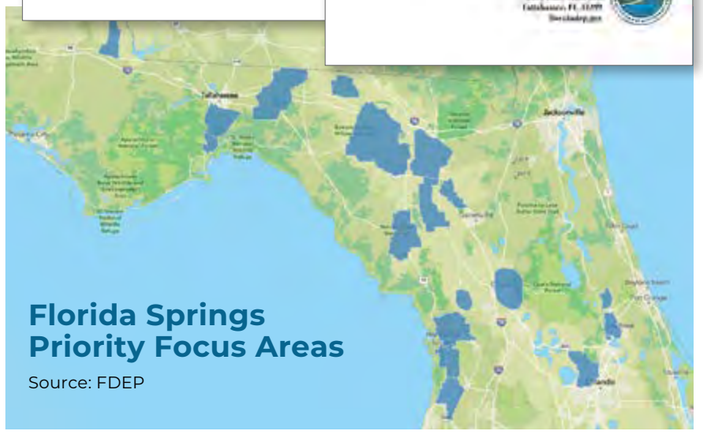
A regulatory tool used by the FDEP to restore and maintain the quality of impaired water bodies, often including septic system management and conversion.

Priority Focus Area (PFA)

The area or areas of a basin where the Floridan Aquifer is generally most vulnerable to pollutant inputs where there is a known connectivity between groundwater pathways and an OFS, as determined by FDEP in consultation with the appropriate water management districts and delineated in a BMAP.







Florida Springs Priority Focus Areas

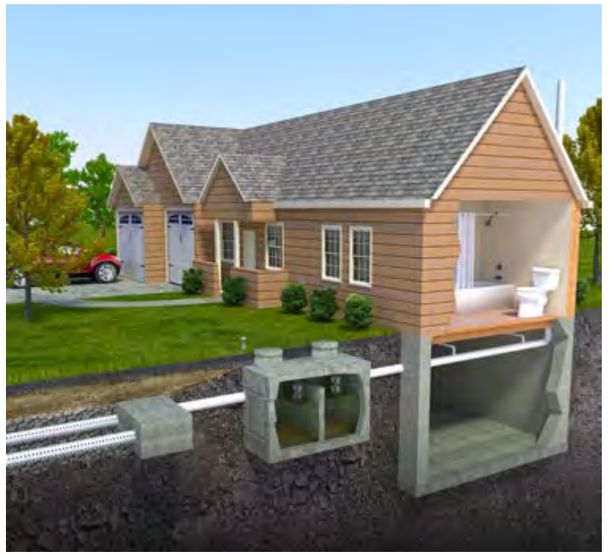
Source: FDEP

SEPTIC SYSTEM OVERVIEW

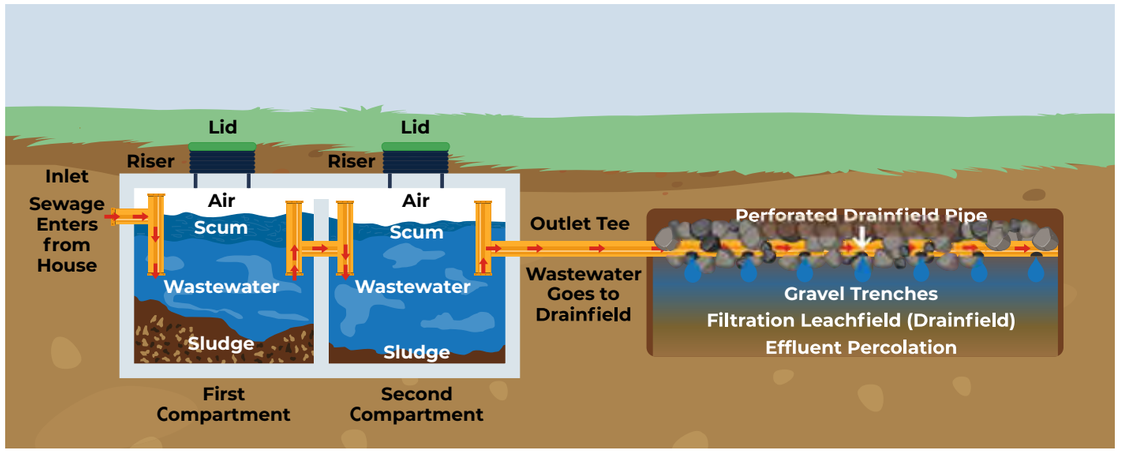
A septic tank is a crucial component in residential wastewater management. Given Florida's unique environmental conditions, septic systems ensure effective wastewater treatment while safeguarding surrounding ecosystems.

Function of Septic Systems

Septic systems in Florida are engineered to treat household wastewater by separating solids from liquids within a tank and then filtering the liquids through a drainfield. This process encompasses several stages:



- **Separation**: Wastewater from the household enters the septic tank, where solids settle at the bottom, forming sludge, while oils and grease float to the top as scum. The middle layer of partially clarified water is then directed to the drainfield.
- **Filtration**: The liquid effluent is dispersed through perforated pipes into the drainfield, percolating through the soil, which acts as a natural filter. This filtration removes harmful bacteria, viruses, and nutrients before the water reaches the groundwater.



KEY FACTS

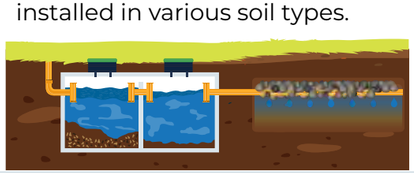
Florida represents **12%** of all septic systems in the United States.

Florida is home to approximately **2.6 million** septic systems.

Septic systems in Florida discharge around **426 million** gallons of wastewater per day.

Septic systems serve about **30%** of Florida's population.

Septic tanks can be installed in various soil types.



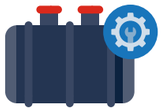
The average family in the U.S. uses **300+ Gallons** of water a day.

Every home sink, tub, and pipe is connected to the septic system. Even a garbage disposal can affect how the system functions, so paying close attention to what is being **flushed down the toilet and what is poured down the drain is essential.**

Septic systems must be maintained regularly (at least once every 3-5 years), but the exact frequency depends on some factors like tank size, system age, and usage habits.

Flushing the toilet can use up to **2 Gallons** of water per flush.

With proper maintenance, septic tanks can last up to **30 years.**



Traditional septic systems have been widely used since the **1940s.**

UNIQUE CONDITIONS IN FLORIDA

Florida's regulations and geography present specific conditions for the optional utilization of septic systems.

Environmental Impact of Septic Systems

Septic systems contribute to nutrient loading in Florida's water bodies. Nitrogen and phosphorus are significant contributors to algal blooms and water quality degradation.

Studies have shown that septic systems are responsible for significant portions of nutrient pollution in sensitive areas. For example, septic systems have been identified as a primary nitrogen source in Florida's springs and coastal waters.

Health Risks

Failing septic systems pose serious health risks by allowing pathogens to contaminate groundwater, a primary drinking water source for many Floridians. Contaminants such as fecal coliform bacteria are often found in surface and groundwater near septic systems, especially older or malfunctioning ones.

The risk is heightened in areas with high population densities, sandy soils, or high water tables, where the natural filtration process is insufficient to remove contaminants before they reach drinking water sources.

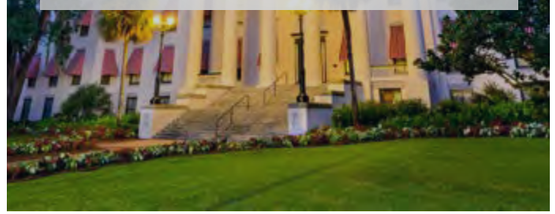
Hydrogeological Challenges

Florida's regulations and geography present specific conditions for the optional utilization of septic systems. High water tables and proximity of groundwater to the surface increases the risk of contamination if the septic system malfunctions.

Porous limestone bedrock and sandy soils allow partially treated effluent to move quickly through the soil and into the groundwater, diminishing the effectiveness of natural filtration, and contaminating drinking water supplies and nearby surface waters.

Regulatory Changes

In response to growing concerns about water quality, Florida has enacted several laws and regulatory changes to reduce septic systems' environmental impact. These include stricter permitting requirements, mandatory inspections, and promoting advanced septic systems or conversions to centralized sewer systems.



REGULATIONS AND MAINTENANCE

Florida has established several regulations to ensure the optimal functioning of septic systems and minimize their environmental impact.

System Inspections

Regular inspections are mandated to identify and rectify issues before they escalate.

Pumping

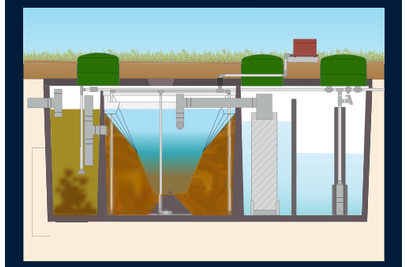
Periodic pumping of septic tanks is required to remove sludge and scum buildup, thereby ensuring system efficiency.

Drainfield Maintenance

Proper drainfield maintenance is essential to prevent clogging and maintain its efficacy in effluent filtration.

To mitigate these challenges, advanced treatment systems and enhanced regulations have been introduced:

Advanced Treatment Systems



These systems provide additional effluent treatment before it reaches the drainfield, ensuring increased nutrient and pathogen removal.

Enhanced Regulations

New rules mandate more effective technologies and stricter maintenance schedules to protect the environment.

SEPTIC TANK CONVERSION LEGISLATION

FLORIDA STATUTES

Chapter 373

Florida Statutes (FS) – Water Resources:

Part VIII – Florida Springs and Aquifer Protection Act:

Enacted as part of Senate Bill 552 in 2016, this section explicitly protects Florida's springs and aquifers from nutrient pollution, including from septic systems. Local governments must develop management strategies, including septic to sewer conversions, to reduce nutrient impacts on these water resources.

Chapter 381

FS – Public Health:

Section 381.0065, FS – Onsite Sewage Treatment and Disposal Systems (OSTDS):

This section outlines the regulations for installing, maintaining, and operating septic systems in Florida. It includes requirements for system design, siting, permitting, and inspections.

Section 381.00655, FS – Connection to Public Sewer System:

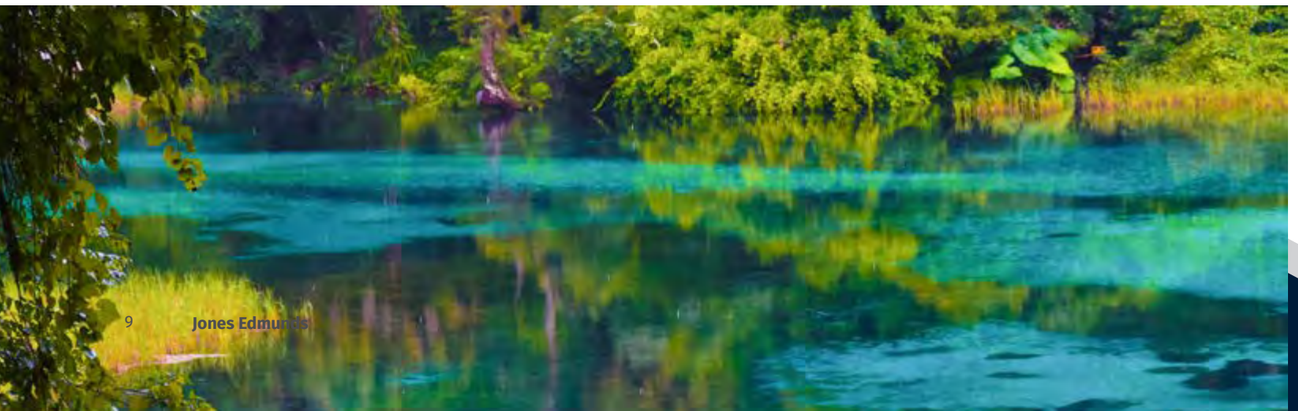
This statute mandates that properties served by a public sewer system must connect to the system if the system is available within a certain distance.

Chapter 489

FS – Contracting:

Section 489.105, FS – Definitions (Septic Tank Contracting):

This section defines the scope of work licensed septic tank contractors can perform, including installing, repairing, and inspecting septic systems.



Chapter 403

FS – Environmental Control:

Section 403.067, FS – Establishment and Implementation of Total Maximum Daily Loads (TMDLs):

This section relates to the identification and restoration of impaired water bodies. Septic systems are often addressed in BMAPs as sources of pollution that need to be controlled.

Subparagraph 403.067(7)(a)9., Florida Statutes.

OSTDS Remediation Plans are required by FDEP Final Order (OGC Case No. 23-0112 to 0135), which requires local governments within a BMAP to develop a wastewater treatment plant and/or an OSTDS remediation plan(s) per Subparagraph 403.067(7)(a)9., Florida Statutes.

Section 403.086, F.S. – Sewage Disposal Facilities:

This section addresses the requirements for sewage disposal facilities, including regulations related to the treatment and disposal of sewage from septic systems.

FLORIDA ADMINISTRATIVE CODE (FAC)

Chapter 64E-6

Florida Administrative Code (FAC) – Standards for Onsite Sewage Treatment and Disposal Systems:

This chapter provides detailed regulations for the design, installation, permitting, and maintenance of septic systems in Florida. It covers system construction, siting, performance standards, and inspection requirements.

Rule 64E-6.001 through 64E-6.029:

These rules cover various aspects of septic system regulations, including definitions, general requirements, system design criteria, siting, maintenance, and inspection protocols.

Chapter 62-610

FAC – Reuse of Reclaimed Water and Land Application:

This chapter includes provisions related to the land application of treated wastewater, which may involve septic systems in specific contexts.

RECENT LEGISLATIVE ACTS

The Clean Waterways Act (Senate Bill 712 - 2020):

The Clean Waterways Act, passed in 2020, represents a comprehensive approach to addressing water quality issues across Florida. This legislation shifted regulatory authority for septic systems from the Florida Department of Health (DOH) to FDEP, emphasizing its environmental impact.

2016

The Florida Springs and Aquifer Protection Act (Senate Bill 552 - 2016):

In 2016, the Florida Legislature enacted the Florida Springs and Aquifer Protection Act and identified 30 OFSs that require additional protections to ensure their conservation and restoration for future generations. These springs are a unique part of the state's scenic beauty, provide critical habitat, and have immeasurable natural, recreational, and economic value.

2020

2021

Reclaimed Water (Senate Bill 64 - 2021):

Senate Bill 64 (SB64) includes provisions related to eliminating surface water discharges of treated wastewater, indirectly impacting septic systems by encouraging connections to centralized sewage treatment facilities.

2023

Environmental Protection (Senate Bill 1632 – 2023):

Senate Bill 1632 (SB1632) primarily addresses environmental protection, focusing on water quality and waste management. It amends multiple sections of Florida law to strengthen regulations on septic tanks, enhance water quality monitoring, and promote the transition from septic systems to centralized sewer systems in certain areas.

The Florida Springs and Aquifer Protection Act (Senate Bill 552 - 2016)

The Act requires FDEP to assess the water quality in the OFSs. Based on these assessments, FDEP determined that 24 of these springs are impaired. For these impaired springs, FDEP must adopt (or re-adopt) a BMAP to implement all the protections of the Act, including:

- Prioritized lists of restoration projects along with planning level estimates for cost, schedule, and nutrient load reduction
- Phased milestones (5-year, 10-year, and 15-year) to achieve water quality restoration targets in 20 years
- Estimated nutrient pollutant loads allocated to each source or category of sources
- Completed remediation plans for OSTDSs where septic loading accounts for at least 20 percent of the estimated nutrient input
- Delineated "Priority Focus Areas" where certain activities are prohibited.

KEY PROVISIONS

- **Outstanding Florida Springs:** The Act identifies 30 "Outstanding Florida Springs" that require additional protection. It mandates that local governments develop and implement strategies to reduce the impact of septic systems on these springs, including transitioning to centralized sewer systems where feasible.
- **Coordination Among Agencies:** The Act requires coordination among local governments, FDEP, and WMD to develop and implement BMAPs focused on reducing nutrient pollution, particularly from septic systems.
- **Public Awareness and Education:** The Act includes provisions for public education campaigns to raise awareness about septic systems' environmental and health risks and the benefits of transitioning to sewer systems.

The Clean Waterways Act (Senate Bill 712 - 2020):

The Clean Waterways Act, passed in 2020, represents a comprehensive approach to addressing water quality issues across Florida. This legislation shifted regulatory authority for septic systems from DOH to FDEP, emphasizing its environmental impact.

KEY PROVISIONS

- **Septic System Inspection and Monitoring:** The Act mandates periodic inspection and monitoring of septic systems, especially those near sensitive water bodies. The goal is to identify and address systems failing or contributing to nutrient pollution.
- **Basin Management Action Plans (BMAPs):** The Act requires the inclusion of septic to sewer conversions as part of BMAPs in areas where septic systems are identified as a significant source of nutrient loading. This includes specific timelines and strategies for reducing pollutant loads.
- **Septic System Upgrades:** The Act promotes upgrading conventional septic systems to more advanced systems that better treat and reduce nutrient loads, particularly nitrogen. It also provides a framework for local governments to incentivize these upgrades.

Reclaimed Water (Senate Bill 64 - 2021):

SB64 mandates domestic wastewater utilities to eliminate nonbeneficial surface water discharges by submitting a plan to the FDEP by November 1, 2021, and fully implementing it by January 1, 2032, or by January 1, 2028, if no plan is approved.

Important Information: SB64 incentivizes potable reuse projects and residential graywater technologies, designates potable reuse as an alternative water supply eligible for funding, and establishes standards for dissolved solids in aquifer storage and recovery.

KEY PROVISIONS

- **Exemptions:** Certain fiscally constrained areas and mobile home park operators, while allowing beneficial or regulated discharges under specific conditions.
- **Permitted Discharges:** Beneficial or regulated discharges, including:
  - Indirect potable reuse projects.
  - Permitted wet weather discharges.
  - Discharges used for irrigation via stormwater systems.
  - Facilities reusing at least 90% of annual flow.
  - Discharges with ecological or public water supply benefits.
- **Reporting:** FDEP must report to the Legislature beginning December 31, 2021, detailing average daily reduction and continuation of discharges, treatment levels of discharged water, and updates on utility plans.

Environmental Protection (Senate Bill 1632 – 2023):

SB1632 primarily addresses environmental protection, focusing on water quality and waste management. It amends multiple sections of Florida law to strengthen regulations on septic tanks, enhance water quality monitoring, and promote the transition from septic systems to centralized sewer systems in certain areas.

Critical Provisions Related to Septic Tanks:

SB1632 prohibits the installation of new OSTDSs beginning on a specified date in certain circumstances. This prohibition primarily aims at areas covered by BMAPs and other designated sensitive areas.

In specific regions, particularly within the BMAPs for OFSs, new septic systems are banned unless enhanced nutrient-reducing or alternative systems are approved.

Sanitary Sewer Planning Requirements:

Local governments must update comprehensive plans by July 1, 2024, to address sanitary sewer services for large developments. Plans must evaluate feasibility, project wastewater flows, and set timelines for necessary infrastructure.

Mandated Upgrades for Existing Systems:

SB1632 outlines a requirement for upgrading existing septic systems to meet higher environmental standards, particularly in areas with sensitive water bodies. The upgrade requirement includes implementing systems that reduce nitrogen emissions to protect water quality.

Requirement for Connection to Central Sewer:

Residential and commercial properties with existing septic systems are required to connect to a central sewer system or upgrade to an enhanced nutrient-reducing septic system by a specified date. This measure is intended to reduce nutrient pollution, particularly nitrogen, which significantly contributes to water quality issues in Florida.

Enhanced Nutrient-Reducing Systems:

SB1632 defines “enhanced nutrient-reducing onsite sewage treatment and disposal systems” and promotes their use as an alternative to conventional septic systems. These systems are designed to reduce nutrient (especially nitrogen) pollution, which is critical for protecting Florida’s water resources.

Impact:

SB1632 impacts developers, governments, and homeowners by banning new septic systems and requiring sewer connections to protect Florida’s water. It emphasizes infrastructure planning near sensitive areas and reducing nutrient pollution.

WHY RESIDENTS NEED TO CONVERT

Environmental Concerns

- **Nutrient Pollution:** Septic systems are a significant source of nitrogen, phosphorus, and non-nutrient pollution that contribute to the degradation of water quality in Florida's springs, rivers, and coastal waters. These nutrients fuel harmful algal blooms, leading to fish deaths, loss of aquatic vegetation, and the destruction of critical habitats.
- **Water Quality:** Florida's groundwater is particularly vulnerable to contamination due to the state's unique hydrogeology. Failing septic systems can introduce pathogens and other pollutants into the water supply, posing serious risks to public health and the environment.

Public Health

- **Health Risks:** Failing septic systems can release untreated or partially treated sewage into the environment, contaminating drinking water sources with harmful pathogens such as E. coli and other fecal bacteria. This can cause serious illness and outbreaks of waterborne diseases.
- **Protecting Drinking Water:** Many Floridians rely on groundwater for their drinking water, so this resource must remain uncontaminated. Converting to a sewer system or upgrading your septic system reduces the risk of groundwater contamination and ensures safer drinking water for residents.

Legal Requirements

- **Compliance with Legislation:** Florida's recent legislative changes, particularly the Clean Waterways Act, require specific areas to transition from septic to sewer systems to protect water quality. Homeowners in these areas must comply with these regulations or face potential fines and penalties.
- **Future Regulations:** As water quality issues continue to be a concern, additional regulations are likely to be introduced, making it increasingly important for homeowners to proactively transition from septic to sewer systems to stay ahead of legal requirements.

CONVERSION CONSIDERATIONS

Conversion Costs: The cost of converting from a conventional septic system to a central sewer system or enhanced onsite system can vary significantly depending on several factors, including proximity to existing sewer lines, the ability to obtain easements, the condition of the existing septic system, the type of conversion system, and the specific requirements of the local government.

Cost Considerations

Costs are related to the project type. Owners may have no cost based on funding, or they may be responsibile for the cost of equipment and installation on their property. These costs vary depending on the system.

Installation Costs

Installation costs include obtaining easements, decommissioning the existing septic system, connecting it to the sewer line, and completing necessary landscaping or construction work.

Ongoing Costs

After conversion, homeowners will incur monthly sewer fees, which can vary depending on the local utility rates. However, these fees are often offset by eliminating septic tank maintenance costs.

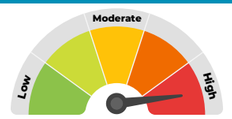
Potential Savings

In the long term, homeowners may save money by avoiding the costs associated with septic system repairs, pumping, and potential environmental damage. Additionally, properties connected to sewer systems often have higher market values.

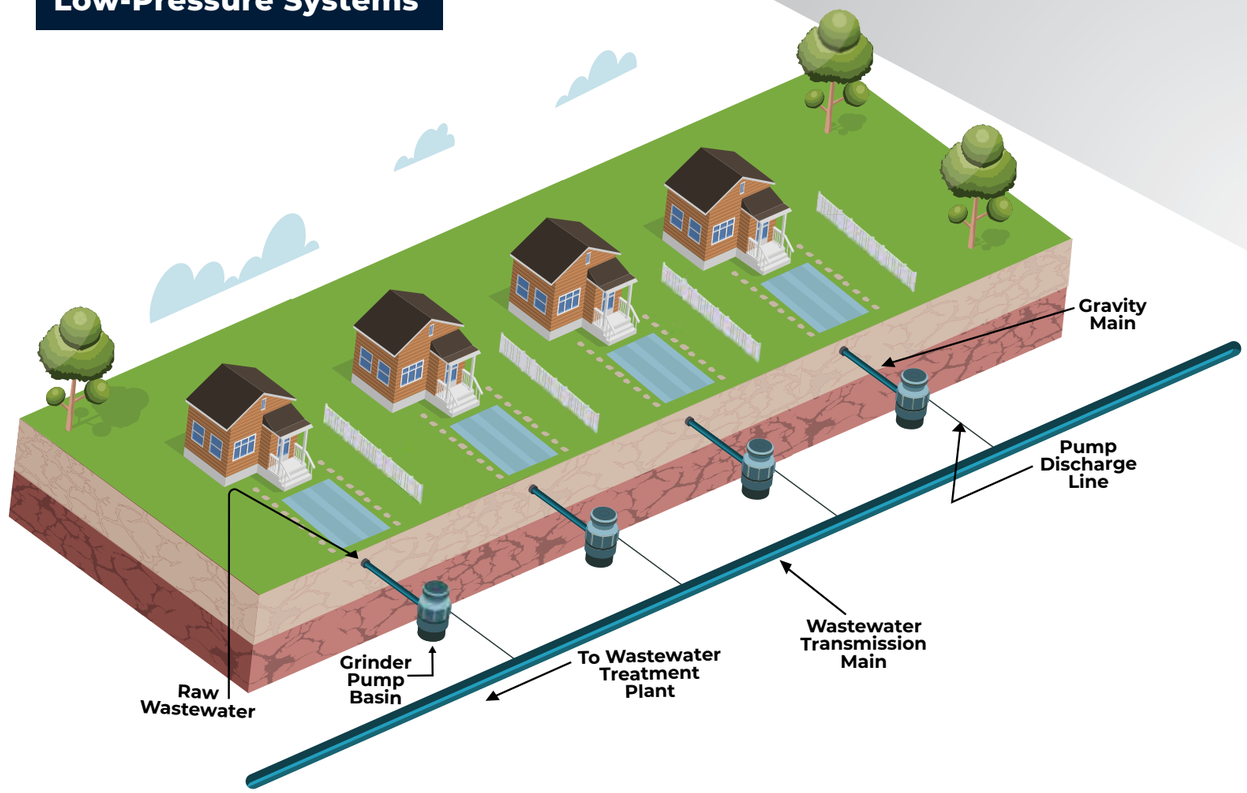
SEPTIC SYSTEM REMEDIATION OPTIONS

Centralized Collection System Alternatives

Sewer collection systems are generally categorized by their transport mechanism, which include pressure, vacuum, and gravity. The most common collection systems currently implemented in Florida are low-pressure, vacuum, and gravity collection systems.

Low-Pressure System	Vacuum Collection System	Gravity Collection System
Low-pressure systems include standard drain piping from residences connected to a grinder pump station in an easement or in the right-of-way. The sewage flows by gravity to the valve pit and is then pumped through a small-diameter force main to a transfer lift station or the wastewater treatment plant (WWTP) for treatment.	Vacuum sewer systems include standard drain piping from residences into a valve pit in the right-of-way. The sewage flows by gravity to the valve pit, where a pneumatic valve opens into a vacuum main that connects to a vacuum collection station, and then the wastewater is pumped through a force main to the WWTP.	Gravity collection is the most common wastewater collection system. Sewage flows by gravity from homes through sloped drain piping to sewer mains. The system conveys sewage to a transfer lift station, which pumps wastewater through force mains to the WWTP for treatment.
CAPITAL COSTS		
		
OPERATIONS AND MAINTENANCE COSTS		
		
SIMPLE TO OPERATE		
		
COMMUNITY IMPACT		
		

Low-Pressure Systems



Low-pressure systems consist of conventional drain, waste, and vent piping within an individual residence connected to a conventional septic tank or a packaged grinder pump basin. The sewage gravity flows to the existing septic tank or basin. After a given volume of sewage accumulates, the sewage is pumped through a small-diameter force main to a transfer lift station or the WWTP for treatment.

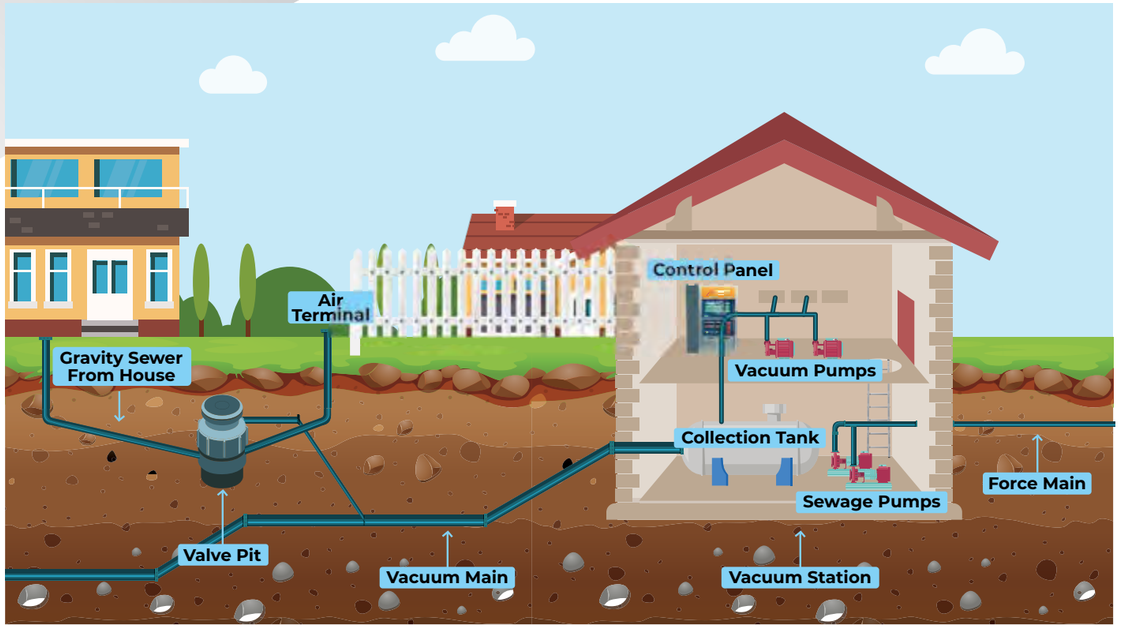
Advantages

- Shallow excavation, which reduces the potential of encountering limerock and groundwater.
- Minimizes community disruptions to streets, sidewalks, etc.
- Low infiltration potential.

Disadvantages

- May require an easement.
- Requires a new power supply to each resident and a dedicated control panel.
- Operation and maintenance (O&M) costs associated with pumps.

Vacuum Collection System



In a vacuum system, sewage flows by gravity from two to four homes/structures into a valve pit. The valve pit has a pneumatic valve that operates by pressure (no electrical power is required). The valve pit pneumatic valve opens automatically when a given quantity of sewage accumulates in the valve pit. When the valve opens, the sewage in the pit is "vacuumed" into small-diameter gravity piping (minimum of 4 inches in diameter) to the vacuum collection station. The vacuum collection station collects, stores, and pumps the sewage via pressure through a force main to the WWTP.

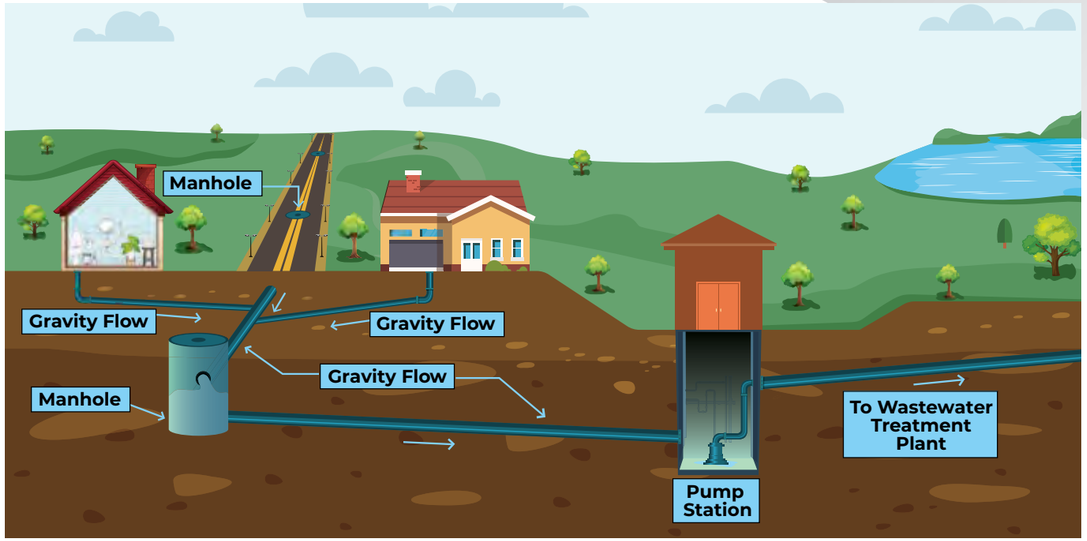
Advantages

- Shallow excavation, which reduces the potential of encountering limerock and groundwater.
- Minimizes disruptions to streets, sidewalks, etc.
- Valves operate pneumatically, so power is not required.

Disadvantages

- Higher O&M costs than gravity sewer.
- Moderate infiltration potential.
- High capital cost for smaller developments.
- More precise construction techniques (sawtooth pattern collection system piping) compared to low-pressure.

Gravity Collection System



Gravity collection systems are a common and traditional method of collecting wastewater for public utilities. Sewage flows by gravity from the home through 4-inch sloped service lateral pipes to the gravity sewer mains. Gravity sewer mains are typically 8 inches in diameter and larger. Manholes generally are required every 400 feet at each main intersection and changes in flow direction. The network of gravity sewer mains and manholes is considered the gravity collection system. The gravity collection system typically conveys sewage to a transfer lift station that pumps the sewage under pressure to the WWTP for treatment.

Advantages

- Lowest O&M cost.
- Highest long-term reliability.
- Homeowner easements are not needed.

Disadvantages

- High capital cost for retrofitting existing neighborhoods.
- Deeper excavations are typically required.
- High community disruptions to streets, sidewalks, etc.
- Higher infiltration potential.

Onsite System Alternatives for Enhanced Treatment of Nitrogen

Advanced nitrogen treatment units are specialized systems designed to significantly reduce nitrogen levels in wastewater from septic systems and are added on to the septic system itself. They are required on lots less than one acre. Homeowners are required to upgrade upon septic/drainfield repair or replacement after 2023 in the PFA (occurs on an average of 47 residential parcels annually).

In-Ground Nitrogen-Reducing Biofilter

The in-ground nitrogen-reducing biofilter is a passive system with a denitrification layer under 18 inches of sand fill in the drainfield area. Special repair and maintenance procedures are required; performance testing is required 10 years after installation. These systems are estimated to achieve 65-percent nitrogen removal.

CAPITAL COSTS

OPERATIONS AND MAINTENANCE COSTS

SIMPLE TO OPERATE

COMMUNITY IMPACT

Nitrogen-Reducing Aerobic Treatment Unit (ATU)

An ATU system is similar to septic but is an active system that recirculates incoming wastewater to reduce the amount of biological material entering the drainfield and promote denitrification. All ATU systems require a maintenance contract and operating permit. These systems are estimated to achieve 65-percent nitrogen removal.

CAPITAL COSTS

OPERATIONS AND MAINTENANCE COSTS

SIMPLE TO OPERATE

COMMUNITY IMPACT

Performance-Based Treatment System (PBTS)

The PBTS is an advanced treatment unit and ancillary components that require regular maintenance. It must be professional engineer-designed, with an approved maintenance contract and operating permit from the County health department. Residential and commercial systems require an inspection/ maintenance report every 3 months; FDEP approval in some counties; and water quality sampling, testing, and reporting every 6 months. The health department will inspect the system annually. These systems are estimated to achieve 65 to 90-percent nitrogen removal.

CAPITAL COSTS

OPERATIONS AND MAINTENANCE COSTS

SIMPLE TO OPERATE

COMMUNITY IMPACT

Distributed Wastewater Treatment System (DWTS)

A DWTS is a decentralized wastewater treatment system recently approved by FDEP. It involves individual treatment units installed at the point of generation (i.e., in neighborhoods) that are connected to the utility using wireless data networks and a central management system. DWTS networks are permittable for up to 100,000 gpd of total combined flow. These systems are estimated to achieve 80 to 90-percent nitrogen removal.

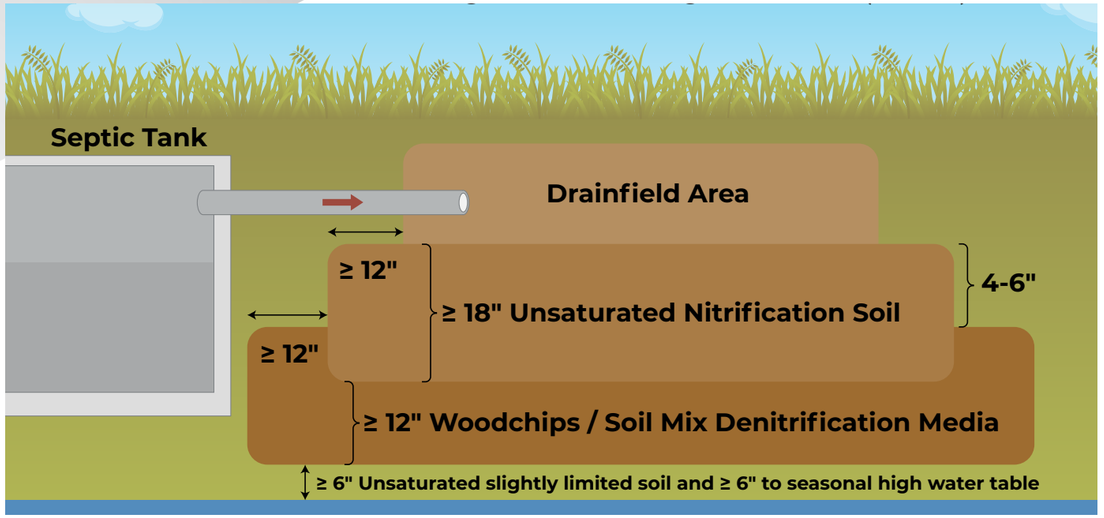
CAPITAL COSTS

OPERATIONS AND MAINTENANCE COSTS

SIMPLE TO OPERATE

COMMUNITY IMPACT

In-Ground Nitrogen-Reducing Biofilter



The in-ground nitrogen-reducing biofilter option is a passive system that includes a denitrification layer under 18 inches of soil fill, all under the drainfield area. The denitrification layer is made up of a mixture of fine aggregate – course sandy loam, sandy loam, loamy sand, fine sandy loam, very fine sand, loamy fine sand, or loamy very fine sand and a lignocellulosic material, chips or shavings of untreated lumber, blended urban waste wood mulch, yellow pine sawdust, 2- to 3-inch wood chips, or other material demonstrated to be effective at denitrification. The denitrification layer is no less than 12 inches thick, extends 12 inches beyond the perimeter of the drainfield, and wraps 12 inches upward. Additionally, the denitrification layer bottom must be 6 inches above the seasonal high groundwater table. During construction, the denitrification layer must be inspected by the Florida Department of Health (FDOH). The denitrification layer requires special repair and maintenance procedures. The denitrification layer must be tested for performance 10 years after installation to determine if media replacement is warranted. These systems are estimated to achieve 65-percent nitrogen removal.

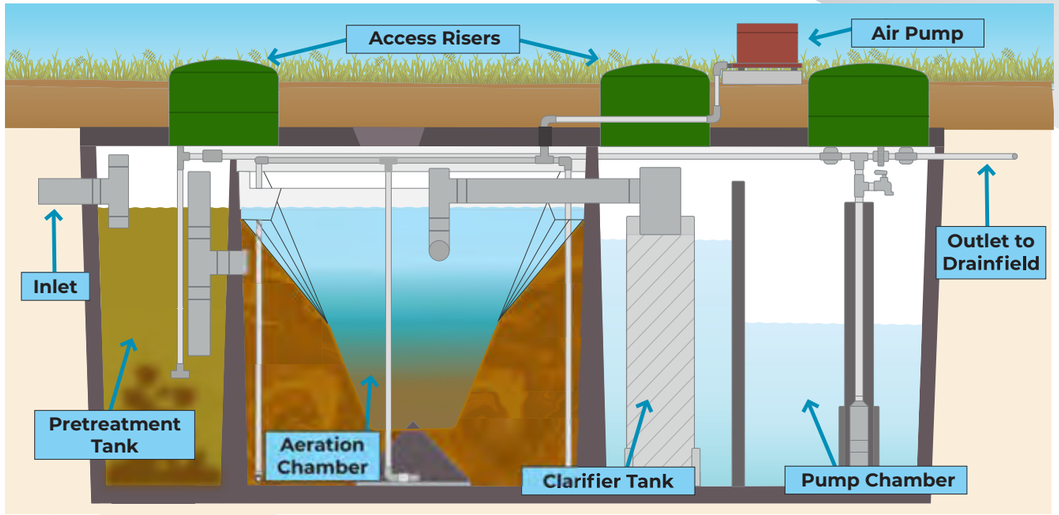
Advantages

- Treatment occurs onsite without the need for a centralized sewer.
- Can be used in conjunction with existing septic tank.
- Potential additional funding may be available.

Disadvantages

- O&M requirements for homeowners.
- Limited application due to groundwater clearance requirements.
- Requires more space than a conventional septic system.

Nitrogen-Reducing Aerobic Treatment Unit (ATU)



The ATU system is more efficient at processing waste than a conventional septic tank and drainfield. It works by reducing the amount of biological material entering the drainfield. The nitrogen-reducing ATU systems typically involve biological denitrification processes such as mixed biomass using suspended growth, fixed film, an unsaturated media filter, or two-stage segregated biomass. In both processes, treatment is accomplished by bacteria respiration. Recirculation with fresh incoming wastewater is essential for continuous denitrification in the mixed biomass process. The two-stage segregated biomass process requires external carbon or chemical addition. All ATU systems typically consist of a pump, pipes, and diffusers. These systems require a maintenance contract and operating permit from the County health department. The maintenance entity must submit effluent-quality laboratory samples every 6 months for residential and commercial systems and an inspection/maintenance report every 3 months. FDOH annually inspects the maintenance and performance of the system. These systems are estimated to achieve 65-percent nitrogen removal.

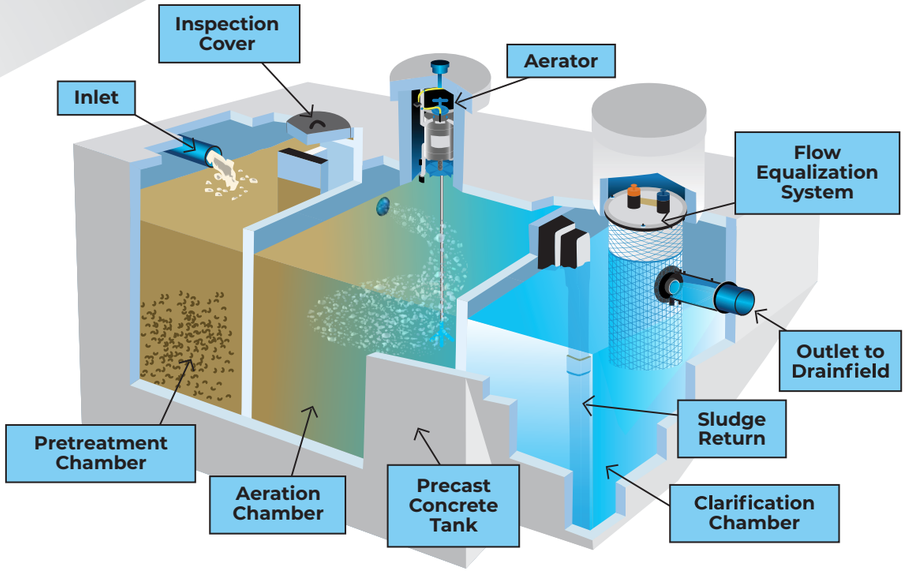
Advantages

- Treatment occurs onsite without the need for a centralized sewer.
- Potential additional funding may be available.

Disadvantages

- O&M requirements for homeowners.

Performance-Based Treatment System (PBTS)



A PBTS can include a nitrogen-reducing ATU and other components. For example, it may consist of tanks that percolate effluent down through a medium, such as peat moss, synthetic material, chlorinator/dechlorinators, ultraviolet (UV) lights, and/or effluent recirculation. It must be professional engineer-designed and requires an approved maintenance contract and operating permit from the County health department. The maintenance entity must submit effluent-quality laboratory samples every 6 months for residential and commercial systems and an inspection/maintenance report every 3 months. Different sample levels are required based on the type of PBTS and the specific site conditions. FDOH annually inspects the maintenance and performance of the system. These systems are estimated to achieve 65- to 90-percent or more nitrogen removal.

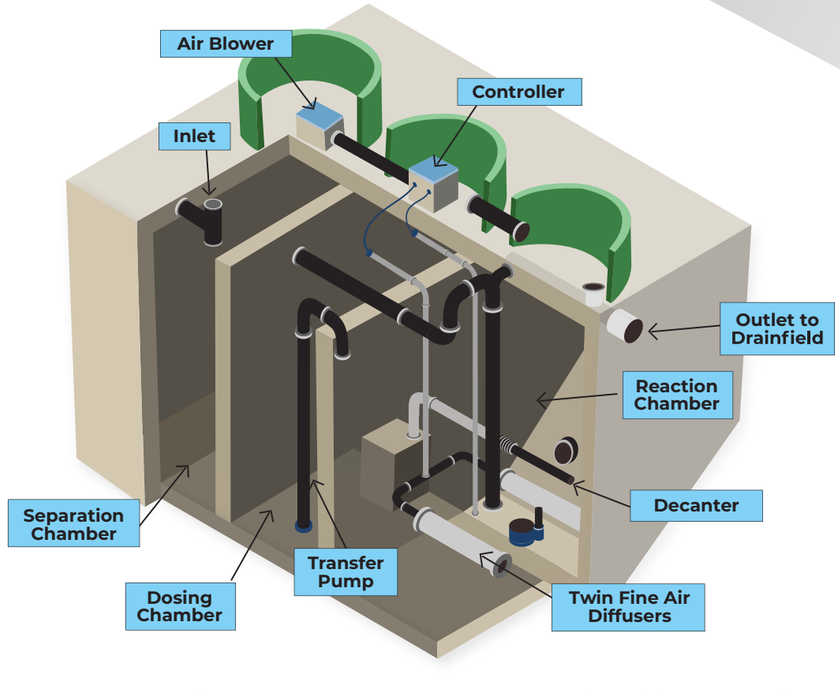
Advantages

- Treatment occurs onsite without the need for a centralized sewer.
- Potential additional funding may be available.

Disadvantages

- O&M requirements for homeowners.

Distributed Wastewater Treatment System (DWTS)



A DWTS is a new category of wastewater treatment systems involving centrally managed, decentralized treatment technology approved by FDEP. Decentralized wastewater treatment is provided by individual distributed wastewater treatment units (DWTUs) installed at the point of generation (i.e., individual homes). These DWTUs are virtually connected to the utility using existing wireless data networks and a central management system such as a supervisory control and data acquisition system (SCADA). In this configuration, the DWTS functions like a public wastewater collection and treatment system without the physical sewer connection to each end user. These DWTS networks are permittable for up to 100,000 gpd of total combined flow.

Advantages

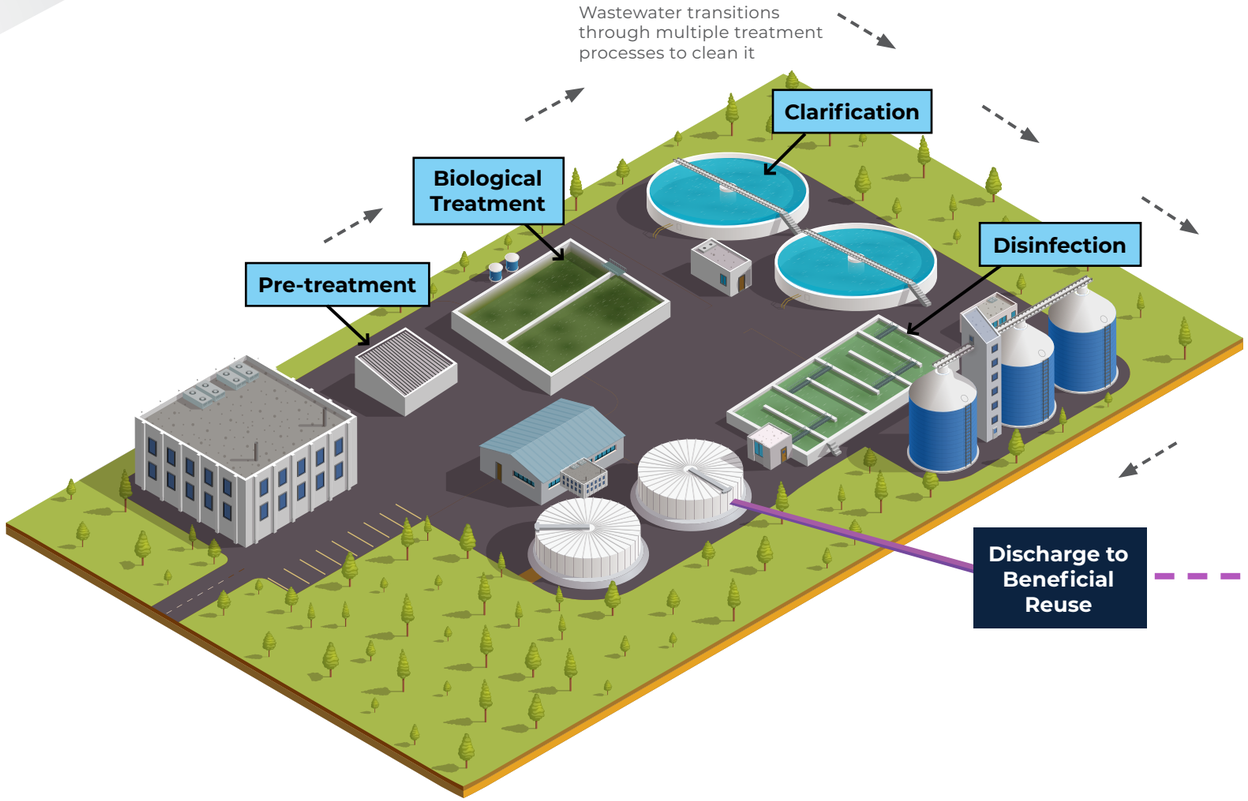
- 80- to 90-percent nitrogen removal (equivalent to secondary wastewater treatment processes).
- Treatment occurs onsite without the need for a centralized sewer.
- Potential additional funding may be available.

Disadvantages

- Treatment and water-quality monitoring requirements for utilities.
- Higher O&M costs for utility.

Wastewater Treatment Plant (WWTP)

Centralized collection systems transport the community's wastewater to a wastewater treatment plant. Licensed operators ensure that the water is cleaned and safely returned back to the environment in accordance with the state and federal standards.



Advantages

- Operated by licensed professionals who are required to maintain compliance with current regulations.
- Dedicated maintenance funding programs administered by local governments or the public service commission.
- Economies of scale that lower cost relative to other forms of treatment to achieve current regulatory standards.

Disadvantages

- Higher initial costs requiring long term financing.
- Land area requirements could create challenges for siting in some areas.

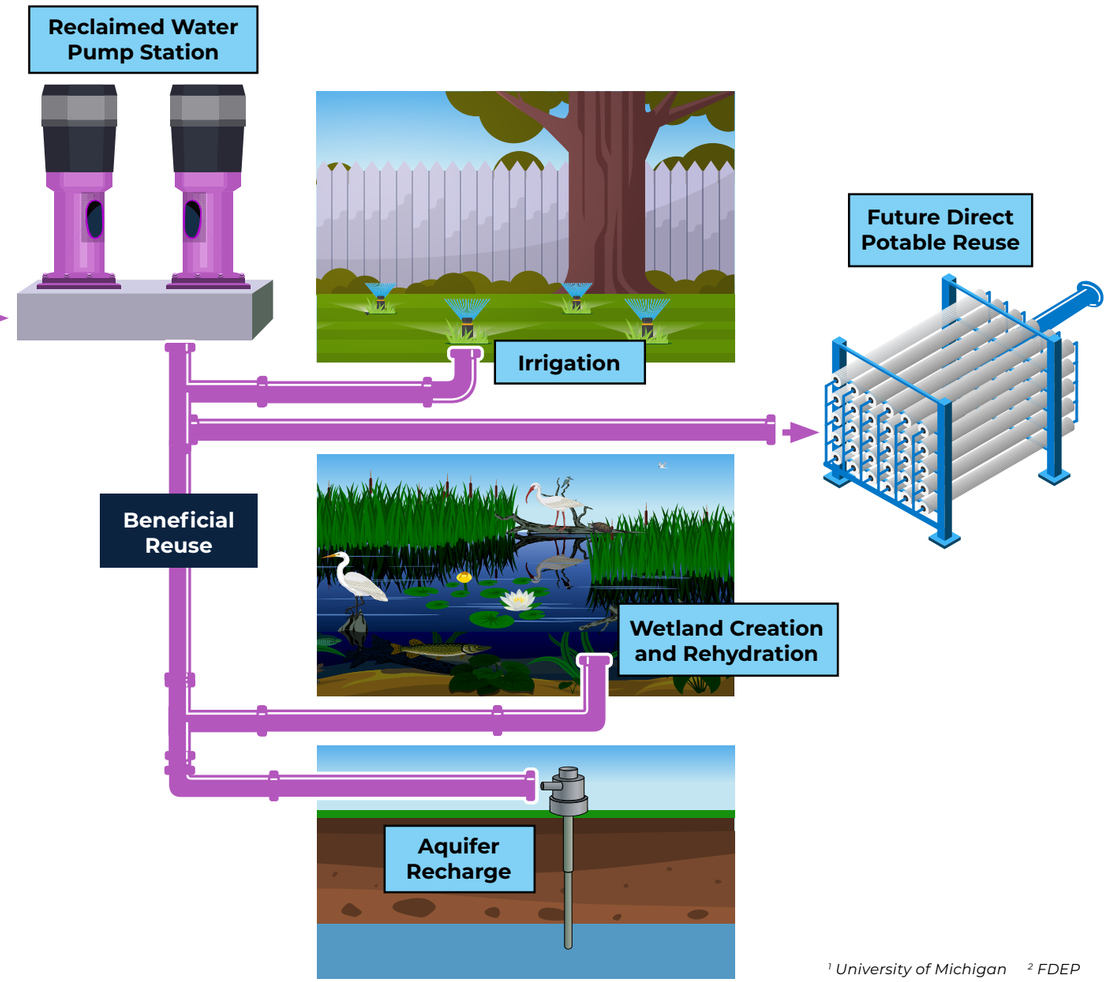
KEY FACTS

Over **240 million** people are connected to a public wastewater treatment plant in the United States.[1]

Florida recycles **738 million** gallons of wastewater per day.[2]

Wastewater utilities must meet **strict regulation requirements** to protect the public and environment.

Floridians get **90%** of their water from groundwater sources such as aquifers. Protecting and preserving this water supply is critical to our growth and prosperity.[2]



[1] *University of Michigan* [2] *FDEP*

FUNDING AVAILABLE*

Septic to sewer conversions in Florida protect water quality and public health, mainly where septic systems contribute to nutrient pollution in water bodies such as springs, lakes, and estuaries. Both state and federal funding programs are available to support these conversions, helping local governments and property owners offset the costs of connecting to central sewer systems. The following lists and briefly describes the key federal and state funding sources available for septic to sewer conversions in Florida:

Federal Funding Programs

Rural Development Water and Waste Disposal Loans and Grants

The USDA's Rural Development program offers loans and grants to rural communities for water and wastewater infrastructure projects, including septic to sewer conversions. These funds are available to municipalities, counties, and other local entities serving rural areas with populations of 10,000 or less. The program provides financial assistance to improve water quality and reduce pollution from failing septic systems.

Water Infrastructure Finance and Innovation Act (WIFIA)

The WIFIA of 2014 established the WIFIA program, a federal credit program administered by EPA for eligible water and wastewater infrastructure projects. WIFIA and the WIFIA implementation rule outline the eligibility and other requirements for prospective borrowers

Community Development Block Grant (CDBG) Program

Administered by the US Department of Housing and Urban Development (HUD) and managed locally by the Florida Department of Economic Opportunity (DEO), the CDBG program provides funding to local governments for community development projects, including septic to sewer conversions. These grants are primarily targeted at low- to moderate-income areas, helping to improve public health and environmental quality.

*Grant and funding programs are subject to change and may vary over time. It is important to research any programs of interest to confirm their current status, eligibility requirements, and application deadlines. Always consult official program resources or contact program administrators for the most up-to-date information.

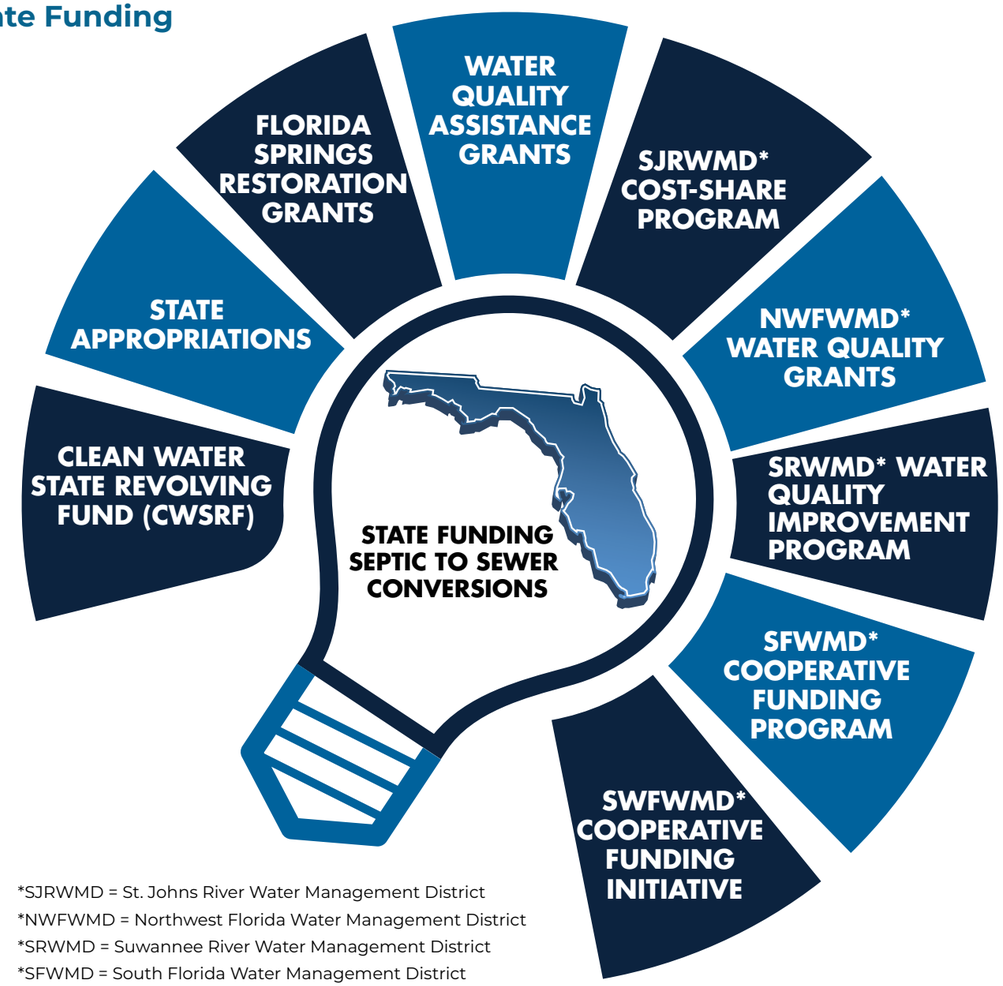
Environmental Infrastructure Program

The US Army Corps of Engineers (USACE) funds environmental infrastructure projects, including water and wastewater improvements. Under this program, local governments can receive grants for septic to sewer conversions, particularly in areas where these projects contribute to broader water quality and ecosystem restoration goals. The program requires a cost-share from local entities but can significantly reduce the financial burden of conversions.

Hazard Mitigation Grant Program (HMGP)

Federal Emergency Management Agency (FEMA) HMGP funds states and local governments for projects that reduce the risk of future disasters. Septic to sewer conversions may be eligible for this funding if they help mitigate flood risks, particularly in areas prone to flooding where septic systems can contaminate water sources. The program emphasizes long-term resilience and environmental protection.

State Funding



*SJRWMD = St. Johns River Water Management District
*NWFWMD = Northwest Florida Water Management District
*SRWMD = Suwannee River Water Management District
*SFWMD = South Florida Water Management District
*SWFWMD = Southwest Florida Water Management District

POTENTIAL FUNDING OPPORTUNITIES*

FDEP Grants and Funding Opportunities

Springs Grant

Eligible Projects: Centralized sewer improvements, septic to sewer

Requirements: Annual application process through FDEP or WMD

Description: Funding allocated for projects associated with nitrogen reduction in the BMAPs of springs identified in the Florida Springs Aquifer Protection Act

Water Quality Grants

Eligible Projects: Homeowner site improvements associated with septic to sewer

Requirements: Annual application process through FDEP

Description: Provides up to a 50% matching grant to local governmental entities for wastewater and stormwater improvements, including septic conversion and remediation

Alternative Water Supply (AWS) Grants

Eligible Projects: Alternative water supply projects submitted and approved by a WMD

Requirements: Application process through FDEP

Description: Projects funded through this program are intended to prioritize regional projects in the areas of greatest need as well as projects that provide the greatest benefit

Septic to Sewer Connection Grant

Eligible Projects: Homeowner site improvements associated with septic to sewer

Requirements: Application process through FDEP

Description: Provides funding for homeowner side costs of septic to sewer projects in the springs areas and some cost offsets for ATUs required in springs areas

State Water-quality Assistance Grants (SWAG)

Eligible Projects: Wastewater improvements, including septic to sewer

Requirements: Application process through FDEP

Description: Reduce nonpoint source pollution from land use activities

*These funding sources are subject to the Build America Buy America Act (BABA)

Onsite Sewage Program

Eligible Projects: Homeowner site improvements associated with septic to sewer

Requirements: Application process through FDEP

Description: Limited funding for low-income households

Septic Upgrade Incentive Program (SUIP)

Eligible Projects: Homeowner site improvements associated with septic to sewer

Requirements: Submit an application through the FDEP online portal or via mail

Description: Provides up to $10,000 per qualifying property

Nonpoint Source Management Program

Eligible Projects: 319h grants for septic to sewer projects

Requirements: Annual application process through FDEP or WMD

Description: Reduces water pollution from runoff with grants, education, and green infrastructure

Florida Communities Trust (FCT)

Eligible Projects: Wastewater improvements, including septic to sewer

Requirements: Application process through FDEP

Description: Protects natural resources, providing recreational opportunities and preserving Florida's traditional working waterfronts through the competitive criteria outlined in the Parks and Open Space and the Stan Mayfield Working Waterfronts Florida Forever Grant Programs

Resilient Florida Grants

Eligible Projects: Vulnerability Assessments and implementation of projects that address impacts of flooding and sea level rise

Requirements: Application process through FDEP

Description: May be used by a county or municipality for:

- Vulnerability Assessments to identify the risk of coastal and inland flooding or sea level rise
- Inventory of critical assets in coastal or floodplain areas
- Adaptation plans to enhance community preparation for the impacts of flooding and sea level rise
- Pre-construction activities for project submissions to the Statewide Flooding and Sea Level Rise Resilience Plan
- Feasibility studies for nature-based solutions to reduce the impact of flooding and sea level rise

Legislative Appropriation

Eligible Projects: Wastewater improvements, including septic to sewer

Requirements: Requires a request from the local government to the state during the legislative process

Description: Provides funding for specifically identified projects requested through specific legislative offices and approved through the legislative process and must be approved by the Governor

Water Management District Grants and Funding Opportunities

South Florida Water Management District

Available Grants: Cooperative Funding Program and Dispersed Water Management Program

Eligible Projects: Septic to sewer conversions and stormwater improvements with water quality benefits

Requirements: Application process through SFWMD

Description: Projects must improve water quality in impaired or sensitive water bodies and local match funding is required

Southwest Florida Water Management District

Available Grants: Cooperative Funding Initiative (CFI)

Eligible Projects: Septic to sewer conversions and nutrient removal projects to reduce pollutant loads

Requirements: Application process through SWFWMD

Description: Priority for projects in springsheds or impaired water bodies with cost-share typically ranging from 50%-75%

St. Johns River Water Management District

Available Grants: Cost-Share Program

Eligible Projects: Septic to sewer conversions and wastewater treatment upgrades

Requirements: Application process through SJRWMD

Description: Projects must demonstrate improvement in water quality and must be within eligible basins or springsheds; matching funds are required

Suwannee River Water Management District

Available Grants: Rural Economic Development Initiative (REDI) and Septic Tank Abandonment Program

Eligible Projects: Septic to sewer conversionsand septic tank removal and replacement

Requirements: Application process through SRWMD

Description: REDI grants target rural areas and require a reduced local match, and benefits to the environment must be demonstrated

Northwest Florida Water Management District

Available Grants: Water Quality Improvement Grants

Eligible Projects: Septic to sewer conversions and wastewater treatment and nutrient reduction projects

Requirements: Application process through NWFWMD

Description: Projects should benefit impaired water bodies, local government or utility sponsorship is required, and local match funding is typically needed

Other Entity Grants and Funding Opportunities

Rural Infrastructure Fund (RIF)

Eligible Projects: Wastewater improvements, including septic to sewer

Requirements: Annual application process through Florida Department of Commerce (FDC)

Description: Planning, preparing, and financing of infrastructure projects in rural communities to encourage job creation, capital investment and, the strengthening and diversification of rural economies

Clean Water State Revolving Fund (CWSRF)

Eligible Projects: Wastewater improvements, including septic to sewer

Requirements: Application process through the FDEP

Description: Environmental Protection Agency (EPA) fund managed by FDEP. Federal-state partnership that provides low-cost financing to communities for a wide range of water quality infrastructure projects

Florida Job Growth Grant Fund

Eligible Projects: Public infrastructure projects, including septic to sewer

Requirements: Annual application process through FDC

Description: Economic development program designed to promote public infrastructure and workforce training across the state

State Housing Initiatives Partnership (SHIP)

Eligible Projects: Homeowner site improvements associated with septic to sewer

Requirements: Application process through the local SHIP office

Description: Florida Housing Finance Corporation (FHFC) program that provides 0% interest deferred payment loans (DPL) up to $50,000 for health/safety/energy efficiency home improvements, with loans being forgiven for over 15 years

Additional Funding Mechanisms

LOCAL INCENTIVES:
Some local governments in Florida offer cost-sharing programs, rebates, or low-interest loans to help homeowners cover the costs of converting to a sewer system. These programs are often targeted at areas where septic systems pose a significant risk to water quality.

TAX CREDITS:
Homeowners who invest in environmentally beneficial upgrades, such as converting from septic to sewer, may be eligible for state or federal tax credits. These credits can help offset the initial cost of conversion.

UTILITY PROGRAMS:
Many utilities offer programs that allow homeowners to spread the conversion cost over time, often through their monthly utility bills. These programs can make the upfront cost of conversion more manageable.

LEGISLATION IMPACTS AND FUTURE DIRECTIONS

Implementation Challenges: Although these legislative measures set a robust framework for improving water quality, their success depends on effective implementation at the local level.

Challenges → **Solutions**

Securing Sufficient Funding

→ **Leverage Government Grants and Programs**

Public Private Partnerships

Explore Innovative Financing Options

Challenges → **Solutions**

Overcoming Technical Barriers

→ **Regional Collaboration**

Collaborate with technical experts to provide solutions that eliminate obstacles.

American Water Works Association Florida Section
Resiliency Florida
Florida Water Environment Association wef Member Association
ACEC
Florida Rural Economic FREDA Development Association
Florida Chamber of Commerce

Ensuring Community Buy-in

→ **Public Outreach Communication**

Following Ongoing Legislation

→ **Get to Know Your Legislators**

Florida continues to refine and strengthen its approach to septic system management. Future legislative efforts may focus on expanding funding, improving technologies for septic treatment, and enhancing collaboration among state agencies, local governments, and private stakeholders.

FAC Florida Association of Counties All About Florida
FLC Florida League of Cities
FCCMA

RESOURCES FOR MORE INFORMATION

Onsite Sewage Treatment and Disposal Systems: An Overview

The publication outlines onsite sewage systems, focusing on septic tanks, drain fields, and alternatives for challenging conditions, emphasizing proper design and soil suitability for environmental protection.

Permitting of Enhanced Nutrient Reducing Onsite Sewage Treatment and Disposal Systems (ENR-OSTDS)

The website explains the permitting process for Enhanced Nutrient-Reducing Onsite Sewage Systems (ENR-OSTDS) in Florida, required in water quality focus areas to reduce nitrogen pollution and meet compliance deadlines.

Basin Management Action Plans (BMAPs)

This webpage summarizes BMAPs. It lists collaborative efforts, including infrastructure upgrades, conservation practices, and water quality monitoring, to ensure restoration goals are met.

Nonpoint Source Funds

The webpage details Florida's Nonpoint Source Management Program, offering grants for projects like septic to sewer conversions and pollution control to reduce water pollution from diffuse sources.

Florida Onsite Sewage Nitrogen Reduction Strategies Study

The webpage outlines studies and Florida's efforts, strategies, and technologies to reduce nitrogen pollution from onsite sewage systems and protect water quality.

Onsite Sewage FAQ - Permitting

The webpage answers FAQs on permitting onsite sewage systems in Florida, covering applications, site evaluations, and agency transitions.

Build America, Buy America (BABA)

The EPA's BABA webpage outlines requirements for using American-made materials in federally funded water infrastructure projects and provides compliance resources.

Septic Systems Overview

The EPA's septic systems webpage offers resources on maintaining and upgrading systems to protect health and water, with guidance, funding, and management tools.

Septic System Owner's Guide

The guide advises Florida septic system owners on proper use, maintenance, and inspection to protect health, the environment, and prevent costly repairs.

Areas of Critical State Concern Program

The webpage explains Florida's Areas of Critical State Concern program, which oversees development to protect key natural and cultural resources.

Rural Areas of Opportunity

The webpage outlines Florida's Rural Areas of Opportunity program, supporting economic development in rural regions facing challenges.

National League of Cities Local Infrastructure Hub

The webpage helps local governments find funding for infrastructure projects through tools like the Grant Search and Funding Pathfinder.

Breakdown of Federal Infrastructure Funding Available to Counties

The document guides counties on accessing Bipartisan Infrastructure Law funding for transportation, water, energy, and broadband projects.

BIL Funding Opportunities: Funding Matrix for Counties

The webpage provides a funding matrix for counties to explore opportunities under the Bipartisan Infrastructure Law (BIL), including project types, eligibility, and application details.

Septic to Sewer Guidance Document

This document is the previous version of the Septic to Sewer Guidance Document. The document discusses transitioning from septic to sewer systems to protect water resources, with resources for stakeholders to address the challenges of such upgrades.

Using a Diffusion of Innovation Lens to Understand Homeowner Support for Septic to Sewer System Conversions

This research utilizes the Diffusion of Innovation theory to investigate factors influencing homeowner support for septic to sewer conversion programs. It examines key factors like perceived advantages, compatibility, complexity, and observability in shaping resident attitudes and behaviors.

SEPTIC TO SEWER WEBPAGE

Get a more in-depth look into septic to sewer programs along with valuable resources like funding opportunities, links to legislation, and public outreach tools.

CASE STUDIES AND PROJECT PROFILES

Learn more about Florida communities that have successfully implemented septic to sewer programs with this interactive online map.

JonesEdmunds

www.jonesedmunds.com