

Public Information Meeting Workshop

Town of Irvington Sanitary Sewer Planning Study

September 28, 2023



Bowman

Agenda



- Team Introductions
- Project Objectives and Background
- Service Area and Alternatives
- Project Schedule
- Public Comments and Questions

Team Introductions

Town of Irvington

- Jeremy Taylor – Project Lead
- Tom Chapman – Chair of the Irvington Sewer Committee

Bowman Consulting

- Bob Krallinger – Contact Manager
- Tim Wilson – Project Manager

team

Project Objectives and Background



Bowman

The Town's Planning Team

- The Town Council and Town's Sewer Committee Has Commissioned Bowman to Perform this Study
- The Town's Charter Allows the Town to Own and Maintain Water Works and Sanitary Sewer Systems
- The Town is Not Interested in Owning or Operating Public Water or Sewer Utility System
- Focus on Finding an Optimum Long-Term Solution to Serve Wastewater Needs for the Community

Project Objectives With this Planning Study

- Determine a Long-Term Strategy for Sanitary Sewer Service
 - Sewer conveyance
 - Sewage Treatment
- Determine Capacity Requirements
- Identify Feasible Options and Costs
- Identify Ownership for the System
- Provide Recommendations in Written Report



Alternatives Identified for Investigation

- Alternative A – Evaluate Alternative Onsite Sanitary Systems
 - Collect and treat wastewater into local treatment facility(s)
 - Dispose of treated water with onsite drainfield systems
 - Pipeline crossing at Tides Inn under Carters Creek
- Alternative B – Town Center Sewer Line
 - Extend collection pipeline from the Tides Inn to Kilmarnock's System
 - Follows King Carter Drive and Route 200 Irvington Road
 - Connect to Kilmarnock's system near Compass Entertainment

Alternatives Identified for Investigation

- Alternative C – Complete Town Sewer Line
 - Expands Alternative B to provide town-wide service
 - This may be evaluated as a future buildout scenario of Alternative B

Potential Funding Agency – USDA Rural Development

- Grants
- Low Interest Loans
- A Combination of Both Grants and Loans
- A Preliminary Engineering Report is the First Step Required
- Evaluating Multiple Options are Required
 - Options for Conveying Wastewater
 - Options for Treating Wastewater
 - Cost Estimates are Required for Each
 - A recommended Solution Will Be Made



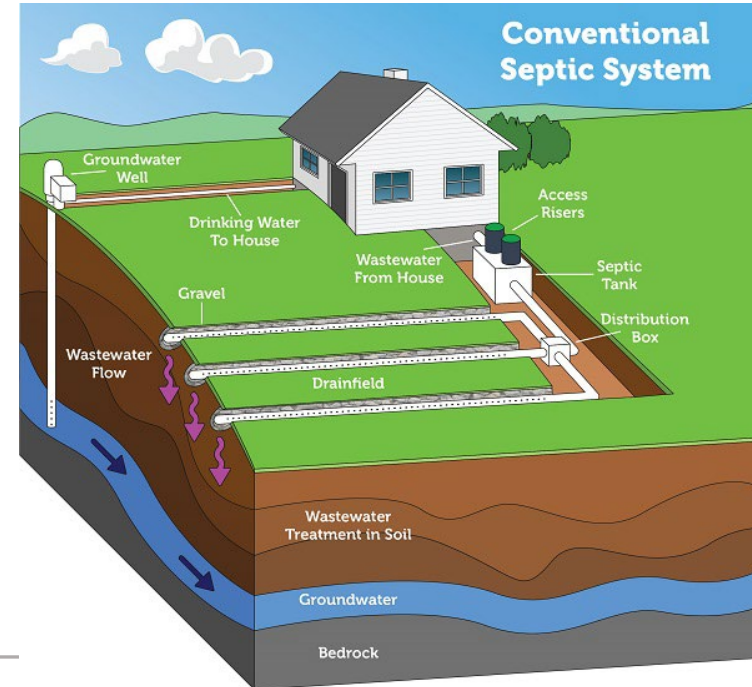
Rural Development
U.S. DEPARTMENT OF AGRICULTURE

Key Stakeholders in the Project Area

- Existing Homeowners with septic systems
- Tides Inn
- New and Future Planned Developments
- Businesses in Town on Private onsite treatment system
- Town of Kilmarnock
- Lancaster County
- USDA – Funding Agency

Existing Wastewater Systems Within the Town

- Town Residents Primarily Utilize Conventional Septic System and Drainfields
- Tides Inn Utilizes Surface Water Discharge Treatment Plants
- ICN Operates an AOSS for Commercial Area Within Town



Please note: Septic systems vary. Diagram is not to scale.

Service Area and Alternatives



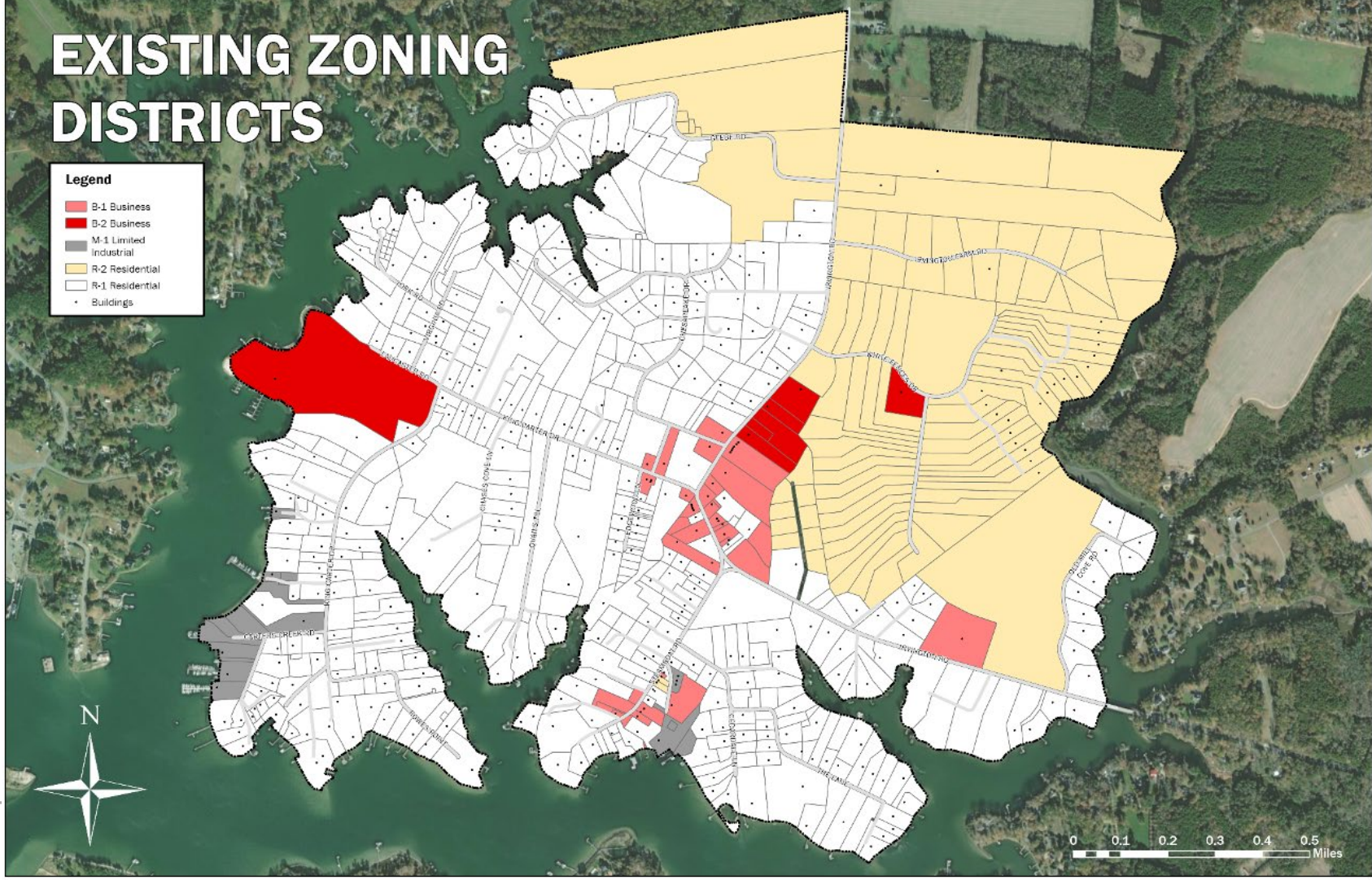
Bowman

Service Area Of Project

EXISTING ZONING DISTRICTS

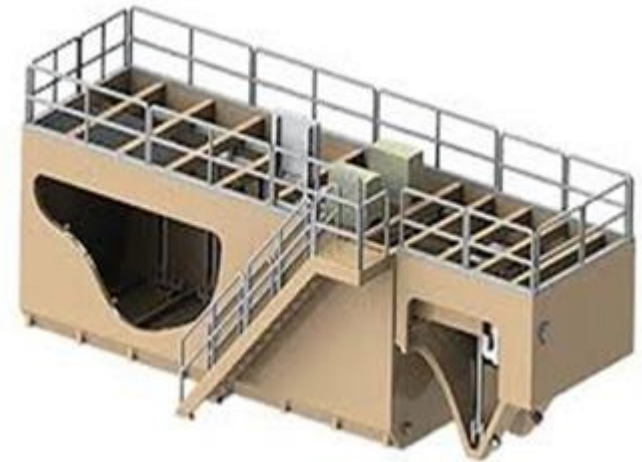
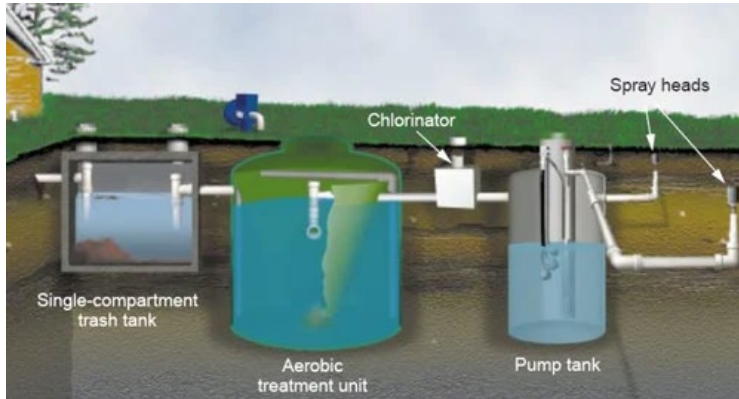
Legend

- B-1 Business
- B-2 Business
- M-1 Limited Industrial
- R-2 Residential
- R-1 Residential
- Buildings



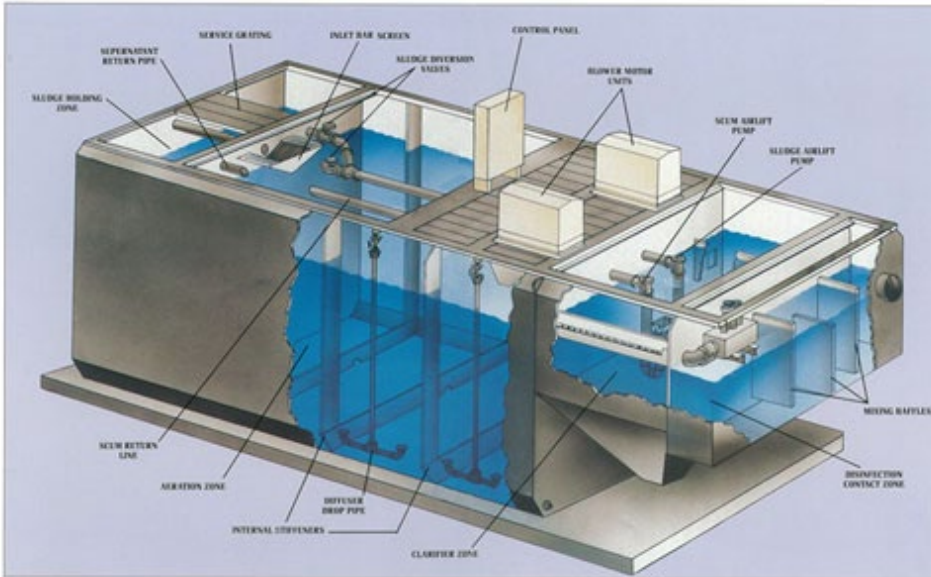
Potential Alternatives

- Treatment Alternatives
 - Wastewater Treatment Plant Discharging to Surface Waters
 - Alternative Onsite Wastewater Treatment System (AOSS)
 - Treatment at the Existing Kilmarnock WWTP



Wastewater Treatment Discharging to Surface Waters

- Primarily Carters Ck. Is the Option for this Alternative
- Mechanical Equipment Treat, Disinfect and Discharge Effluent
- Licensed Operators and Discharge Permits Required by DEQ



Wastewater Treatment Discharging to Surface Waters

Advantages

High Quality Effluent Discharge
Effective for Lager Capacities

Disadvantages

Some Nutrients Still Within Effluent
Local Shellfish Condemnations Result
Expensive to Operate – Labor and Energy
Requires Waterfront Property for Discharge
Requires licensed Operator

AOSS Wastewater Treatment System

- Requires Both a Treatment System and a Disposal Field for Effluent Discharge
- Requires More Land than Surface Water Discharging Facility and Suitable Soils
- Eliminates Impacts to Surface Waters



Example Project at White Stone

- Phase 1 Constructed:
 - 40,000 GPD Treatment System
 - ~9 Acres of Drip Irrigation Fields
 - 2 Operations Staff Members
- Phase 2 Developed:
 - Additional 40,000 GPD Treatment System
 - ~6 Acres of Drip Irrigation Fields
 - *Better Soil Conditions*
 - 2 Operations Staff Members
- Approximately 42 Acres of Land for Treatment and Drip Zones



AOSS Wastewater Treatment Systems

Advantages

High Quality Effluent Discharge
Can Implement in Phased Increments
Long Lasting

Disadvantages

Land Intensive for Discharge Drainfield
Requires Licensed Operator
Expensive to Operate – Labor and Energy
Requires Periodic Pump out of Biosolids

Town of Kilmarnock WWTP

- Kilmarnock has Sewer Infrastructure
 - Low Pressure Sewer (Grinder Pumps)
 - Vacuum Sewer
 - Conventional Gravity Sewer and Pumping Stations
 - Wastewater Treatment Facility
 - Coordination with Town of Kilmarnock has excess capacity in system

Treatment at the Town of Kilmarnock's WWTP

Advantages

- Eliminates the Need for a New Plant
- Likely Adequate Capacity to Serve
- Publicly Owned System
- Economy of Scale of Larger System

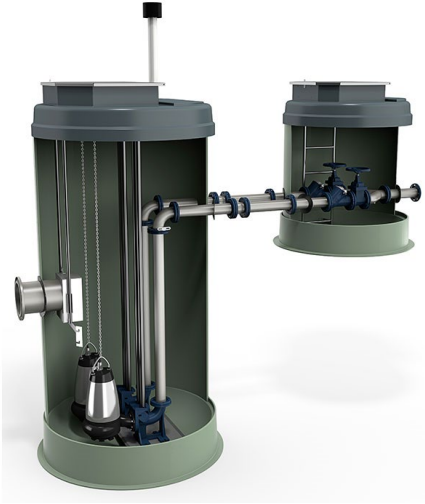
Disadvantages

- Conveyance Cost to the Town's System
- Connection Fees
- Town Acceptance for Extension Needed



Conveyance Alternatives

- Conveyance
 - Low Pressure Sewer (Grinder Pumps)
 - Vacuum Sewer
 - Conventional Sewer Systems



Low Pressure Sewer Alternative

- Individual Grinder Stations
 - ~11 gpm flow rates
 - Single Phase Electrical Connections
 - Powered from Home Supply
- Easy to Phase throughout Town
- Multiple options for Flow Requirements



Low Pressure Sewer Alternative

Advantages

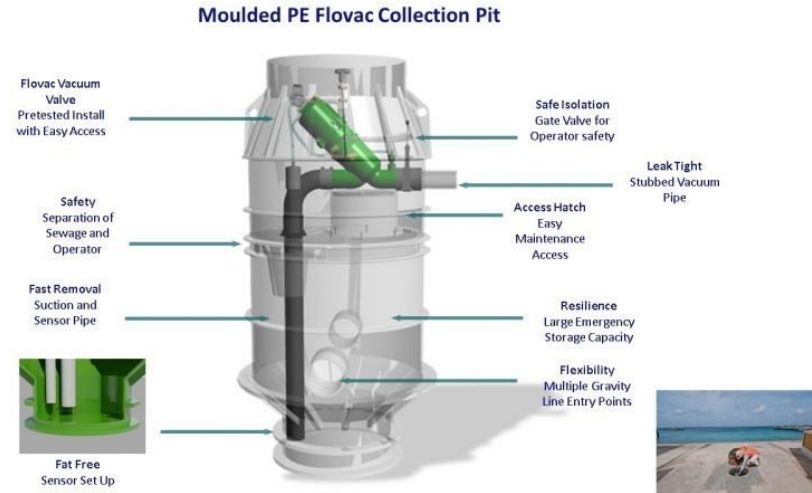
Ease of Installation
Pre-Engineered Packaged Technology
Installed as Needed
Proven Technology
Reliability – O&M
No Centralized Pumping System Needed

Disadvantages

Needs Plumber and Electrician
Impact to Private Property

Vacuum Sewer Alternative

- Similar to Low Pressure System
- Individual Connections
- Requires Maintenance Team
- Vacuum Sewer Line through Town



Vacuum Sewer Alternative

Advantages

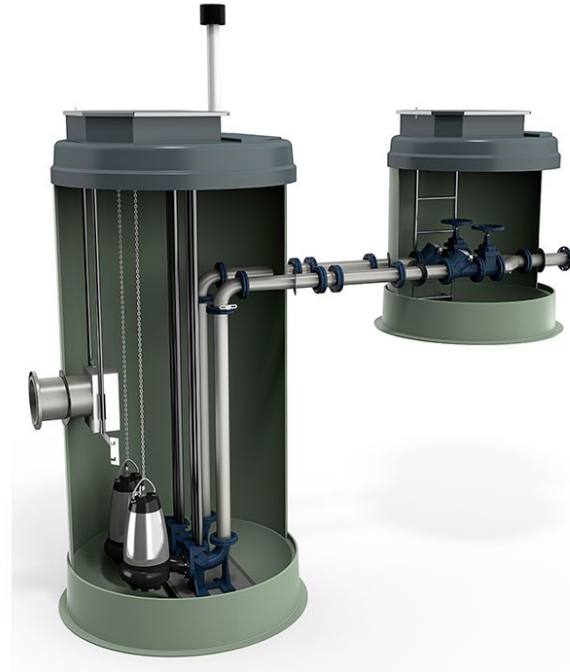
Minimal Impact to Private Property
Simple Operation
Economy of Scale of Larger System

Disadvantages

High Energy Consumption
Central Vacuum Station Has High Cost
Still Requires Pumping to Treatment System

Conventional Gravity Sewer and Pump Station Alternative

- Conventional Gravity Sewer
 - Manholes and Piping
 - Within Roadway or ROW
- Pumping Station
 - Large Pumps
 - Force main Conveyance to Treatment Alternative
 - Building/Emergency Power



Conventional Gravity Sewer and Pump Station Alternative

Advantages

Lowest Private Property Impact
Oldest and Most Known Technology
Fewer Facilities to Maintain

Disadvantages

Gravity Sewer Requires Deeper Excavation
Cost of 8" Gravity Sewers
High Operation and Maintenance Costs

Project Schedule



Bowman

Project Schedule

Activity/ Deliverable	Completion Date
Public Information Meeting	September 28, 2023
Development of Alternatives	October 20, 2023
Prepare Draft Report to the Town	November 30, 2023
Town Review Complete	January 11, 2024
Submit Report to USDA for Approval	January 25, 2024
USDA Comments Received (Assume 4 Weeks)	February 22, 2024
Publish Final Report	March 14, 2024



Public Comments and Questions