

# WASTEWATER ADVISORY COMMITTEE

## A G E N D A

TOWN OF CHINCOTEAGUE, VIRGINIA

**March 21, 2013, 9:00 A.M. – Council Chambers - Town Hall**

CALL TO ORDER

ROLL CALL

AGENDA ADDITIONS OR ADOPTION

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1. Town Council Report
  - Committee mark up of draft findings and recommendations
2. Council Work Session
  - Committee review of a sample presentation
3. Committee Member Comments

ADJOURN

NEXT MEETING: APRIL 18<sup>TH</sup>, 9AM





## MEMORANDUM

Town of Chincoteague Inc.

Date: March 19, 2013  
To: Wastewater Advisory Committee  
Through: Robert Ritter, Town Manager  
From: Bill Neville, Town Planner  
Subject: Review of Draft Report to Town Council

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Over the last several meetings, members of the Wastewater Advisory Committee have reviewed attempts by Staff to wrap up research information into a report format. It has been clear that there are different audiences for this report and the presentation may be unique for each one:

- Town Council during a work session
- Town Council during a public hearing
- Informal presentations to community organizations
- Accomack County
- State agencies
- Maryland Coastal Bays Program
- Newsletter, newspaper article
- Town website

The Committee has not yet resolved what recommendations should be presented to the Town Council. The answer to that question will guide how the rest of the background information will be assembled. In order to spur discussion at the Committee level, several draft findings and recommendations have been prepared in advance of this meeting.

Please review and provide comments, edits and suggestions during our meeting on March 21<sup>st</sup> at 9am that will form the basis of the Committee report to Town Council (hopefully during the April 18<sup>th</sup> work session at 5pm)

A sample power point presentation borrowed from Accomack County/Cape Charles is attached for discussion as we consider whether this format would be useful for the Council workshop.

## WAC Summary Findings (March 19, 2013)

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### ■ **Current Management of Wastewater Treatment (Cesspools, Drainfields, Individual Treatment Systems)**

The 'status quo' of wastewater treatment solutions has served Chincoteague Island well over the years as a small town, fishing community and seasonal summer destination for family vacations. Investment by individual property owners has traditionally been adequate to meet wastewater disposal needs and regulations.

- Peak water use and disposal occurs in the drier summer months when high water tables are not as much of a problem
- Conversion of many year round homes to season rentals has reduced year round impacts (Census data)
- High technology advanced treatment systems approved by VDH in 2010 allow the use of unsuitable soils and areas of high water table to install an individual wastewater treatment system (mound system)
- Increased need for wastewater treatment has been met by private investment of hotels, condos, etc. in small treatment facilities

#### ***What are we doing right?***

- ✓ Installation of advanced individual treatment systems with new construction (cost)
- ✓ Repair of existing septic tank/drainfield systems (number of systems)
- ✓ Maintenance to pump out septic tanks or cesspools when there is a problem
- ✓ Inspection by State officials for the Shellfish Sanitation Report with violation notices (number of violations)

Looking to the future, investment in public infrastructure may be needed to solve economic challenges, new regulations and construction standards. A public wastewater infrastructure would be preferable to trading landscaped yards and off street parking area for septage disposal mounds – especially on the small lots in the older part of town. It seems reasonable to plan for a public infrastructure system which costs each customer about the same as it would cost for them to install a new individual system. (\$13,000 to \$26,000)

### ■ **Next Steps to Improvement (Sunset Bay Utilities)**

In response to an urgent need for wastewater treatment along Main Street in downtown Chincoteague, a private utility company expanded its service area in 2012 to connect existing business and civic uses. Approved and permitted capacity at the plant has allowed for private investment of 4.7 million dollars for construction of a new 70 room waterfront hotel, and will replace inadequate or failing septic drainfields for 3 restaurants, the downtown theater, public restrooms, and the historic firehouse.

- One time connection fees were established at a preferred rate of \$10,000, plus \$3,500 per EDU\* to reimburse the private investment in capital cost of the plant and the sewer main extension. Monthly service fees are estimated at \$100 per month.  
(\*Equivalent Dwelling Unit equals 350 gallons per day, commercial use estimated by history of water use plus a reserve)

## First Draft Copy – for Committee Review Only!

- The Sunset Bay Utilities treatment plant may be expanded under an approved State discharge permit. (\$250,000 to construct additional capacity for 105 EDUs/total 64,000 gpd treatment capacity)
- The Virginia State Corporation Commission has approved a wastewater treatment plant service area for Sunset Bay Utilities extending along Main Street from Maddox Boulevard to Bunting Road. (percent of island/water customers/potential demand of xxx gpd)

### ***What are we doing right?***

- ✓ Expanding existing utility infrastructure through private investment (failing septic replaced with higher treatment standards - equivalent of x homes/x gpd)
- ✓ Demonstrating small steps can make a big difference

Looking to the future, there are limits to the number of approved discharge permits for small private wastewater treatment plants on Chincoteague Island, and the State has indicated that there will be no additional permits granted (to surrounding waters). Multiple treatment plants that are privately owned and managed is not the solution preferred by State agencies that are responsible for inspection, testing and certification of operators.

### **■ Long Term Future Solution (North Accomack County Regional Study)**

Accomack County and the Town of Chincoteague worked together in 2011 to complete a feasibility study and preliminary engineering report (PER) for a regional wastewater treatment plant to be located in the vicinity of Atlantic, VA. This grant-funded work was completed in the context of many years of prior studies, and the possibility of working with private investment through a proposed Planned Development community to find a larger solution.

- Cost is a major concern. \$127 million for construction of the treatment plant and collection system would mean the equivalent of \$351 per month for mandatory service to all customers<sup>1</sup> (without grants or large connection fees)
- Geographic separation of communities to be served by a regional treatment plant increases cost and raises growth and land use control issues
- Location of wastewater treatment and disposal facilities are a difficult political concern, in addition to the expectation that new development should pay for itself
- Federal or State grants for regional wastewater infrastructure that would benefit both the economy and the environment are not generally available at this time.
- Town PER proposed a Phase 1 area with an infrastructure cost estimate of \$25 million and 300 customers in the service area (169,000 gpd estimated). Without grant funding, the connection fee would need to be over \$80,000 per customer

### ***What are we doing right?***

- ✓ Explored a solution that is being implemented in other coastal communities out of necessity or mandate from the EPA
- ✓ Engaged engineering expertise to estimate costs and feasibility of the regional solution

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<sup>1</sup> Eastern Shore News, March 19, 2011, Carol Vaughn-Staff Writer

## First Draft Copy – for Committee Review Only!

- ✓ Compared this solution with both County and Town Comprehensive Plans to determine whether this model fits with local land use planning and political reality
- ✓ Found that this solution is not feasible for our rural, low density communities

Looking to the future, a regional wastewater treatment plant will only make sense with significant support from federal or state grants, private investment fueled by new growth, or cost sharing with large federal agencies at Wallops Island. Until that time, a localized transition from low density septic drainfields to improved and decentralized wastewater treatment technology is most likely.

### ■ **Short Term Future Solution (Phase One Decentralized)**

The Town of Chincoteague should have its own independent public wastewater treatment utility on Chincoteague Island, starting with a phase one area as a first step. The phase one service area should focus on the Maddox Boulevard corridor from Main Street to the Refuge boundary in order to support the largest water users, the land area most likely to grow or re-develop, and the zoning districts that will benefit the Town's tourism based economy. The Town should not try to compete with the private utility service area already established along Main Street.

- Businesses, rental homes and civic uses are most likely to connect to a public utility on a voluntary basis. This was confirmed by a survey of business owners completed by members of the Committee in 2012
- Existing residential neighborhoods are least likely to connect to a public utility if their septic drainfield meets their needs

#### ***What should be considered?***

- ✓ Propose a system that can be expanded to meet future needs
- ✓ Match the financial model (rates) of Sunset Bay Utilities so that the cost of service is the same whether it is private or public
- ✓ Voluntary connections with minimum number of property owner agreements to proceed
- ✓ Location of wastewater treatment facility on existing public property
- ✓ Utilize an existing approved discharge permit and consolidate treatment facilities, or
- ✓ Obtain a permit for 'land application' to Fowling Gut in connection with a dredging plan

## Recommendations

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The Wastewater Advisory Committee recommends that Town Council adopt one or more of the following actions that will inform Town Staff efforts and create a working policy for the next steps toward creating a public wastewater utility on Chincoteague Island.

## First Draft Copy – for Committee Review Only!

- 1) **Town of Chincoteague will work with Virginia Department of Health to inventory, inspect, and improve private maintenance of the Island’s individual wastewater systems (cesspools, failing drainfields, etc.)**
- 2) **Town of Chincoteague will continue to encourage private wastewater treatment permit holders to provide service within the Main Street Corridor between Maddox Boulevard and Bunting Road.**

**Implement the Short Term Future Solution by:**

- 3) **Town of Chincoteague will encourage private market solutions that meet the immediate needs of individual businesses or property owners, will address problem areas as they arise, and will continue to monitor the regional, state, and federal programs and grant opportunities.**

or

- 4) **Town of Chincoteague will identify a potential Maddox Boulevard Corridor wastewater treatment service area and prepare the next phase of engineering studies, permit applications, and grant requests to determine its feasibility for operation as a decentralized publicly owned wastewater treatment facility similar to the Sunset Bay Utilities service area.**
- 5) **Town of Chincoteague will actively participate with Virginia State Agencies, Accomack County, and the Maryland Coastal Bays Program to revise the Comprehensive Conservation and Management Plan (CCMP) for monitoring and improving water quality in Chincoteague Bay, and will seek to continue working on a long range plan that reduces nutrient loads from septic drainfields to the surrounding waters of Chincoteague Island on a voluntary basis.**

## Eastern Shore of Virginia Wastewater Summit

### Disposal- Reuse

1. Subsurface – *Ground water Discharge*
2. Land Application – *Irrigation or Reuse*
3. Surface – *Streams, Bay or Ocean*



**GMB**  
ARCHITECTS / ENGINEERS

## Eastern Shore of Virginia Wastewater Summit

### Disposal- Reuse

1. Subsurface (mass drain-field, drip irrigation, low pressure dosing)

#### Advantages

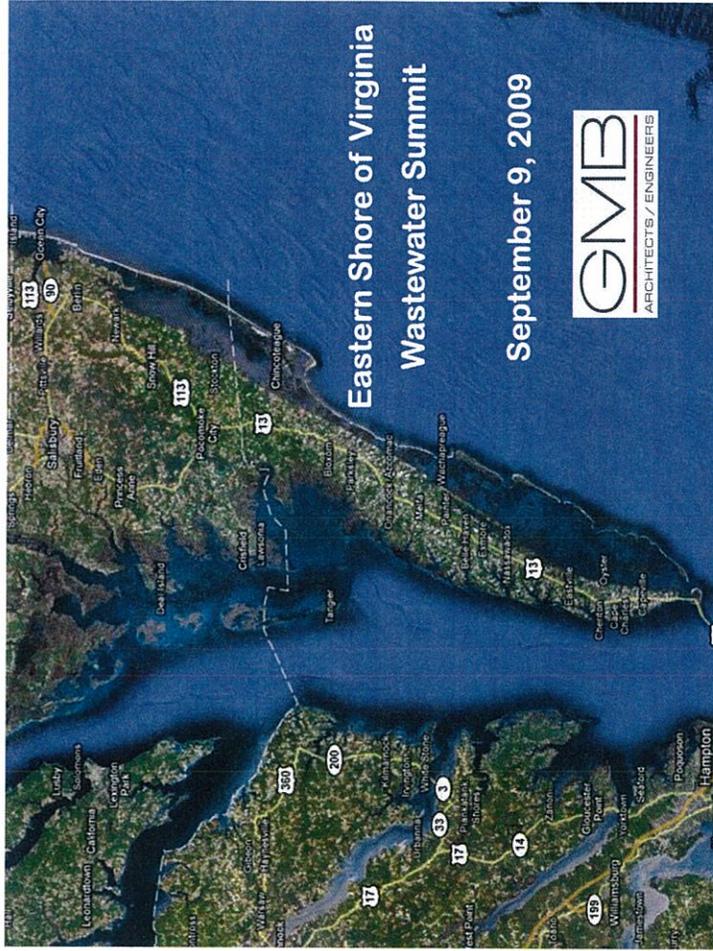
- Groundwater recharge
- Less stringent buffers, out of sight
- Continued treatment through soil prior to reaching receiving waters
- Minimal storage requirement



#### Disadvantages

- Land requirements (cost) for disposal
- Need good soils
- Significant operation and maintenance

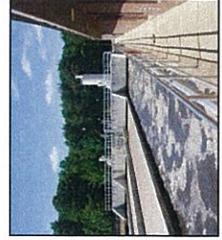
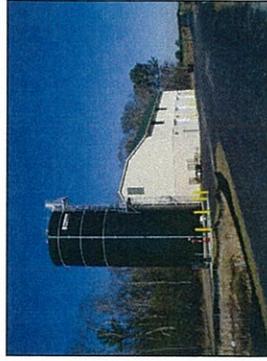
**GMB**  
ARCHITECTS / ENGINEERS



## Eastern Shore of Virginia Wastewater Summit

### Agenda

1. Disposal – Reuse: *Where to put it ?*
2. Treatment: *How clean is clean ?*
3. Planning: *Large or small systems ?*
4. Collection: *Does it leak in or out ?*
5. Costs: *Is it affordable?*



**GMB**  
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Disposal-Reuse

3. **Surface Discharge** (streams, bay or ocean outfall)

Advantages

- No land requirements for disposal
- Less maintenance
- Provides adequate mixing and dilution

Disadvantages

- Concentrated discharge
- Groundwater is "wasted" (not reclaimed)
- No aquifer recharge
- Difficulty in obtaining permit
- Sensitivity of shellfish beds
- Primarily economical at large flows

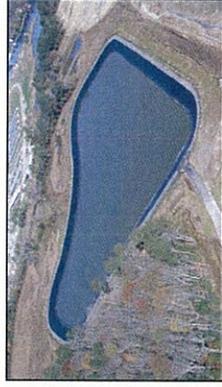


Disposal-Reuse

2. **Land Application**

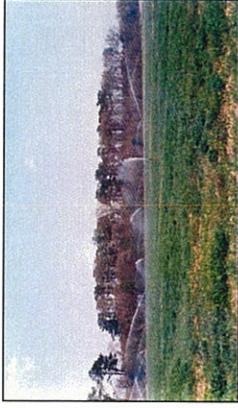
Advantages

- Groundwater recharge
- Water reclamation – recycled water
  - Level Classification
  - Continued treatment through soil/crop



Disadvantages

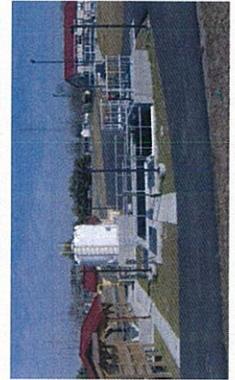
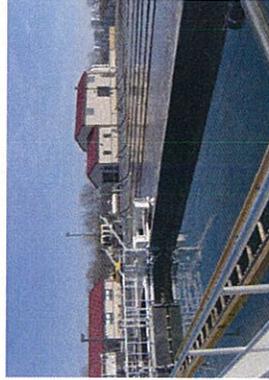
- Large land requirements for disposal
- Need good soils and effluent storage
- Significant operation and maintenance
- NIMBY & BANANA



Treatment

Treatment Evolution – Surface Water Discharges

- Primary/Physical Treatment
- Secondary Treatment
- Biological Nutrient Removal (BNR)
  - TN ≤ 8 mg/l
  - TP ≤ 1 – 2 mg/l
- Enhanced Nutrient Removal (ENR)/ State-of-the-Art (SOA)
  - TN ≤ 3 – 4 mg/L
  - TP ≤ 0.3 mg/l
- Nutrient trading may prove critical for new or expanding discharges



Disposal-Reuse

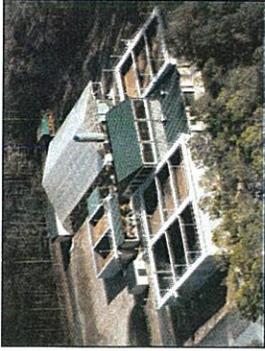
**Water Reclamation Reuses**

Reuse Category	Reuse	Minimum Standard Requirements
1. Urban – Unrestricted Access	All types of landscape irrigation in public access areas (i.e., golf courses, cemeteries, public parks, school yards and athletic fields) Toilet flushing – nonresidential Fire fighting or protection and fire suppression in nonresidential buildings Outdoor domestic or residential reuse (i.e., lawn watering and noncommercial car washing) Commercial car washes Commercial air conditioning systems	Level 1
2. Irrigation – Unrestricted Access <sup>a</sup>	Irrigation for any food crops not commercially processed, including crops eaten raw	Level 1
3. Irrigation – Restricted Access <sup>a, e</sup>	Irrigation for any food crops commercially processed Irrigation for nonfood crops and turf, including fodder, fiber and seed crops; pasture for foraging livestock; sod farms; ornamental nurseries; and silviculture	Level 2
4. Landscape Impoundments <sup>d</sup>	Potential for public access or contact No potential for public access or contact Soil compaction	Level 1 Level 2
5. Construction	Dust control Washing aggregate Making concrete Commercial laundries	Level 2 Level 1
6. Industrial	Livestock watering Stack scrubbing Boiler feed Once-through cooling Aquaculture Street washing Ship ballast Recirculating cooling towers <sup>h</sup>	Level 2

**Planning – Large Regional WWTF**

**Advantages**

- Ease of operation, one location
- Lower overhead costs
- Potential for greater efficiency
- Single operating body
- Easier reporting and permitting functions



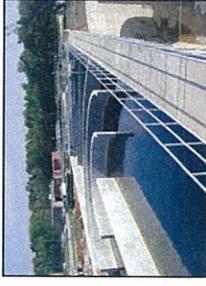
**Disadvantages**

- High infrastructure cost on collection system
- Effluent concentrated at a single location (TMDL issues)
- Sprawl (infill development may not be consistent with Comprehensive Plan)



**Treatment – Mechanical**

1. Activated Sludge Systems
2. Attached Growth Systems
3. Secondary Clarification
4. Membrane Bioreactors (MBR)



**Planning – Small Decentralized WWTF**

**Advantages**

- Lower infrastructure cost on collection systems per EDU
- Opportunity for “distributed wastewater management”
- Limits sprawl (infill development may not be consistent with Comprehensive Plan)
- Greater opportunity for subsurface discharge



**Disadvantages**

- Political, legal and administrative framework may not be in place to have a single responsible organization (utility commission, public service authority, etc.)
- Potential for multiple permittees
- Minimized economies of scale on operation and maintenance
- Harder to develop operator expertise



**Treatment – Natural Systems**

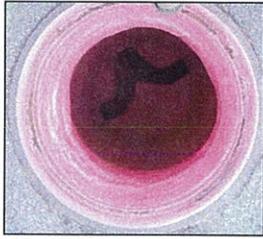
**Pond Type Systems**

- Facultative vs Partial-Mix
- Dependant on LTS for treatment
- Storage may be integral
- Odor issues
- Limited in operational flexibility and nutrient removal
- LTS buffer reductions w/add-on unit processes
- Old pond systems may prove to be valuable future asset



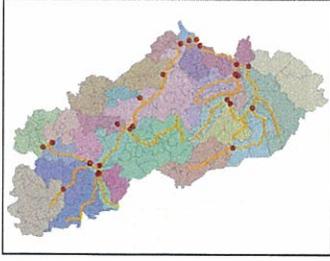
**Collection System**

5. Estimate infrastructure necessary for transmission to WWTF location
  - Preliminary pump station sizing
  - Preliminary pressure main sizing
6. Identify rehabilitation necessary for existing manhole and pipelines
7. Prepare overall cost estimates for:
  - Capital improvement planning and funding
  - Asset value determination
  - Sanitary sewer impact fees

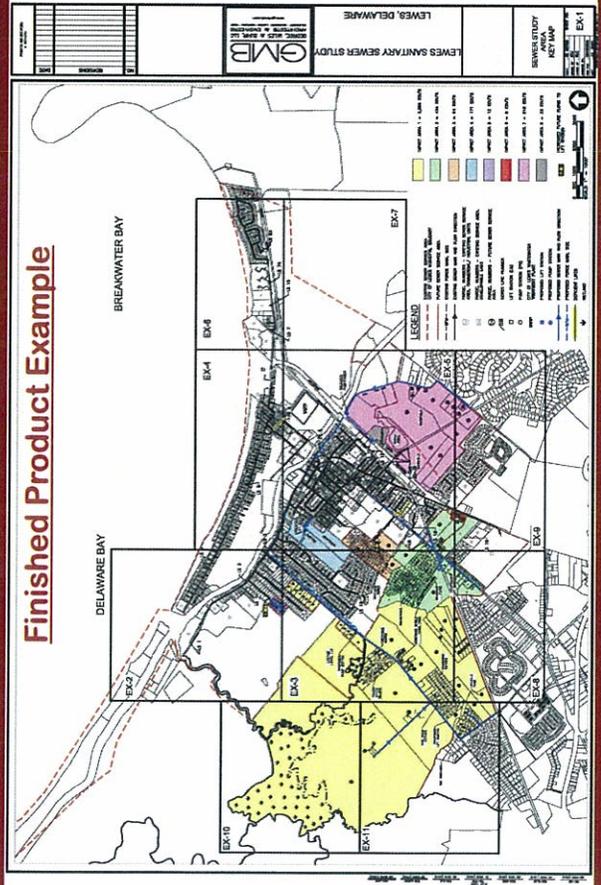


**Collection – Planning and Design**

1. Determine projected wastewater flows of existing development within current Town limits
2. Determine projected wastewater flows from future development and connection points:
  - Infill within current Town limits
  - Development in future growth area



**Finished Product Example**



**Collection System - Types**

3. Examine feasibility of collection system alternatives including:
  - Gravity sewer, pumping station
  - Low pressure systems
  - Vacuum sewer systems



4. Identify specific infrastructure needs to serve the existing Town and future growth area:
  - Sewer main diameters
  - House services (number & locations)
  - Manholes



**Questions & Discussion**

Thank you for this opportunity!

 <p><b>STEPHEN L. MARSH, P.E.</b> VICE PRESIDENT SR. PROJECT MANAGER 208 WEST MAIN STREET SALISBURY, MARYLAND 21801 PH: 410.742.3115 FAX: 410.548.5799 smarsh@gmbnet.com www.gmbnet.com</p>	 <p><b>CHRISTOPHER DERBYSHIRE, P.E.</b> ASSOCIATE 208 WEST MAIN STREET SALISBURY, MARYLAND 21801 PH: 410.742.3115 FAX: 410.548.5799 cderbysh@gmbnet.com www.gmbnet.com</p>	 <p><b>CHARLES M. O'DONNELL III, P.E.</b> VICE PRESIDENT PROJECT DIRECTOR 400 HIGH STREET SEAFORD, DE 19773 PH: 302.624.1421 FAX: 302.624.8350 codonell@gmbnet.com www.gmbnet.com</p>
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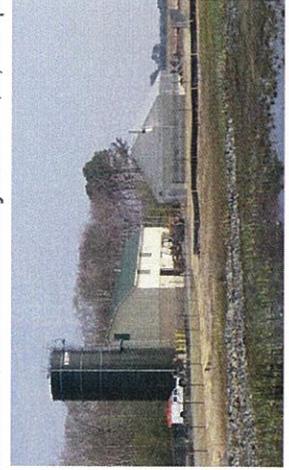
**Impact Fee Summary Example**

Lewis Sanitary Sewer Impact Fees

Zone	Total EDU's in Zone	Collection and Transmission Impact Fee per EDU	WRP Expansion Impact Fee per EDU	Total Impact Fee per EDU
Impact Zone 1 New Road	2,560	\$ 1,180	\$ 2,510	\$ 3,690
Impact Zone 1a Tradewing Estates	136	\$ 3,410	\$ 2,510	\$ 5,920
Impact Zone 2 Savannah Road	424	\$ 1,900	\$ 2,510	\$ 4,410
Impact Zone 3 Highland Acres	94	\$ 1,780	\$ 2,510	\$ 4,270
Impact Zone 4 Rollins/Highlands	171	\$ 2,590	\$ 2,510	\$ 5,100
Impact Zone 5 Hornhill Avenue	12	\$ 1,080	\$ 2,510	\$ 3,590
Impact Zone 6 Kings Highway	6	\$ 100	\$ 2,510	\$ 2,610
Impact Zone 7 Showfield	736	\$ 1,050	\$ 2,510	\$ 3,560
Impact Zone 7a Gills Neck Road	82	\$ 4,750	\$ 2,510	\$ 7,260
Impact Zone 8 Gibbs/Warrington	33	\$ 1,050	\$ 2,510	\$ 3,560
Existing Single Vacant Parcels in City Limits	327	\$ -	\$ 2,510	\$ 2,510

**Costs - Affordability**

1. BNR/ENR New construction: \$11-17 per gallon
2. ENR Upgrade: \$1-4 per gallon
3. Small system w/subsurface disposal: \$22-50 per gallon
4. Collection and transmission system: ~\$5,500 per EDU



Wastewater Advisory Committee  
21 February 2013  
Informational Meeting Notes

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Members Present:

Mr. Spiro Papadopoulos, Chair

Mr. Mike Tolbert

Mayor Jack Tarr

Guests: None

Staff: Robert Ritter, Town Manager  
Harvey Spurlock, Public Works Director  
William Neville, Planning Director

Members Absent:

Mr. Kelly Conklin

Mr. Scott Chesson

Mr. Tommy Clark

Public Present: Ray Rosenberger

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*Chairman Papadopoulos requested a copy of the VDH presentation from Jon Richardson and Cathy Plant that was given to the County Groundwater Committee. (attached)*

*Several members of the committee were absent and it was determined that there was not a quorum for an official meeting. Mayor Tarr suggested mailing the packet out to the members with a request for input, and asking if there was a better time or place to meet that would encourage participation.*

*A Cost Information Summary from Research Materials handout was reviewed. Staff was requested to fix the column headings and clarify unit costs. Costs for a 100,000 gpd decentralized wastewater treatment plant were considered for a possible phase one solution.*

*This should be considered further based on voluntary hookups and whether a phase one would replace or add to the capacity of existing treatment plants currently serving the waterfront hotels. Mr. Ritter added that the federal grant or loan programs will require service to LMI residential areas.*

*Additional discussion regarding methods of disposal centered on an application for overboard discharge to determine if that would be an alternative that could be approved if the Town was the applicant. This could be a recommendation to Town Council along with: area to be served, estimated cost/payment plan, and justification.*

*The next meeting of the Committee will be held on March 21, 2013 at 9am.*

## SEWAGE DISPOSAL SYSTEMS ON THE SHORE

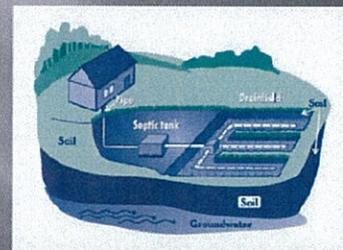
### Types of Sewage Systems

- ▣ Conventional
  - Septic tank and drain field
  - Require 36 inches of suitable in situ soil
- ▣ Alternative (AOSS)
  - Contain one or more methods of wastewater pre-treatment (BOD, nitrogen, TSS)
  - Require 6 inches suitable in situ soil
- ▣ HB1166
  - No suitable in situ soil required

### Permitting Process

- ▣ Local VDH staff conducts permit evaluations for conventional systems only
- ▣ Alternative system designs may be submitted by Alternative Onsite Sewage Evaluators (AOSEs) or Professional Engineers (PEs) and are reviewed by local VDH staff
- ▣ HB1166 permits are reviewed by local VDH staff as well as a technical services engineer at VDH Central office

Conventional



### Conventional System

ADVANTAGES

- ▣ Low maintenance
- ▣ Lower cost (~\$4,000)
- ▣ No adverse aesthetic value
- ▣ Functions hydraulically (no moving parts)

DISADVANTAGES

- ▣ Limited amount of suitable soils
- ▣ Lower level of effluent treatment obtained
- ▣ Requires relatively large land area

### Recent Legislation

HB 930 = 32.1-164.1:1

- ▣ Waiver from pressure dosing or treatment requirements beyond what was originally permitted/installed
- ▣ Not transferrable with property sale
- ▣ Only applies to residential properties serving four or less dwelling units

HB 1166 = 32.1-163.6

- ▣ Allows systems to be designed by engineers in accordance with standard engineering practices

### Voluntary Upgrade

- ❑ Allows an owner to voluntarily upgrade their septic system
- ❑ Same requirements as HB 930 except this does transfer with property sale
- ❑ Only applies to systems not failing (may not be used for building permits, system expansion, etc.)

### Alternative Systems

Common types-Peat Biofilter, Sand Filter and Aeration

Regulatory requirements(<1,000 GPD)-Licensed Operator visit and effluent sample submitted w/in 180 days of system operation; Licensed Operator visit every 12 months thereafter and grab sample required every 5 years

### Alternative Systems

VERTICAL SEPARATION	MINIMUM EFFLUENT QUALITY
1.) 18" or more	1.) Septic Tank Effluent
2.) 12-18"	2.) TL-2 (BOD/TSS 30 or less)
3.) 0 to 12"	3.) TL-3 (BOD/TSS 10 or less)

### Alternative System Maintenance

- ❑ Manufacturer-specific
- ❑ May be required as frequently as every 6 months
- ❑ Essential to system's functionality

### Alternative Systems

ADVANTAGES	DISADVANTAGES
❑ Smaller footprint	❑ Costly installation (~\$12,000-15,000)
❑ Increased level of effluent treatment	❑ Maintenance and reporting required in perpetuity
❑ Allows development of previously non-developable parcels	❑ More components with potential to fail

### Moving Forward

- ❑ Technologies always evolving
- ❑ Develop and improve tracking mechanisms for AOSSs
- ❑ Education of system owners
- ❑ Increased cooperation with other governmental agencies
- ❑ A need for penalties for failure to maintain and report on AOSSs?

## Contact Information

- Jon Richardson
  - Phone 757-302-4271
  - Email: [Jon.Richardson@vdh.virginia.gov](mailto:Jon.Richardson@vdh.virginia.gov)
  
- Cathy Plant
  - Phone 757-302-4272
  - Email: [Cathy.Plant@vdh.virginia.gov](mailto:Cathy.Plant@vdh.virginia.gov)

## Questions?