

# Southern Kent Island Sanitary Project

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## **Abstract**

The Queen Anne's County Sanitary Commission has established the South Kent Island Wastewater Subdistrict of the Queen Anne's County Sanitary District. On November 1, 2016, construction contracts were authorized to proceed with the first project phase to extend public sewer which will provide sewer service to nine (9) exclusive communities on South Kent Island (SKI). The areas to receive service have long-standing, documented failing on-site septic disposal systems (OSDS) creating a large public health concern. This project phase represents 60-percent of the overall four (4) phase plan.

The collective SKI communities include 1,518 existing single family residential homes, 8 non-residential uses and a maximum of 632 vacant infill lots. The project will be implemented in four phases over a 10-year period. Phase 1 of the project is estimated to be complete within the next 5-years. The Community-by-Community phasing schedule is:

Phase 1 - Kent Island Estates & Romancoke on the Bay - 2015-2022

Phase 2 - Tower Gardens - 2019-2023

Phase 3 - Queen Anne's Colony & Kentmorr - 2020-2024

Phase 4 - Chesapeake Estates, Sunny Isle of Kent, Normans & Matapeake Estates - 2021-2025

The County, MDP and MDE worked together to address the pollution caused by failing septic systems, technical issues relating on-site sewage disposal, Smart Growth requirements, anti-growth concerns, alternatives in the design of the proposed sewer system, affordability concerns and State funding requirements.

The proposed SKI service area is not in a Priority Funding Area (PFA) and there was a potential of 1,600 infill vacant lots. Unless there are failing septic systems, areas that are not in the PFA usually are not eligible for State funding. But State law also allows property owners to connect to an adjacent sewer line. In addition, the County needed a number of connections from the vacant lots so that the project would be affordable.

The County enacted an ordinance to merge lots in order to reduce the amount of infill development in the SKI service area to a maximum of 632 lots, a reduction of almost 1,000 lots. The project will provide public sewer to nine communities on SKI bordering the Chesapeake Bay and the Eastern Bay. This area is of significant public health and environmental concern due to the large number of septic systems penetrating groundwater. Currently, almost all of the septic systems in the SKI service area discharge directly into groundwater and 70 percent are in the Critical Area. The SKI region has a high groundwater table and soils with poor permeability. These two characteristics are unsuitable for on-site sewage disposal systems (OSDS). The high groundwater results in insufficient treatment of pathogens found in sewage. The poor surficial soil permeability limits the utilization of alternative systems that do not penetrate groundwater. These site characteristics also facilitate the delivery of nitrogen to the Chesapeake Bay.

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The County's initiative to provide public sewer will overcome the site limitations of the region by segregating the sewage effluent from the high groundwater and will provide superior treatment of the effluent at the existing Kent Narrows / Stevensville / Grasonville (KNSG) WWTP by eliminating pathogens as well as reducing the nitrogen loads to ENR levels.

MDE estimates that 30,400 pounds per year of nitrogen are currently being discharged into the Bay from the SKI service area. After connection to the KN/S/G wastewater treatment, MDE estimates that 13,100 pounds per year of nitrogen will be discharged from the SKI service area. This is a reduction of 17,300 pounds per year of nitrogen, which far exceeds the nitrogen reduction from alternative OSDS systems. This reduction in N loads will also help the County reach about 33 percent of its septic system goal for the Chesapeake Bay Watershed Implementation Plan.

County Staff researched public sewer collection systems nationwide in order to select an appropriate technology for this unique island peninsula service area. Estimated project costs were reduced significantly through the use of the septic tank effluent pumping (STEP) system that limits transmission of effluent to greywater. This technology eliminated the need for intermediate pumping stations and minimized sources for inflow and infiltration.

The SKI Sanitary Project strikes a balance between solving a significant public health problem and allowing a limited amount of infill development. This project was presented at the MDE Groundwater Symposium in September 2015 as a state-wide model for addressing the conflicts in technical, legal, political and financial issues that arise when projects are proposed to remedy failing septic systems.

## **Background & Major Project Milestones**

1975 – The first Southern Kent Island communities (Kent Island Estates & Romancoke) were designated as areas with “public health concerns” in the County's Comprehensive Water & Sewerage Plan for future public sewer service.

1989 - Recognizing the public health dangers, the State Environmental Health Officer, John Nickerson, revoked 216 vacant lot perc test approvals on SKI.

1990 – A County Health Department Sanitary Survey documented that “70% to 90% of the septic systems on SKI were directly discharging into groundwater.”

1995 – A County Health Department Sanitary Survey “confirmed that 80% of the septic systems on SKI directly discharge into groundwater.” These failed septic system problems and public health concerns were re-affirmed again in 1998 and in 2004.

2004 - County Commissioner's adopted Resolution #04-68 reserving 500,000 gallons of sewer treatment capacity for communities with failing septic systems at the KN/S/G Enhanced Nutrient Removal (ENR) Plant which was upgraded and expanded in 2005. This was a vital step towards solving this longstanding public health problem.

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December 2006 – The County Commissioners created a 15-member Department of Public Works’ Citizen Advisory Board to study the SKI problem.

2007 – County Health Officer, Dr. C. Devadason, documents there is “clear evidence of continuing septic system failures and that a permanent solution is warranted.”

2007 – The County retained nationally recognized waste disposal expert, Dr. Robert Rubin, to determine the best solution to the SKI problem. Dr. Rubin was a known advocate for decentralized waste water disposal solutions. Nonetheless, his conclusion was, “extension of public sewer is the most cost effective solution and best for nutrient reduction.”

2008 – The County retained engineering/planning firm JMT to evaluate a series of options for a public sewer system for SKI.

August 2011 – The Department of Public Works’ Citizen Advisory Board concluded with their commission after nearly 5-years of study that public sewer collection and treatment was warranted for SKI provided the County:

- 1) imposed infill limitations to reduce and manage growth,
- 2) established an Economic Benefit Premium (EBP) for infill lot development,
- and, 3) obtained State Grants to ensure project affordability to existing homeowners.

September 2011 - MDE Secretary, Dr. Robert Summers wrote, “The Queen Anne’s County Health Department has documented a very serious public health and water quality problem from septic systems that do not function properly, primarily due to poor soils and a high groundwater table. The Department concurs with this assessment. The small lot size of most homes makes on-site repair or replacement very challenging and infeasible. Given that there are over 1,500 improved properties, there is a current, existing issue that cannot be ignored by the public health and environmental agencies.”

2012 – The County began regular meetings with MDE & MDP to develop a plan that would balance infill development with project financing and to identify grant opportunities.

2013 –The County retained experienced expert counsel, Kurt Fischer from Venable, LLC to assure legally defensible actions with imposing permanent infill growth limitations.

2013 – The County retained experienced expert appraiser, Fitz Turner from Tidewater Realty to assure Economic Benefit Premium viability for vacant lot infill development.

2013 – The County researched and developed a concept design using STEP system technology with the firm, H50 Solutions. This technology was proven to be a more efficient and cost effective design over traditional vacuum sewer technology for this region (H50 Solutions are Bill Cagel, Grant Denn, Darren Paschke, Swapan Nag, Monideep Nag).

2013 – The County launches a dedicated SKI webpage to provided direct and continuous public outreach to SKI property owners and County citizens. This website remains active with historical and current project information.

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2013 – The County commissioned an independent and professional survey of affected residents which documented community support ( Dr. Dan Nataf, Ph.D., Anne Arundel Community College Center for the Study of Local Issues).

2013 – The County Health Department adopts a “Sewage Holding Tank Policy” for failed septic system areas. Currently there are eight (8) homes and two (2) businesses on holding tanks and over 500 additional homes have been identified for the holding tank requirement in the near future.

December 2013 – The County announces a proposal to extend public sewer to the SKI communities with a target charge to homeowners of, “less than \$100 per month for a 20-year assessment term”. The model used STEP system technology within an exclusive community service area using a lot merger ordinance and an EBP charge for eligible vacant lots. The plan was also dependent on receipt of a significant state Bay Restoration Fund grant requiring state legislative action.

January 2014 – MDE concludes that removal of existing septic systems through connection to County ENR plant will provide an annual reduction of 17,300 lbs of nitrogen (including nitrogen discharges from new vacant lot infill). This is equivalent to 33% of the County’s Septic System WIP Goal.

January 2014 – MDE sponsored HB 11 at the General Assembly which facilitated the County’s request to use the State Bay Restoration Fund (BRF) for an \$11.8 million grant for the public sewer extension to SKI (outside of a PFA). Delegate Steve Arentz and County Lobbyist, David Bliden, were instrumental in the effort to make HB 11 become new state law.

May 2014 – The County held a series of three Public Hearings at the Kent Island High School required for project initiation including:

- 1) the Overall Public Sewer Extension Project,
- 2) the Lot Merger Ordinance #13-24,
- and, 3) the Special Benefit Resolution #14-07 to levy project costs which included an EBP on vacant lots.

All three initiatives were adopted by the County Commissioners.

June 2014 – County Health Officer, Dr. Joseph Ciotola, documents that the “Department of Health does not consider it prudent to delay installing a public collection system (for SKI) to convey sewage to the County’s ENR Treatment Plant”.

July 2014 - The State Smart Growth Coordinating Committee approved the SKI Sewer Extension project making the County eligible for a State BRF grant and low interest water quality loans to fund project construction with seven (7) conditions.

1. Project must be limited to 1,518 existing homes and no more than 632 vacant infill lots
2. County must report annually to the State the number and location of new sewer connections on SKI

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3. Sewerage capacity for the SKI service area shall not exceed 500,000 gpd
4. Sewer service to non-residential uses cannot be increased above current usage
5. Denial of sewer service for any future connection outside of the established SKI service area
6. County shall conform to the 2013 model MD Floodplain Ordinance – minimum 2 feet of freeboard for new infill development
7. County shall assess climate change vulnerability and outline strategies to enhance resilience

November 2014 - The BRF Grant Agreement was accepted by the County Commissioners for the SKI Sewer project. The \$11.8 million State BRF grant will be apportioned to each existing resident on SKI to cover their individual connection fee for wastewater treatment.

February 2015 - County Commissioners approved design contracts to proceed with detailed engineering plans and preparation of construction bidding documents for Phase 1 of the project.

Earth Data	\$544,590	STEP System Contract
Davis Bowen Friedel	\$238,860	Transmission Main Contract
Hazen Sawyer	\$187,800	Community Mains Contract

March 2015 - County and State Professional Staff in cooperation with the Homeowner Associations of Kent Island Estates and Romancoke hosted a series of five (5) open-house workshops at the local Community Clubhouses to provide one-on-one information to residents about the proposed public sewer extension project.

April 2015 – County Staff launched an extensive door-to-door campaign to meet with residents and collect right-of-entry forms needed for the individual STEP system design plans needed for each home in phase 1 of the SKI project.

November 2015 – The County established a Community office next to the United Communities Firehouse to continue with outreach efforts, assisting residents, and collection of resident design agreements (right-of-entry and easements).

Office Hours: Monday, Wednesday & Friday - 11am – 4pm  
Tuesday and Thursday - 11am – 7pm

April 2016 – Construction Bidding Documents are advertised for Phase 1 construction bids.

April 2016 – A separate design contract is authorized for the installation of fiber conduits along Maryland Route 8 and within the KIE-R communities with Skyline Incorporated. This work will be considered as an addition to the sewer line contract which could ultimately provide a high speed fiber link to SKI.

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May 5, 2016 – State Experts in Environmental Health\* make presentation to County Commissioners. “Environmental Prevention Concerns with Exposure to Untreated Sewage”.

\*PROFESSOR KELLOGG J. SCHWAB, Ph.D., JOHNS HOPKINS UNIVERSITY and DR. CLIFF MITCHELL, DIRECTOR, ENVIRONMENTAL HEALTH BUREAU

June 20 – 30, 2016 – County Staff and STEP system site plan design firm, Earth Data, visited residents in the community that have not yet responded to earlier requests for a right-of-entry (ROE’s) to collect field information needed to prepare their individual STEP system site plan.

June 27 – July 1, 2016 – SKI Sanitary project bids were received for the three construction contracts necessary to provide sewer service to Phase 1 of the Southern Kent Island Sanitary Project (Kent Island Estates & Romancoke on the Bay subdivisions). The low construction bids came in higher than anticipated which necessitated the County and MDE to reevaluate the financial plan to see if project affordability goals could still be achieved.

August 2016 - A comprehensive cash flow model with enhanced financing options was developed by County and MDE officials. This model demonstrated that: 1) the targeted assessment rates could be achieved for homeowners at \$100 per month for 20-years and 2) a positive cash flow balance for the Sanitary District could be maintained for the project. It also provided flexibility and additional State financial assistance to ensure that the Sanitary District Enterprise Fund could complete both the overall four phase SKI project and pay off the KN/S/G/ Treatment Plant debt without additional tax dollars from the County’s General Fund. These financing parameters include:

MDE Increased BRF Grant to \$15.26 million (\$10,000 per home), a net increase of \$3.43m

MDE Lowered (SRL) Loan Rate – 0.60% - saves \$2.2m over loan term

MDE provided State Loan Forgiveness granted - saving \$1.2 million

MDE offered a 30-year State loan debt service term (with 20-year term for home owners)

MDE offered a State Loan “balloon payment” option thru construction years

County to dedicate new Allocation Sales on vacant lots in SKI (582 lots adds \$4.5 m)

County will use existing Sanitary District Fund Balance = \$3.3m

August 23, 2016 - The County Commissioners award the SKI Phase 1 construction contracts subject to the concurrence of the Maryland Department of the Environment, as follows:

Contract 16-01 – Septic Tank Effluent Pump Installation, to Cole Ventures of Annapolis, MD in the amount of \$15,600,150

Contract 16-02 – Community Mains Installation, to Schummer, Inc. of Mayo, MD in the amount of \$6,191,750

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Contract 16-03 – Transmission Main Installation, to Schummer, Inc. of Mayo, MD in the amount of \$7,025,316

September 28, 2016 - Maryland Department of the Environment officially concurs with the County and approves the SKI Phase 1 Construction Bids.

November 2, 2016 – State Board of Public Works approves a \$33-million SRL loan for SKI Phase 1 construction and construction contracts were authorized by the Director of Public Works.

## **Statistics (as of 11/27/16)**

Homeowner ROE participation is 85-percent (655 out of 775)

Total ROE's denied - 44

Step Site Plans completed and mailed to homeowners – 561

Easements Confirmed - 205

Total Lot merger documents filed – 120

## **Financial Parameters**

Total Estimated Cost of Infrastructure – \$50 million

Total number of existing Homes and Business in the service area – 1,526

Total number of existing non-residential uses in the service area – 8

Estimated Cost of Infrastructure Phase 1 – \$32 million

Number of existing Homes and Business in Phase 1 – 775

Estimated/Maximum number of vacant lots in Phase 1 – 400/450

Maximum Bay Restoration Fund Grant Value for the Project – \$15,260,000

Total estimated number of new infill Homes - 582

Maximum number of new infill Homes permitted – 632

Estimated Economic Benefit Premium to be assessed to vacant infill Homes – \$25,600