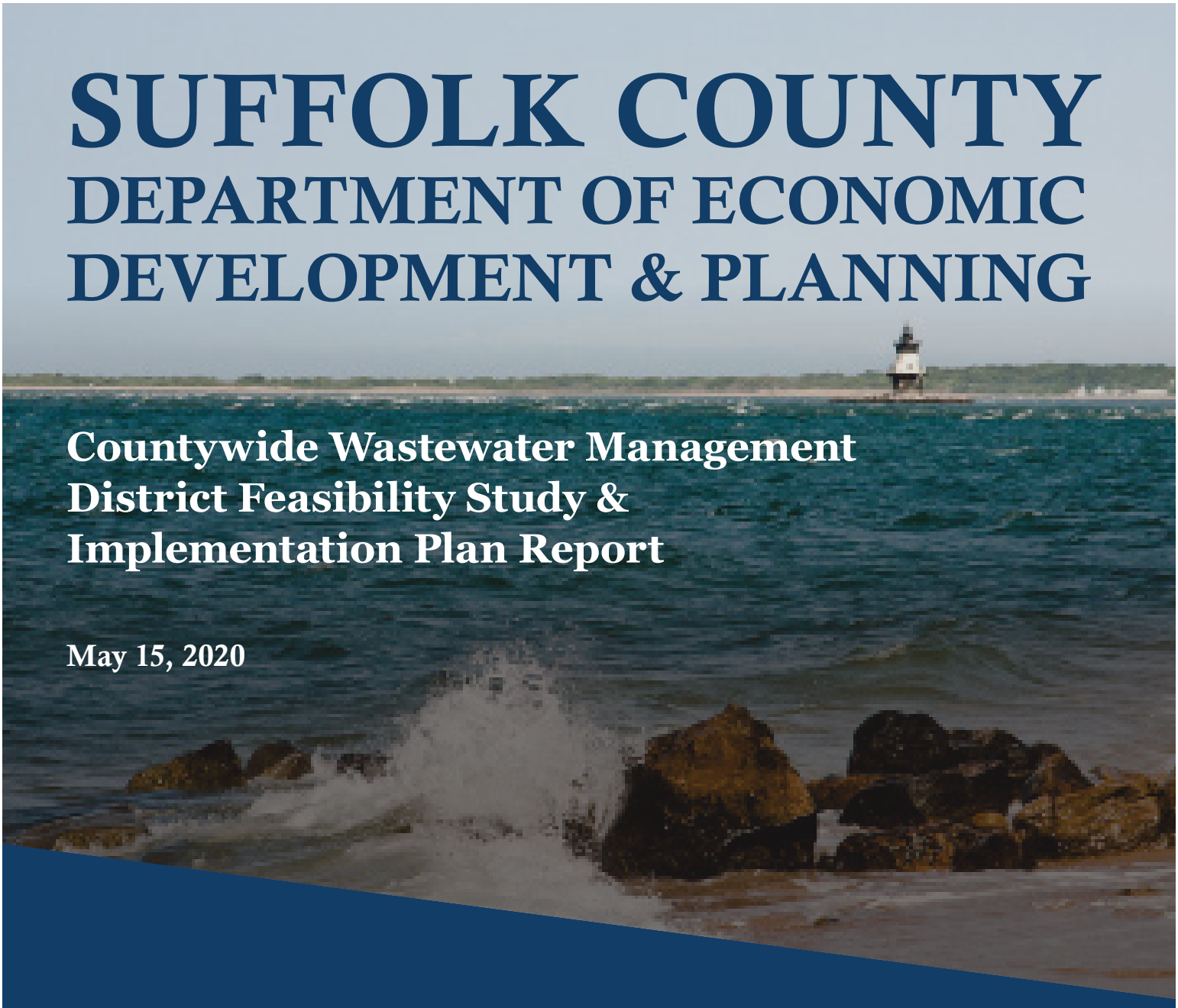
SUFFOLK COUNTY
DEPARTMENT OF ECONOMIC DEVELOPMENT & PLANNING



Countywide Wastewater Management District Feasibility Study & Implementation Plan Report

May 15, 2020

"We are a county that will no longer allow our water quality crisis to go unaddressed, but will come together to Reclaim Our Water."
Steve Bellone, *Suffolk County Executive*

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List of Abbreviations

ASRF	Assessment Stabilization Reserve Fund
AV	Ad Valorem
BAT	Best Available Technology
BRF	Bay Restoration Fund
CEO	County Executive Office
CPF	Community Preservation Fund

CSSLP	Community Septic System Loan Program
DEDP	Department of Economic Development and Planning
DHS	Department of Health Services
DOIT	Department of Information Technology
DPW	Department of Public Works
EDU	Equivalent Dwelling Unit
EHIMS	Environmental Health Information Management System
EPA	Environmental Protection Agency
FGEIS	Final Generic Environmental Impact Statement
FTE	Full-Time Equivalent
GOSR	Governor's Office of Storm Recovery
GPD	Gallons per Day
HBI	Household Burden Indicator
I/A	Innovative/Alternative
I/A OWTS	Innovative/Alternative Onsite Wastewater Treatment Systems
LIHEAP	Low-Income Home Energy Assistance Program
LINAP	Long-Island Nitrogen Action Plan
LIRPC	Long-Island Regional Planning Committee
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
MHI	Median Household Income
MSHA	Maine State Housing Authority
NYSDEC	New York State Department of Environmental Conservation
O&M	Operations and Maintenance
OM&R	Operations, Maintenance, and Replacement
OSDS	On-Site Sewage Disposal System
POTW	Publicly Owned Treatment Works
PSD	Pressurized Shallow Drainfield
RME	Responsible Management Entity
RPTS	Real Property Tax Service
SBR	Sequencing Batch Reactor
SCCRI	Suffolk County Coastal Resiliency Initiative
SCWA	Suffolk County Water Authority
SCCWMD	Suffolk County Wastewater Management District
SEQRA	State Environmental Quality Review Act
SFE	Single-Family Equivalent
SIP	Septic Improvement Program
SPDES	State Pollution Discharge Elimination System
SRF	State Revolving Loan Fund
SSRP	Septic System Replacement Program

STILF	Sewer Tie-In Loan Fund
STP	Sewage Treatment Plant
SWP	Subwatersheds Wastewater Plan
TIF	Tax Increment Financing
TN	Total Nitrogen
TNC	The Nature Conservancy
CWMD	County-Wide Wastewater Management District
WWTP	Wastewater Treatment Plant

Executive Summary

For the past five years, government agencies on all levels have been engaged in a collaborative, science-based effort to address longstanding concerns related to the lack of active wastewater treatment throughout most of Suffolk County (County). As an outgrowth of the Long Island Nitrogen Action Plan (LINAP) initiative being managed jointly by the New York State Department of Environmental Conservation (NYSDEC) and the Long Island Regional Planning Council (LIRPC), the County Department of Health Services (DHS) recently completed a long-term plan to address the need for enhanced wastewater infrastructure throughout the County. In recognition of the importance of clean water to the region's economic future, the County Subwatersheds Wastewater Plan (SWP) has received broad support from government agencies, the business and environmental communities, organized labor, and the building trades.

The LINAP Management Team has identified the creation of a countywide wastewater district, which had previously been recommended in the County's Comprehensive Water Resources Management Plan (2015) and in a report issued by IBM corporation as part of its Smarter Cities Challenges initiative (2014), as an "early action" item under LINAP. The establishment of a **County-Wide Wastewater Management District (CWMD)** is necessary to provide the administrative and legal structure necessary to implement the long-term wastewater plan. The CWMD, supported by a dedicated and recurring revenue source, will:

- Provide an integrated and efficient approach to managing wastewater services across the County;
- Allow the County to enhance and expand its incentive program to property owners to upgrade their wastewater treatment systems without adverse personal income tax consequences;
- Manage, monitor and enforce nitrogen reduction programs throughout the County;
- Complete additional sewer extension projects;
- Provide an opportunity to consolidate and streamline the County's existing sewer district system and normalize the inequitable rate structure that has long existed.

This Study was funded by the Long Island Regional Planning Council as part of LINAP, to provide a blueprint and implementation plan for the establishment of the proposed District.

Rationale

Nearly three quarters of the residential, multifamily and commercial properties in the County are not connected to sewers and rely instead on cesspools and septic systems. Nitrogen discharge from these systems has been an acknowledged public health concern for more than 50 years. Excess nitrogen is now a recognized threat globally and the County has consulted early and often with leaders from other municipalities to learn about their efforts to reduce nitrogen. In October 2019, the UN Environment Programme, issued the "Colombo Declaration" which proposes to halve nitrogen waste by 2030.

A comprehensive County-wide sewer plan developed in the 1970s was never fully implemented, for a variety of reasons. The County nonetheless continued to experience a boom of new residential and

commercial development, dramatically increasing the impact of nitrogen discharge as the majority of properties were developed with on-site cesspools and septic systems. Today there are approximately 380,000 individual systems, and water quality data shows a steady increase in the amount of nitrates in groundwater over the past few decades. Groundwater laden with nitrogen is a primary source of excess nutrients in bays, harbors, lakes and ponds. The three major estuary systems in the County, along with dozens of smaller bays, creeks, and ponds, are all included on the New York State list of impaired water bodies.

Water quality in the County is at a critical stage. For the first time in history, state and local governments, the business community, major environmental groups, organized labor and the building trades, are unified in efforts to see a long term infrastructure plan implemented. Reliance on sound science for decision making is made possible through the involvement of the region's premier research institution, Stony Brook University's School of Marine and Atmospheric Sciences (SOMAS) and its New York State Center for Clean Water Technology.

It is widely recognized that for a County that relies on its water resources to support a multi-billion-dollar tourism economy, a future with a continuation of closed beaches, toxic algae blooms and frequent fish kills is not sustainable. The recreational and commercial value of the region's surface waters is the foundation on which the region's economy was established. For that reason, restoring water quality is necessary to ensure the County's economic future. The SWP is the science-based blueprint developed specifically to achieve that objective.

Connecting to or installing sewers is not a practical or cost-effective option for the entire county. For that reason, the County and stakeholder agencies have focused on a hybrid approach that relies on sewering, where feasible, as well as the replacement of cesspools and septic systems with Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS). The SWP acknowledges that sewers are a cost-effective solution in certain areas of the County and presents preliminary sewer extension scenarios for the purposes of estimating long-term program financial means. The SWP acknowledges that all hypothetical sewer projects require project-specific feasibility studies and environmental State Environmental Quality Review Act (SEQRA) reviews. In areas of the County for which installing public sewers is not a practical way to provide wastewater treatment, the SWP recommends a phased approach to the installation of IA/OWTS, starting with priority areas identified based on sound science.

Governance and Organization

To date, nearly 1,000 I/A OWTS have been installed throughout the County, 350 with the support of the County Septic Improvement Program (SIP). The SIP incentivizes property owners to upgrade their conventional, non-performing septic/cesspools with grants up to $20,000 per eligible parcel (including a base grant of $10,000, with additional $5,000 incentives for low-to-moderate-income property owners, and for the use of pressurized shallow drainfields). The County also assists property owners in securing New York State Septic System Replacement Program (SSRP) grant funds of up to $10,000 for an I/A OWTS.

The SWP recommends that the County continue to provide funding support to help fund the installation of I/A OWTS on a significantly larger scale than the current program to reverse the impacts of nitrogen pollution. This enhanced grant program is projected to provide:

- 100% funding for existing properties that volunteer to upgrade failed septic/cesspool systems to I/A OWTS in non-mandated upgrade areas;
- 100% funding for upgrades to properties with failed systems in mandatory upgrade areas;
- 50% grant funding for properties requiring upgrades as part of additions on pre-developed properties.

To efficiently manage an expanded I/A OWTS grant program, maintain enforcement and nitrogen monitoring, mitigate household income tax implications of receiving a grant from the County, and implement other elements of the nitrogen reduction program, the County will require an efficient organizational structure: a County-Wide Wastewater Management District.

Based on New York State County Law and the present organizational structure of the County, as well as analysis of similar operations across the country, it is recommended that the County proceed with an incremental approach to the creation of a CWMD organizational structure.

Phase I: The County creates a CWMD to collect and administer revenue for I/A OWTS grants and management activities. In this phase, the DHS will be the Responsible Management Entity (RME), with support from other County departments, specifically the Department of Economic Development & Planning (DEDP) and the Department of Public Works (DPW).

Phase II: The CWMD effectively assumes control of wastewater programming countywide. County sewer districts are operationally integrated, and sewer rates are equalized gradually. Operations and maintenance (O&M) of higher numbers of I/A OWTS upgrades are contracted to private sector operators under continued oversight of a DHS-based RME. The district is then positioned to expand when called for, and the obligation for both sewer connection and I/A OWTS can be assigned as a benefit assessment to properties. In later stages of Phase II, RME responsibilities and associated staffing may move from DHS and be reorganized as part of the CWMD to help achieve greater efficiencies.

Phase III: An optional third phase might facilitate consolidation of management of wastewater and water functions currently performed separately by the County and the Suffolk County Water Authority (SCWA).

An important benefit of creating a CWMD early in the SWP implementation process is to provide the legal authority and administrative structure required to oversee the installation and enforce maintenance of I/A OWTS, similar to the authority the County already has for the construction and maintenance of sewer infrastructure. In addition, establishment of a CWMD would allow the County the flexibility to convert its current I/A OWTS grant program to a program in which the County pays installers directly for I/A OWTS installations and amortizes these costs to property owners through a benefit assessment.

A benefit assessment-type program, in addition to proffering tax advantages, would assert operational oversight of I/A OWTS maintenance. In addition, it would enable amortization of the property owner's share of the installation cost, thereby lowering the property owner's upfront financial burden.

Presently there are approximately 17 full-time equivalent (FTE) staff positions in DHS to support the I/A OWTS program. Under an expanded I/A OWTS program, the volume of annual applications may reach 7,000 based on the optimistic projections of the SWP. More conservative projections based on rates of absorption realized for a similar program in Maryland, as well as other environmental incentive programs, indicate that the volume of applications may be more in the range of 1,000 to 4,000 applications per year.

Based on a review of the proposed activities and functions of a CWMD – which include I/A OWTS grant program management, septic system upgrade construction oversight, enforcement, monitoring and the planning, design, and implementation of sewer extension projects, it is estimated that the County will need to employ approximately 115 FTE staff once the CWMD is operating at the full volume estimated in the SWP. With more conservative estimates of annual I/A OWTS applications, staffing levels of approximately 80 FTEs may be sufficient.

CWMD Revenue Requirements

Revenue requirements of the CWMD are broken down into program administrative expenses (which include salaries, benefits, materials and supplies) and capital expenditures (which include cash funds for I/A OWTS grants and debt service to finance sewer extensions). It is projected that from 2024-2043, the annual cost of the County's I/A OWTS grant program could range from $59.4 million to $66.1 million, with annual I/A OWTS installations ranging from 4,100 to 7,300 during that period. More conservative estimates are in the $15.0 million to $60.0 million range with annual I/A OWTS installations ranging from 1,000 to 4,000. As part of the County's SWP, its nitrogen reduction program includes sewer infrastructure improvements in certain areas of the County, to connect between approximately 3,316 to 8,737 properties to centralized sewer systems between 2024 and 2043 at a cost ranging from $257 million to $567 million.

The annual revenue requirements from 2024-2043 to fund the County's planned I/A OWTS grant program, debt service for sewer extension projects, and provide nitrogen reduction monitoring, enforcement activities, and management of the CWMD could range from an estimated average of $51.1 million per year (under a slower pace scenario assuming the maximum rate of I/A OWTS installations is 2,500 per year), $67.3 million per year (under a medium pace scenario assuming the maximum rate of I/A OWTS installations is 4,000 per year) to $125.5 million per year (under faster pace scenario assuming the maximum rate of I/A OWTS installations is 7,000 per year and sewer extension projects are funded at a more robust level). These revenue requirement estimates exclude any New York State or other external grant funding that may be secured to support the program. Based on the SWP, the higher funding level would be required to meet the County's 50-year target timeframe for completion of identified sewer projects.

CWMD Charge Structure

Several government programs in the Eastern U.S. have been established to help fund the upgrading of conventional, non-performing septic/cesspools to I/A OWTS and to reduce the release of excessive nitrogen to the environment. These include the State of Maryland's Bay Restoration Fund (BRF), and the Commonwealth of Massachusetts Community Septic Management Program, as well as the Onondaga County's Septic System Replacement Funding Program, Otsego County Onsite Wastewater

Management Program, and the Towns of Virgil and Cortlandville's Aquifer Protection Districts in New York State. However, no dedicated recurring revenue sources have been created to help fund the programs in New York State.

Several alternative funding structures were identified and evaluated as potential recurring revenue sources for the CWMD and the County's nitrogen reduction programs. The evaluation included a review of the County's existing funding sources, examination of programs implemented in other municipalities, and discussions with the various stakeholders, including the Long Island Regional Planning Council, the Long Island Builders Institute, Long Island Board of Realtors, The Nature Conservancy (TNC), Citizens Campaign for the Environment (CCE) and the SCWA. A full description of the funding alternatives which were considered is referenced in Section 5.3.

Based on an evaluation of the advantages and disadvantages of the alternatives, it is recommended that the County proceed with the implementation of either a water consumption-based charge or a fixed charge by single-family equivalent (SFE) unit. A water consumption charge would be established at a uniform rate per 1,000 gallons of billed water consumption. All properties, sewered and unsewered, would pay this charge including those served by SCWA and other water providers. Properties served by wells would pay a fixed charge based on typical water usage for that property type. A fixed charge would establish and assess an annual flat fee per property to be collected on the property tax bill or billed separately. As an option, the fixed charge could vary based on parcel size, building size, water meter size, SFE water usage or other property attributes. Either alternative would generate the recurring revenue required to fund I/A OWTS construction incentives, planned sewer extensions, and other nutrient reduction programs throughout the County.

A water consumption-based charge has the advantages of equitability, simplicity, ease of understanding, and would not likely be covered under the County's tax cap limitation. A fixed charge determined by SFE has the advantage of equitability, revenue stability, ease of implementation, and would not likely be covered under the County's tax cap limitation.

One consideration in the ultimate selection of a recurring revenue alternative will be whether the SCWA is willing or obliged to provide water consumption data to the County on routine basis at a reasonable cost. SCWA currently charges the County $0.50 per water billing record. Discussions are underway to explore the possibility of sharing data between the County and SCWA. If a water consumption-based charge is used and the SCWA continues to charge the County for billing records at the same unit cost, the total cost to the County is estimated at $790,000 per year. If a fixed charge SFE approach is used, the County would only be required to obtain consumption records for commercial customers (about 6% of the records). This would make the County's cost to acquire water consumption records approximately $47,000 per year. For either revenue alternative selected, the County Legislature should compel the SCWA to provide usage data at minimum or no charge to the County to support the environmental goals of the CWMD, if ongoing discussions are not fruitful.

Policy makers will also need to weigh the benefits and disadvantages of tiered structures. A tiered structure improves the equitability (discussed in greater detail in the study) of the charge but adds complexity and administrative burden to implement and maintain. Without a tiered charge, the revenues generated would be stable from year to year; however, under a tiered charge, the revenues are likely to decline over time as more property owners upgrade to I/A OWTS systems and as sewer extension

projects are completed. As such, a tiered CWMD charge would likely need to be escalated periodically over time as required in order to continue to meet the program's needs.

Based on these considerations, ***it is recommended that the County consider establishing either a tiered water consumption charge or a tiered fixed charge by SFE*** to improve the equitability of the charge and provide an incentive for I/A OWTS upgrades.

Under a tiered structure, property owners with conventional, non-performing septic/cesspool systems would pay the full CWMD charge (Tier 2); properties within a County sewer district and those with an I/A OWTS would pay a lower CWMD charge (Tier 1). This structure is equitable, since Tier 2 properties discharge the greatest amount of nutrients into the environment. The tiered structure also provides an incentive for property owners to upgrade to an I/A OWTS, reflects the regular maintenance costs these property owners will incur with their systems, and recognizes that properties within a sewer district are already paying directly for wastewater treatment.

The difference in rates between Tier 1 and Tier 2 is a policy consideration for the County; however, a discount of 50% or more may provide a sufficient incentive to encourage property owners to upgrade to an I/A OWTS system.

Over the long-term, the County should also consider a multi-faceted approach to funding its nutrient reduction program. This could include:

- Exploring additional grant funding resources through New York State programs to supplement the County's revenue needs;
- Pursuing funding and grants from private sources, such as foundations;
- Considering the use of tax increment financing (TIF) to help fund sewer extension projects in areas where development is desirable; and
- Amortizing obligations over time through a benefit assessment, akin to how sewer connections are assessed. Should the federal state and local tax (SALT) deduction limitation of $10,000 be increased in the future, this will provide added relief.

Since its enactment through state legislation in the mid-1980's, the Assessment Stabilization Reserve Fund (ASRF) has been an essential component of the County's sewer system revenue stream. The ASRF is funded through a dedicated portion of sales tax collected in the County equal to $0.25 per $100 of eligible purchases. The ASRF statute has a sunset provision that eliminates the revenue stream altogether in 2030. This sunset provision would require the County to rely on its general obligation credit to fund needed capital improvements to the system which could otherwise be supported by the sewer districts' own revenue sources. Amendment of the ASRF statute to broaden its use, inclusive of weighting impact in terms of nitrogen loading, plus extension of its term, would contribute significantly to the operational and financial goals the County might expect to achieve through consolidation its sewer districts.

Annual revenue estimates were projected at several CWMD rates (per 1,000 gallons) and assuming a water consumption charge structure both with and without tiering. A non-tiered CWMD charge is anticipated to generate stable revenue from year-to-year. A non-tiered CWMD charge of approximately

$61 per single-family residential property per year would be required to fund the program under the slower pace I/A OWTS installation and lower sewer extension cost scenario (slower pace scenario). A CWMD charge of approximately $85 per single-family residential property per year would be required to fund the program under the medium pace I/A OWTS installation and lower sewer extension cost scenario (medium pace scenario), and a CWMD charge of $172 per single-family residential property per year would be required to fund the program under the faster pace I/A OWTS installation and higher sewer extension cost scenario (faster pace scenario). The slower and medium pace scenarios assume $257 million in sewer extension funding over 20-years, and the faster pace scenario assumes $567 million in sewer extension funding over 20-years.

These scenarios are shown in Table E-1 and assume that the County would receive an additional $10 million per year in funding from a combination of State Grants, repurposing of a portion of ASRF funds, or other sources to support the program. Also shown in Table E-1 are estimates of annual revenues anticipated to be generated by fee levels ranging from $50 per year to $200 per year for a typical residential property.

Table E-1: Annual Revenue Projection vs. CWMD Charge Level (without Tiering)

Annual Residential CWMD Bill	Annual Revenue ($ Millions)	Uniform Charge ($ / 1,000 gals)
$50 per year	$33.5	$0.44
$61 per year (Low Scenario)	$41.1	$0.54
$85 per year (Med Scenario)	$57.3	$0.76
$99 per year	$66.4	$0.88
$150 per year	$100.6	$1.33
$172 per year (High Scenario)	$115.5	$1.53
$200 per year	$134.2	$1.78

Assumes typical residential customer uses 112,700 gallons of water per year (1 SFE = 112,700 gallons).

Revenue projections do not consider population growth and exclude potential State grants, revenues from repurposing the ASRF Funds, or other sources of revenue.

Uniform charge assumes the CWMD charge and annual residential bill is flat over the forecast period, and all properties regardless of whether they are connected to a centralized sewer system or whether they use a conventional, non-performing septic/cesspool system or an I/A OWTS system would pay the same charge.

An affordability analysis was completed to estimate the economic burden the new CWMD charge might place on households within the County. The analysis consisted of documenting current income levels and the prevalence of poverty in the County and measuring the affordability of the proposed new CWMD charge by examining the future annual residential costs as compared to income levels. Based on the projected residential cost as a percentage of median household income under the various CWMD charge levels, the financial impact of the CWMD on households within the County is considered to be

low using the United States Environmental Protection Agency criteria.[1] Even with a low financial impact, some households within the County are already experiencing economic hardship, and the introduction of the CWMD charge may further contribute to this hardship. Therefore, the County may want to consider adding a low-income customer assistance program along with the implementation of the CWMD charge, providing a reduced CWMD for low income households that qualify. The County could consider leveraging the Low-Income Home Energy Assistance Program (LIHEAP) to identify households that would be eligible for the low-income discount program.

Sewer District Rate Equalization

The County operates and maintains its 26 sewer districts with personnel that are staffed within DPW. This organizational structure allows for effective sharing of resources across sewer districts and is an efficient use of limited DPW resources. Each of the sewer districts has their own operating budget and sewer rate structure, and its finances are independent of all of the others. Sewer rates vary widely among the sewer districts, as does the cost of service on a per household basis. In many districts, there is little correlation between the cost of sewage collection and treatment and the per household charge for this service. The average residential bills in 2019 varied by sewer district from approximately $166 to $1,189 per year. This complex and variable sewer district charge structure makes financial and administrative management of the sewer districts challenging, contributes to perceived inequity of the sewer district rate structures, and makes it difficult for customers to understand their sewer bills.

The County sewer districts are lacking in detailed information on its sewer infrastructure assets, such as asset level in-service dates, original cost, age, condition-based depreciation, asset criticality and risk information, and long-term asset repair/replacement funding needs. This lack of information contributes to the difficulty in estimating long-term sewer district capital infrastructure needs. However, in general, it is estimated that sewer district rates are insufficient to keep pace with rising sewer district costs stemming from aging infrastructure replacement needs, even with the implementation of annual inflationary-level sewer rate increases. It is recommended that the County pursue completion of an asset management program and develop a long-term (10- to 20-year) capital facilities plan for its sewer infrastructure to better estimate its future sewer district funding needs.

Article 5-A of New York State County Law appears to provide the authority for the County to consolidate or extend sewer districts, but there is uncertainty in the law as to whether the definition of "benefits" allow the County to consolidate its sewer districts into a single district. Therefore, it is recommended that the County prepare and propose authorizing legislation that includes specific authorization for combining its sewer districts into a single CWMD.

There is no standard wastewater rate structure employed by other County wastewater service providers in New York State. Some utilize an ad valorem (AV) property tax approach, whereas others use a consumption or SFE based charge, a flat charge per property, or a combination of approaches. Most incorporate two approaches in the rate structure, one for capital cost recovery and one for O&M cost recovery. There is no perfect sewer rate structure alternative for an equalized County sewer district rate

[1] USEPA, "Combined Sewer Overflows Guidance for Financial Capability Assessment and Schedule Development", February 1997, https://www3.epa.gov/npdes/pubs/csofc.pdf

structure. However, an SFE approach appears to provide the best option for the County given the combination of several advantages and limited disadvantages. An SFE charge has the advantage of equitability, revenue stability, and ease of implementation. In addition, given the expected need for the County to raise sewer rates at a pace greater than inflation to address aging infrastructure issues and regulatory requirements, a rate structure excluded from the County's tax cap limitation, such as an SFE-based charge may provide the added advantage of providing more flexibility in raising rates.

One way in which the equalized rate could be implemented would be to add an equalized SFE charge to each customer within each sewer district, increase the equalized SFE charge over a five-year period until it fully covers the combined sewer district rate revenue requirements, and correspondingly decrease the sewer rates and charges associated with each sewer district over the phase-in period until the individual sewer rates and charges are eliminated. For example, assuming a five-year phase-in, the existing sewer district rates and charges could be decreased by 20%, 40%, 60%, 80% and 100% in years 1 through 5. A corresponding increase in the equalized SFE charge would also accompany these existing rate decreases such that revenues continue to cover the anticipated revenue requirements over time.

Implementation Plan Recommendations

Establishing the CWMD, its organizational structure, and a recurring revenue source each involve legal, legislative, administrative, financial, and technical next steps.

The legal and legislative next steps involve:

- Preparing and advocating for specific state legislation for clarifying the authority and beneficial nature of a county-wide district;
- Upon passage of state legislation, proceeding with a public hearing and referendum process for the establishment of the CWMD and associated revenue stream;
- Adopting a County legislative resolution establishing the district and amending local sanitary codes that address when I/A OWTS upgrades are required;
- Submitting an application to the New York State Comptroller; and
- Upon approval, recording the order with the County Clerk and filing with the State Department of Audit and Control.

The next steps for establishing a recurring revenue source to fund the CWMD include:

- Finalizing the construct for either a grant funding and grant management approach or a benefit assessment approach depending on the IRS ruling regarding whether or not grants are taxable to the property owner. In the interim, have contractor complete form ST-124 that affirms installation as a capital improvement which is not taxable, as the contractor has declared on his taxes;
- Determining sewer extension project prioritization;
- Facilitating negotiations with SCWA regarding support for the County through the provision of information and services associated with CWMD billing;

- Developing and continuing to implement a CWMD public outreach and communications plan inclusive of boosting appreciation of the value proposition featuring increased property value as per the CoreLogic real estate evaluation; and
- Determining the policy decision as to the most efficacious structure of the CWMD charge (water consumption charge or SFE-based charge, a uniform charge or a tiered charge, and the funding level).

The next steps for optimizing the administrative processes associated with I/A OWTS grant applications, installations, and contractor payments, include:

- Completing an audit of the County and State grant application processes to streamline and reduce redundancy;
- Completing an end-to-end process audit of the design, construction, and contractor payment process to simplify and optimize the process and improve efficiency by, for example, digitizing the process, allowing electronic signatures to be used on program forms, reducing the number of approvals required, and centralizing involved staff under the CWMD over time upon its establishment; and
- Finalizing state enabling legislation for the CWMD, including a clause that removes the design professional requirement to eliminate installation resourcing bottlenecks.

The next steps for developing a post-installation monitoring and maintenance enforcement process for I/A OWTS systems include:

- Detailed evaluation and selection of I/A OWTS maintenance service models and maintenance procurement approaches to the most feasible and beneficial to the County; and
- Reviewing and refining staffing levels required to complete maintenance enforcement activities.

The next steps for proceeding with sewer district rate equalization include:

- Completing an asset management program and development of a long-term capital facilities plan for County sewer infrastructure;
- Preparing State legislation that specifically authorizes the County to combine sewer district rates into a uniform rate structure;
- Completion of a detailed sewer rate study to refine sewer rate revenue requirements, confirm the rate equalization structure, and equalization phase-in plan; and
- Commencing groundwork for potential integration of the functions of County wastewater and other public water agencies such as SCWA, so that water cycle management is more holistic.

1. Introduction

1.1. Background

Water is the single most significant resource for which Suffolk County (County) bears responsibility. The quality of its water directly impacts the health and well-being of the County's 1.5 million residents and contributes significantly to a robust tourism economy, which enjoys five million annual visitors. As the flooding and devastation from Superstorm Sandy underscored, more than at any time in the County's history, the County and its residents have an obligation to come to terms, in every sense, with the water that surrounds them.

Suffolk's water quality is at a tipping point. The County is experiencing a decline in the quality of its surface water due to excessive contaminants —particularly nitrogen generated from approximately 380,000 individual septic systems and cesspool installations on residential, multifamily, and commercial properties, as well as from agricultural activities and the residential use of fertilizers.

Nitrogen pollution is a significant factor leading to the eutrophication of the County's waters including excessive blooms of algae and proliferation of harmful algal blooms, loss of dissolved oxygen, poor water clarity, and ultimately degradation of our coastal marine ecosystems. Examples of such degradation include fish kills, as well as the destruction of the coastal marshlands that serve as natural protection for our shorelines during tropical storms and nor'easters, beach closures after heavy rainfalls, and an increasing threat to the quality of the County's groundwater. This contamination has a significant impact on the quality of life for residents and visitors, as well as the local economy.

Approximately 74% of the County's residential properties rely upon on-site wastewater disposal systems that do not effectively remove nitrogen. This accounts for 69% of all nitrogen pollution impacting the County's ground and surface water based on an analysis of the Great South Bay and 63.6% of the nitrogen reaching groundwater countywide.[2, 3] Only 26% of the County is connected to a centralized sewage treatment plant (STP). The last expansion of the sewer system was the Southwest Sewer District extension that was completed four decades ago – although several sewer extension projects are currently ongoing.

Addressing this challenge requires collaboration, coordination, and alignment of systems, processes, and stakeholders to achieve a sustainable solution. The County, the New York State Department of Environmental Conservation (NYSDEC), the Long-Island Nitrogen Action Plan (LINAP), and the Long-Island Regional Planning Council (LIRPC) have studied and identified the creation of a **Countywide Wastewater Management District (CWMD)** supported by a dedicated, recurring revenue source as a vital component of the solution to this multi-faceted challenge. Such an organization will provide an integrated and efficient approach to managing wastewater services across the County, and a dedicated funding source will allow the County to enhance and expand its grants program to property owners for installation of Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS), to

[2] Suffolk County Comprehensive Water Resources Management Plan (2015) pg. ES-2, ES-45

[3] Suffolk County Subwatersheds Plan (2019) pg 1-4

complete additional sewer extension projects, and to manage and monitor nitrogen reduction programs throughout the County.

This CWMD Feasibility Study and Implementation Plan builds on the recommendations of the IBM Smarter Cities Challenge report, the County's Comprehensive Water Resources Management Plan, and the Subwatersheds Wastewater Plan (SWP) by completing a detailed assessment of recurring revenue alternatives, and developing a blueprint for an organizational structure and process for establishment and management of a CWMD. These prior reports identified the potential advantages and disadvantages of establishing a single wastewater district to provide the administrative organizational structure to manage sewage treatment infrastructure and to oversee the widespread installation of I/A OWTS technologies to replace cesspools and septic systems in areas where sewering is not practical or a cost-effective alternative.

In 2017, the County initiated the first grant and loan incentive program for I/A OWTS in New York State, called the Suffolk County Septic Improvement Program (SIP). The SIP promotes the use of I/A OWTS and acts as a pilot program for the eventual phased implementation of a larger countywide septic upgrade program. Under the SIP, homeowners who replace their cesspool or septic system with a new I/A OWTS may be eligible for combined grants up to $30,000. Grants are disbursed through a combination of two funding sources from the County and the State. The County funds are derived from a portion of the County's ¼% sales tax that funds the County's Drinking Water Protection Program for Environmental Protection. The County provides up to $20,000 in SIP funds per eligible parcel, including a base grant of $10,000 with a $5,000 incentive for low-to-moderate income property owners, and an additional $5,000 for those homeowners who utilize pressurized shallow drainfields (PSDs) with their I/A OWTS. In 2018, New York State announced an award of $10.025 million to the County from the New York State Septic Replacement Fund (SSRP). The State provides homeowners up to $10,000 toward the purchase of an I/A OWTS. In addition to these grants, homeowners can qualify to finance any remaining cost of the systems over 15 years at a low 3 percent fixed interest rate through loans administered by the Community Development Corporation of Long Island Funding Corp.[4]

1.2. Purpose and Scope of the Assignment

The scope of this report is to assess the feasibility of establishing a dedicated recurring revenue source and to provide the County with an Implementation Plan for the governance and organization of the CWMD that will address the key challenges associated with the County's nitrogen problem:

- Lack of funding and resources;
- Lack of a centralized wastewater management system across the county, limiting the County's ability to take action;
- Lack of water quality awareness and understanding of the threat from nitrogen pollution among citizens and visitors;
- Multiple stakeholders with conflicting objectives; and

[4] Subwatersheds Wastewater Plan, pg.1-47 to 1-48.

- Varied geographical requirements across the County.

The Implementation Plan prepared as part of this project includes identification of the pre-requisite actions that would be required to establish the CWMD, the management structures, and financing required for its operation.

The specific components of this assignment consist of:

1. Identification and evaluation of the infrastructure that would be incorporated into the CWMD.
2. Completion of a financial analysis of the potential costs and revenue sources to fund the CWMD.
3. Detailing of the proposed programmatic functions of the CWMD.
4. Preparation of a recommended management structure of the CWMD, including identification of involved entities and stakeholders.
5. Draft legislation for introduction the New York State Assembly and Senate (see Appendix D).
6. Establishment of a timeline and critical path for implementations at various levels (State, County, Town, etc.).

In providing an organization and structure for the CWMD, three key aspects are addressed: organization, process, and finance. The organization and its compliance function will help to ensure County involvement and integration of all key processes associated with wastewater services within the County and ensure they are adequately monitored, assessed, and executed in a way that allows the County's nitrogen goals to be met. The financing challenges are complex, and this work brings together the pieces of the financing puzzle, including consideration of grants, bond, fees, and consolidated cost savings.

1.3. Prior Studies and Reports

1.3.1. IBM Smarter Cities Challenge Report

In June 2014, the County was one of 16 cities to be awarded an IBM Smarter Cities Challenge grant. The work completed under this grant consisted of assessing the interrelated challenges associated with addressing excessive nitrogen loads into environment and the decline in quality of surface water as a result of nitrogen pollution. The IBM team identified the following challenges associated with addressing this problem:

- Lack of funding and resources;
- A fragmented structure and management system across the county that limit the County's ability to take action;
- Lack of water quality awareness and understanding of the threats from nitrogen pollution among citizens and visitors;
- Lack of overall information management strategy to support decision making and the long-term management of nitrogen reduction in the county;
- Lack of integrated water and wastewater management strategy;
- Different challenges across the County's various geographies;

- Multiple stakeholders with conflicting objectives; and
- Lengthy timescales for water quality restoration, as efforts to manage water quality must be sustained over a long period of time.

After interviews with more than 90 stakeholders, it was concluded by the IBM team that while County residents prioritize water quality, the County lacked a cohesive strategy with overarching objectives and goals to tackle this problem. Furthermore, while relevant data to address this issue was abundant across many county agencies, there was an absence of common data structure, usage, and storage to utilize collected data effectively.[5]

As a result of this study, 11 recommendations were made. These are summarized below:

1. Finalize and deploy a robust and integrated Water Resources Plan
2. Operate the STP network under the control of the Department of Public Works (DPW)
3. Integrate water and wastewater operations
4. Establish a framework to visualize, monitor, and manage water quality
5. Establish governance to enable the installation of appropriate technology and to motivate responsible behavior
6. Excite communities to embrace the solutions for improving water quality
7. Create a structure to drive compliance
8. Continue to develop a funding mechanism
9. Develop workforce model and practices to meet future needs
10. Adapt the business processes in the DPW and Department of Health Services (DHS) to meet expanded integrated water management responsibility
11. Establish a framework for decentralized wastewater handling solutions

The IBM team concluded that if the County wants to continue to grow its economy, attract tourists and deliver high quality of life for its residents, it must tackle managing its water and wastewater services with common goals, shared information, and an integrated approach.[6]

1.3.2. Comprehensive Water Resources Management Plan

The County Comprehensive Water Resources Management Plan (Comp Plan) was completed in 2015 and outlines the County's strategy to address ongoing nitrogen pollution and to create and sustain proper water management. This plan cited many economic, health, and ecological impacts and risks from nitrogen pollution. For instance, the Great South Bay has lost 93% of its clam harvest over the past quarter century resulting in the loss of 6,000 jobs[7], while excess nitrogen spurs hypoxia, harmful algal blooms, and degrades the wetlands which act as storm surge buffers for the County.[8] The plan concluded

[5] IBM Smarter Cities Challenge Report (2014) pg. 1-3.

[6] Ibid. pg. 10-32

[7] Comprehensive Water Resources Management Plan (2015) pg. ES-1

[8] Ibid. pg. ES-47

that the economic consequences of not addressing the County's water quality issues are potentially devastating to property values and tourism, which produces revenues of $4.7 billion per year.[9]

The plan first delineated the value of water for the sustenance of life and well-being. The cost of drinking water in the County is lower than other locations in the nation, and three-quarters of the county has not been paying to treat its wastewater. As a Newsday columnist wrote, satirically in 1969, "Mention Long Island to some people in Bangalore, India, or Tashkent, USSR, and they might wrinkle their noses and ask, 'Isn't that where they have cesspools?'" Over fifty years later, that punchline is no longer humorous, thus the county has set about to delineate the value proposition to homeowners who will be deciding whether ensuring their water quality is the way to go. To that end, CoreLogic was retained by the County to evaluate how having effective wastewater treatment contributes to property value.[10] The 'Ways and Means' chapter of the Comp Plan delineates a prospective roadmap of how policy might be translated into a 'Reclaiming Our Water' campaign.

The goals and objectives of the Comp Plan were to protect and improve ground and surface water quality, and to provide a framework for continued improvement of the County's water resources and provision of a reliable, high quality potable supply of water for future generations. These goals were categorized into the following four focus areas:

1. Groundwater Resource Management Goals
2. Drinking Water Supply Goals
3. Surface Water Resource Management Goals
4. Wastewater Management Goals

Based on the goals established in the Comp Plan, many prioritized recommendations were prepared as a framework for water resources management. Among these recommendations, the following were developed that are particularly relevant to the implementation of a CWMD:

> *1.1 Create or expand sewer districts for existing communities identified as priority areas and upgrade current wastewater infrastructure.*
>
> *1.2 Develop a range of approvable advanced alternative on-site wastewater treatment options available for residential and non-residential applicants in the County. Gain acceptance and encourage participation.*
>
> *1.3 Develop short-term and long-term water quality funding and financing mechanisms in partnership with federal, state, county, and local agencies and private industry. Short-term activities may include voluntary homeowner upgrades and in the long term, possible mandatory upgrades that meet specific locational and environmental criteria.*

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[9] Ibid. pg. ES-3

[10] See Appendix E, Impact of Advanced Septic Installation and Sewer Connection on House Prices, Report prepared for Suffolk County, NY by CoreLogic, December 2019.

1.3 Milestones: Access all potential funding mechanisms, including financing mechanism for long term loans for homeowners, grant opportunities, aquifer protection fee, tax credits, insurance rate adjustments, public private partnerships, benefit assessments, user fees, tax credits, Finance Committee, etc.

1.3 Funding Status: To be determined - could include Watershed Improvement Districts, State Revolving Loan Fund, NYS Water Quality Improvement Program, the Suffolk County Water Quality Protection and Restoration Program, the proposed Aquifer Protection Fee by the Suffolk County Water Authority, and for the East End the Community Preservation Fund if supported at the local and state levels

1.8 Establish governance to enable the installation and compliance/performance monitoring of appropriate wastewater technology county-wide (including the establishment of a wastewater Improvement District)

6.1 Develop a cross departmental leadership team to implement the Reclaim Our Water initiative and manage the County's water from 'cradle to grave'.

6.2 Secure the resources and staff necessary to implement the initial phases of the Water Resources Management Plan.

6.3 Explore the feasibility of operating the existing 193 STPs in the County under the control of the DPW.

6.4 Integrate water and wastewater operations.

6.5 Facilitate communities to embrace the solutions for improving water quality.

6.7 Implement and upgrade the Bureau of Public Health Protection and Division of Environmental Quality databases and enhance their capability to provide comprehensive integrated geo-coded data management program for all regulated facilities, public and non-residential private wells, private well quality, groundwater and surface water quality data, salt water intrusion monitoring data, facility data, inspection records, STP Discharge Monitoring Reports, and monitoring data and on-site wastewater management systems' installation, maintenance, inspection, and performance.

6.8 Adapt the business processes in the DPW and DHS to meet expanded integrated water management responsibility.

Furthermore, the Comp Plan specifically recommended the establishment of a Responsible Management Entity (RME) and a Countywide Wastewater Improvement District to provide oversight of advanced wastewater system infrastructure. It also suggested that on-site systems should have oversight comparable to STPs, and the cost of wastewater treatment should be leveled countywide. This Wastewater Improvement District, with an RME, would oversee the financing, operation, maintenance, and enforcement of I/A OWTS and decentralized sewer system programs.

The Comp Plan also recommended that the County should create and/or identify funding sources and costs to meet onsite sewage disposal system objectives: (i) to create financing/funding options for the upgrade or repair of existing onsite sewage disposal systems, (ii) to review and approve new onsite sewage disposal system technologies to enhance wastewater treatment, (iii) to support the creation and

operation of an RME, and (iv) to provide DHS Office of Wastewater Management with staffing and equipment required to facilitate the wastewater management plan.[11]

The Comp Plan discusses piloting decentralized community sewer systems in communities that utilize wastewater treatment systems approved for use by the County for flows up to 15,000 gallons per day (gpd).[12] High priority for installation of new I/A OWTS systems will be given to properties within the 0-50 year contributing zone to public drinking water fields, areas in the 0-25 year contributing zone to surface waters, unsewered parcels with densities greater than what is permitted under Article 6 of the County Sanitary Code, and areas where groundwater is less than 10 feet below grade.[13]

The Comp Plan also developed a timeline for establishing and implementing a countywide wastewater management construct, as follows:

- 2015-2017: Initiate development and integration of a wastewater management plan;
- 2018-2035: Full-scale implementation of the wastewater management plan via upgrading onsite sewage disposal systems to I/A OWTS or connecting parcels to sewers;
- 2035 and beyond: Continue on-site sanitary system upgrades and/or parcel connections to community sewers.[14]

Finally, the Comp Plan recommended the development of required nitrogen load reduction targets and/or ambient water quality nitrogen concentration targets. These reduction targets will be evaluated on a parcel by parcel basis to select the appropriate type of sewage disposal methods, such as the connection to a STP, the installation of an I/A OWTS, and the installation of a conventional, non-performing system. I/A OWTS are recommended in areas where sewer installations are not feasible. Each of these disposal methods were planned to meet a total nitrogen (TN) target of <19 mg/l. Lastly, the plan stated that the cooperation among key stakeholders and identification of appropriate staffing levels and financing mechanisms are imperative to successful execution.[15]

1.3.3. New York State Local Government Efficiency Grant Report

The New York State Local Government Efficiency Grant Report, prepared for the County by the PFM Group in 2016, highlighted the disparity of sewer rates across the County and outlined the current status and emerging problems with the County's wastewater system. Preliminary findings confirmed that revenues were insufficient for projected capital needs of the future. The report concluded that the principal challenge in the County's wastewater system is that 74% of homes use flawed cesspools and septic systems. These systems need to be upgraded while also reconciling the inconsistencies in the county's 26 sewer districts that serve 26% of homes.[16] Across the 26 sewer districts, billing methodology is not integrated, and there are significant differences in operating budgets. Districts with smaller budgets

[11] Ibid. pg. 8-91
[12] Ibid. pg. ES-49
[13] Ibid. pg. 8-2
[14] Ibid. pg. 8-88
[15] Ibid. pg. ES-50
[16] NYS Local Government Efficiency Grant Report (2016) pg. 1

typically must be supported by the Assessment Stabilization Reserve Fund (ASRF) to fund ongoing operations.[17]

The report recommended the creation of a CWMD organization. A CWMD would be positioned to enable the needed system upgrades, improve operating efficiencies, and direct the significant financial resources required to meet these needs.[18] Benefits from consolidation are uniform service quality and pricing, and more efficient financing of operations and capital investment.[19]

The report recommended that the consolidation of County sewer districts would best be realized following the establishment of a CWMD and development of a robust onsite upgrade program. The initial analysis by PFM identified potential budgetary savings that would result from consolidation of sewer districts. The consolidation of these districts would also facilitate a more equitable and usage-based distribution of the cost of providing services. Consolidation of County sewer districts would enable more equitable distribution of costs and alignment of revenues and expenses system-wide. There is also the opportunity to streamline both administrative and operational functions under consolidation that promises to reduce operating costs by 10% or more.[20]

The PFM report recommended bringing residential sewer fees in line with actual cost over a multi-year period to minimize the financial impact to individual homeowners. It also recommended a more refined and district-specific plan for achieving this financial objective. It recommended that a comprehensive rate study be completed to align sewer revenues and costs over time.

The PFM report also concluded that operational collaboration with the Suffolk County Water Authority (SCWA) could improve water and wastewater efficiency and estimated that a 10% reduction in operating expenses could be achieved, improving the net revenues between the two systems by roughly $7.5 million.[21]

The PFM report stated that the County's sewer system's operating revenues, supplemented by ASRF funds will be insufficient to meet the operating and capital obligations of the sewer system. More equitable rates and gradual narrowing of the revenue/expense gap could help to free up ASRF funding for capital uses. It also stated that closer collaboration and consolidation or merger of the County's sewer districts with the SCWA could provide enhanced capital investment capacity and allow for more efficient operations.

1.3.4. Subwatersheds Wastewater Plan

The Final Generic Environmental Impact Statement (FGEIS) for the Suffolk County Subwatersheds Wastewater Plan (SWP) was unanimously adopted by IR 1241-2020 on March 17, 2020. The plan details the County's wastewater strategy over approximately the next 50 years to combat nitrogen pollution across the county. The SWP was prepared in fulfillment of the recommendations of the Comprehensive

[17] Ibid. pg. 2
[18] Ibid. pg. 1
[19] Ibid. pg. 8
[20] Ibid. pg. 3
[21] Ibid. pg.4

Water Resource Management Plan and in response to the needs of the LINAP which focuses on identifying sources of nitrogen contaminating surface and groundwater, establishing nitrogen reduction endpoints, and developing a plan to achieve these reductions. Additionally, the SWP functions as an overall support tool for present and future water quality initiatives.[22]

This plan was devised in response to models that have predicted Maximum Contaminant Levels (MCLs) of over 10 mg/l in substantial portions of the upper glacial aquifer, the County's sole source aquifer. The County's Sanitary Code recommends an MCL of less than 4 mg/l or 6 mg/l depending on the area. With a countywide wastewater upgrade program, it is projected that in 50 years most of the upper glacial aquifer will have an MCL below 4 mg/l as a result of nitrogen loading across the county being addressed.[23]

The SWP recommends the establishment of a stable and recurring revenue source, as well as a central administrative structure to oversee the implementation of the plan. It notes that the County has already secured partial funding of over $10 million for its SIP from the New York State Septic Replacement Program.[24] In addition, the County leverages the ¼% sales tax revenue for the Drinking Water Protection Program for Environmental Protection to support the SIP grant program. When these two funding sources are combined, eligible homeowners who voluntarily decide to replace their existing cesspool or septic systems could be eligible for combined grants of $30,000; the estimated I/A OWTS typically costs $23,000 on average but can range as high as $60,000 under extreme circumstances depending on the geology of the parcel.[25]

The SWP includes four phases of I/A OWTS implementation. Phase I, consisting of a five-year period beginning in 2019, is the ramp up period during which the County establishes a CWMD, modifies the County Sanitary Code, establishes an RME, and secures a recurring revenue source and grant funding. In Phase II, I/A OWTS installations continue for new construction and for voluntary and mandated existing upgrades. These upgrades take place over 30 years in Priority Rank 1 areas, where they could most likely impact surface and ground water. In Phase III, a 15-year period, upgrades take place in all surface water Priority Rank 2, 3, and 4 areas and all groundwater and drinking water Priority 2 areas. Finally, in Phase IV, all remaining parcels will be addressed. Phase IV does not yet have a schedule identified. The project schedule maintains a steady growth rate of 2,500 I/A OWTS upgrades per year and such that annual funding requirements do not exceed more than $50 million to $70 million per year.[26] A more detailed schedule of I/A OWTS upgrades, including approximate costs for each phase as contemplated by the SWP is summarized in Table 1-1.

[22] Subwatersheds Wastewater Plan (2019). pg. 1-6, 1-7

[23] Ibid. pg. 1-2

[24] Ibid. pg. 1-7, 1-8

[25] Ibid. pg. 1-47, 2-124

[26] Ibid. pg. 4-19

Table 1-1: SWP Program Phase-In Plan[27]

Program Phase	Program Phase Objectives	Approximate Cost
Phase I -Program Ramp Up 9,000 WWT Upgrades (5,000 replaced; 4,000 new construction)	) Continue voluntary upgrade incentive programs) Ramp up RME and Industry Capacity) Establish Countywide Wastewater Management District) Establish Stable Recurring Revenue Source	$12-20M/year* 5 Years (2019-2023) Total Phase = $95M
Phase II – Near Shore 207,000 WWT Upgrades in Highest Priority Areas (177,000 replaced; 30,000 new construction)	) Continue Program Ramp Up (RME and Industry Capacity)) Address all highest priority areas including: - Upgrades in all near shore 0-2 year contributing areas. -Upgrades in surface water priority area rank 1. -Upgrades in groundwater/drinking priority area rank 1.	$65M-$69M/year 30 Years (2024-2053) Total Phase = $1.9B
Phase III – All Other Priority 299,000 WWT Upgrades Areas (253,000 replaced; 46,000 new construction)	) Upgrades in all remaining priority areas. *Remaining parcels in surface water priority area ranks 2,3 and 4. *Groundwater/drinking water priority area rank 2	$48M/year 15 Years (2054-2068) Total Phase = $730M
Phase IV – Upgrades in Remaining Areas (Central Suffolk) 430,000 WWT Upgrades (384,000 replaced; 46,000 new construction)	) Upgrades in all remaining areas (primarily central Suffolk County)	Annual Cost Target $67M/year Timeframe = TBD Total Phase = $1.3B

[1]WWTP upgrades represent cumulative installations of either I/A OWTS, sewering, or clustering.

[2]Actual annual cost during Phase I will depend on funding availability from existing programs through County and NYS Septic Improvement Programs and Town Community Preservation Funds.

[3]Replaced = replacement of existing onsite disposal system (not new construction).

The SWP also establishes policy recommendations pertaining to requirements for septic/cesspool upgrades, and the eligibility of property owners to receive County grant funding for implementation of I/A OWTS systems. These are described below and summarized in Table 1-2:

- Property owners who volunteer to upgrade a cesspool/septic system to an I/A OWTS (Type 1) would be eligible for 100% or $20,000 of County SIP grant funding per upgrade.
- Upon failure of a property's cesspool/septic system (Type 2), the property would be required to be upgraded to an I/A OWTS. In these instances, properties would be eligible for County SIP grant funding up to 100% or $20,000 per upgrade.

[27] Ibid. pg. 4-28

- Properties required to upgrade their cesspool/septic system at the time of property transfer, due to poor function or condition (Type 3) would not be eligible for County SIP grant funding.[28] In order to require mandatory upgrade of a failed septic system at property transfer, the County would need to require an engineering inspection prior to completing the property transaction.
- Requires upgrades of cesspool/septic systems on all new construction on pre-developed property (Type 4). County SIP grant funding assumed at 50% up to $10,000 per upgrade.
- New construction on vacant land (Type 5) would require installation of an I/A OWTS. These properties would not be eligible for County SIP grant funding.

Table 1-2: County I/A OWTS Grant Eligibility

Property/Business Type	Grant Eligibility
Type 1: Existing property that volunteers to upgrade failed cesspool/septic system to I/A OWTS	100% (up to $20,000)
Type 2: Existing property with failed cesspool/septic and mandatory upgrade to I/A OWTS	100% (up to $20,000)
Type 3: Existing property mandatory upgrade at property transfer	0%
Type 4: New Construction Additions of pre-developed property	50% (up to $10,000)
Type 5: New Construction on vacant land	0%

The SWP projects the following quantity of I/A OWTS installations over Phases I and II of the SWP implementation plan, as summarized in Table 1-3.

Table 1-3: Projection of Annual Property I/A OWTS Installations[29]

Property/Business Type	2020-2023	2024-2025	2026-2036	2037-2038	2039-
Type 1: Voluntary Upgrades	632	600	600	600	600
Type 2: Mandatory Upgrades at Failure	0	2,096	1,987	2,302	2,126
Type 3: Mandatory Upgrades at Property Transfer	0	0	3.003	1,014	3,213
Type 4: Mandatory Upgrades at Property Addition	492	492	492	492	492
Type 5: New Construction on vacant land	916	916	916	916	916

[28] The Final SWP includes a range of funding needs for property transfer under the recommended alternative and indicates policymakers should consider property transfer for expansion of grant funding. The SWP was revised after the CWMD Final Report; as such, the CWMD report assumes property transfer is not funded in its financial analyses.

[29] From SWP Report, supporting file labeled 'Detailed SWP IAOWTS Cost Sheet.xlsx'.

While the report concluded that the use of I/A OWTS is the most cost-effective solution in many areas of the County, sewer expansion projects may have advantages in locations with significant water quality impairments, sites with challenging geographic conditions, areas within close proximity to existing sewer districts, and in areas especially vulnerable to rising sea levels. By using a countywide, parcel-specific scoring model from the Chesapeake Bay TMDL Watershed Implementation Plan, the County estimated if I/A OWTS or sewer expansion was the most efficient means of upgrading a particular parcel.[30]

In addition to the grant funding policies highlighted above, the SWP includes three different total annual funding scenarios, which included funding for County I/A OWTS grants, as well as funding sewer extensions in unsewered areas. Scenario 1 assumes a recurring revenue source of $75 million per year. Scenario 2 assumes a recurring revenue source of $93.7 million per year.[31] Scenario 3 starts with a recurring revenue source of $75 million per year from 2024-2033 and increases to a recurring revenue source of $93.7 million from 2034. The differing funding levels of these scenarios were due to the amount of funding assumed for sewer extension projects over the time periods noted.

[30] Ibid. pg. 1-57

[31] SWP pg. 4-45.

2. Sewer Infrastructure Identification and Evaluation

2.1. County Sewer Districts

In 1965, the County established the County Sewer Agency, which was responsible for sewage collection, conveyance, treatment and disposal. The County acquired its first sewage treatment plant in 1970, which was located in Port Jefferson, known today as Sewer District #1. The Southwest Sewer District, known as Sewer District #3 was created and the Bergen Point wastewater treatment plant (WWTP) was constructed and went online in 1981. This WWTP is currently the largest plant owned and operated by the County, which is designed for 30 million gallons per day (MGD) plus scavenger waste flow of 0.5 MGD and is under construction to expand the plant to 40 MGD.[32]

Currently, there are a total of 23 centralized WWTPs and 26 distinct sewer districts within the County. A list of the sewer districts is provided in Table 2-1. A map of sewer district locations is provided in Appendix A. However, most of the WWTPs are considered decentralized. Decentralized plants are designed to operate on a smaller scale than centralized WWTPs and do not require multiple remote pump stations to convey sewage to the plant. Currently, there are over 100 decentralized WWTPs in the County.

This CWMD Feasibility Study and Implementation Plan builds on the recommendations of the IBM Smarter Cities Challenge report, the County's Comprehensive Water Resources Management Plan, and the Subwatersheds Wastewater Plan (SWP). These prior reports identified the potential advantages and disadvantages of establishing a single wastewater entity to provide the organizational structure to manage sewer infrastructure and to oversee the widespread installation of I/A OWTS in areas where public sewers are not practical or a cost-effective alternative. The prior reports recognized that the problem of high nitrogen concentrations is not effectively addressed by the current fragmented approach to managing the water cycle, with its disparate and sometimes conflicting stakeholders. Comprehensive management of the entire water cycle is the optimal solution. This thinking is reflective in the recommendation in the IBM Smarter Cities Challenge Report (2014) that the County consolidate water supply and wastewater management.

[32] Comprehensive Water Resources Management Plan, pg. 8-8.

Table 2-1: Sewer District Summary

Sewer District	District Formation Date	Residential Connections	Commercial Connections	Total Connections*
SD#1 – Port Jefferson	10/27/1969 1918	776	231	1,007
SD #2 – Tallmadge Woods	7/1/2008	1,103	8	1,111
SD #3 – Southwest	2/10/1970	71,287	6810	78,097
SD #4 – Galleria	1/3/2018	229	4	233
SD#5 – Strathmore (Huntington)	12/23/1974 6/28/68	798	0	798
SD#6 – Kings Park	12/22/77 1935	799	9	808
SD#7 – Medford (Twelve Pines and Woodside)	5/25/1977	2,439	65	2,504
SD#8 – Strathmore (Ridge)	12/7/1976	235	0	235
SD#9 – College Park (Farmingville)	12/7/1976	203	3	206
SD#10 – Stony Brook	6/27/1970	2,093	77	2,170
SD#11 – Selden	1/15/1978	7,189	34	7,223
SD#12 – Birchwood/Holbrook	10/27/69 12/12/74	631	0	631
SD #13 – Wind Watch	5/15/1998	311	9	320
SD #14 – Parkland	9/26/1979	2,859	23	2,882
SD #15 – Nob Hill	7/1/1981	546	0	546
SD #16 – Yaphank	7/31/2014	0	2	2
SD #18 – Hauppauge Industrial	5/12/87 1/1/93	0	159	159
SD #19 – Haven Hills	1/8/1986	73	0	73
SD #20 – William Floyd	3/29/1997	3,228	1	3,229
SD #21 – SUNY	7/1/1985	0	2	2

Sewer District	District Formation Date	Residential Connections	Commercial Connections	Total Connections*
SD #22 – Hauppauge Municipal	3/24/1988	450	6	456
SD #23 – Coventry Manor	8/16/1988	267	0	267
SD #24 – Gabreski	9/13/2013	0	11	11
SD #26 – Melville Huntington	7/1/2018	1,219	7	1,226
SD #28 – Fairfield at St. James	9/26/1990	674	1	675

*Excludes vacant and exempt connections

The County is responsible for the wastewater treatment facilities, approximately 103 pumping stations, and over 1,250 miles of sanitary sewer collection lines associated with the sewer districts. A summary of the characteristics of the sewer district infrastructure (including WWTP type, capacity, and number of pump stations) is provided in Table 2-2.

Table 2-2: Sewer District Characteristics

Sewer District	WWTP Type	Permitted Capacity (GPD)	Avg Monthly Flow (GPD)	Pump Stations County-Owned	Pump Stations Privately-Owned
SD#1 – Port Jefferson	SBR	1,150,000	650,000	3	0
SD #2 – Tallmadge Woods	SBR	400,000	150,000	1	0
SD #3 – Southwest	N/A	30,500,000 (expansion to 40,500,000 expected by 12/2020)	25,000,000	15	27
SD #4 – Galleria	SBR	178,000	67,500	0	0
SD#5 – Strathmore (Huntington)	SBR	236,000	170,000	5	0
SD#6 – Kings Park	SBR	600,000	300,000	3	7
SD#7 – Medford (Twelve Pines and Woodside)	Extended Aeration Susp. Growth Denite and Extended Aeration Denite Filter	1,230,000	675,000	6	2
SD#8 – Strathmore (Ridge)	N/A	50,000	50,000	0	0
SD#9 – College Park (Farmingville)	Extended Aeration Susp. Growth Denite	45,000	27,000	0	0
SD#10 – Stony Brook	N/A	500,000	500,000	5*	
SD#11 – Selden	SBR	2,247,000	1,330,000	21	14
SD#12 – Birchwood/Holbrook	SBR	180,000	120,000	1	1
SD #13 – Wind Watch	Extended Aeration Denite Filter	400,000	100,000	2	5
SD #14 – Parkland	SBR	1,250,000	510,000	7	2
SD #15 – Nob Hill	Extended Aeration Susp. Growth Denite	90,000	40,000	1	1

Sewer District	WWTP Type	Permitted Capacity (GPD)	Avg Monthly Flow (GPD)	Pump Stations County-Owned	Pump Stations Privately-Owned
SD #16 – Yaphank	Bio Disc Denite Filter	250,000	76,000	0	0
SD #18 – Hauppauge Industrial	SBR	1,650,000	240,000	3	0
SD #19 – Haven Hills	N/A	19,000	19,000	0	0
SD #20 – William Floyd	N/A	83,000	71,000	1	1
SD #21 – SUNY	Oxidation Ditch	2,500,000	2,020,000	1	1
SD #22 – Hauppauge Municipal	Cannabal	202,000	108,000	1	2
SD #23 – Coventry Manor	Bio Disc Denite Filter	70,000	37,000	0	0
SD #24 – Gabreski	SBR	100,000	6,600	0	0
SD #26 – Melville Huntington	Biodisc Denite Filter	330,000	135,000	2	0
SD #28 – Fairfield at St. James	Extended Aeration Denite Filter	140,000	60,000	0	0

SBR=Sequencing Batch Reactor
*Stony Brook did not indicate if their pump stations were privately or publicly owned

2.2. Decentralized Sewer Systems

Approximately 74% of the County is unsewered and there are approximately 380,000 properties (both residential and commercial) in the County that are connected to septic/cesspools. Approximately 209,000 of these systems are located in priority areas that are in contributing zone to public drinking water well fields or surface waters, are located in areas with housing density that is greater than allowed for unsewered parcels according to the County's Sanitary Code, or are located in areas where the groundwater is less than 10 feet below grade.[33]

[33] Comprehensive Water Resources Management Plan, p.ES-45.

3. CWMD Governance and Organizational Structure Evaluation

3.1. Existing Structure of the County Sewer Function

The 26 sewer districts within the County were established under County Law,[34] specifically Article 5A. This law authorizes the County Legislature to establish a county sewer district having boundaries coterminous with any existing town sewer district, village, or village sewer district for the purpose of acquiring, operating, and maintaining the sewer system. Pursuant to § 266 of the County Law and Article VII of the County Code, the County may establish a user charge system consisting of a schedule of charges for sewer service, subject to the review and approval of the County Legislature. These charges may be in addition to or in lieu of applicable AV or benefit assessments. Such charges are established based on the estimated annual district cost of operation, maintenance, regulatory program costs, capital and improvement costs, or portions thereof. County Law § 266 allows the County Administrator, after public notice of hearing, to adopt a separate user charge system for each sewer district, subject to the review and approval of the County Legislature.

The County has established separate Fund structures, budgets, and sewer rates for each of the sewer districts. The DPW staff operate and maintain each of the sewer districts and manage the sewer districts' capital improvement programs. They are also responsible for the industrial waste unit that monitors discharges to the districts, the safety office, and the wastewater laboratory. Sewer district personnel are centralized in DPW and personnel costs are charged to each sewer district in proportion to the amount of staff time and resources dedicated to the sewer districts. An organizational chart for DPW is provided in Figure 3-1.

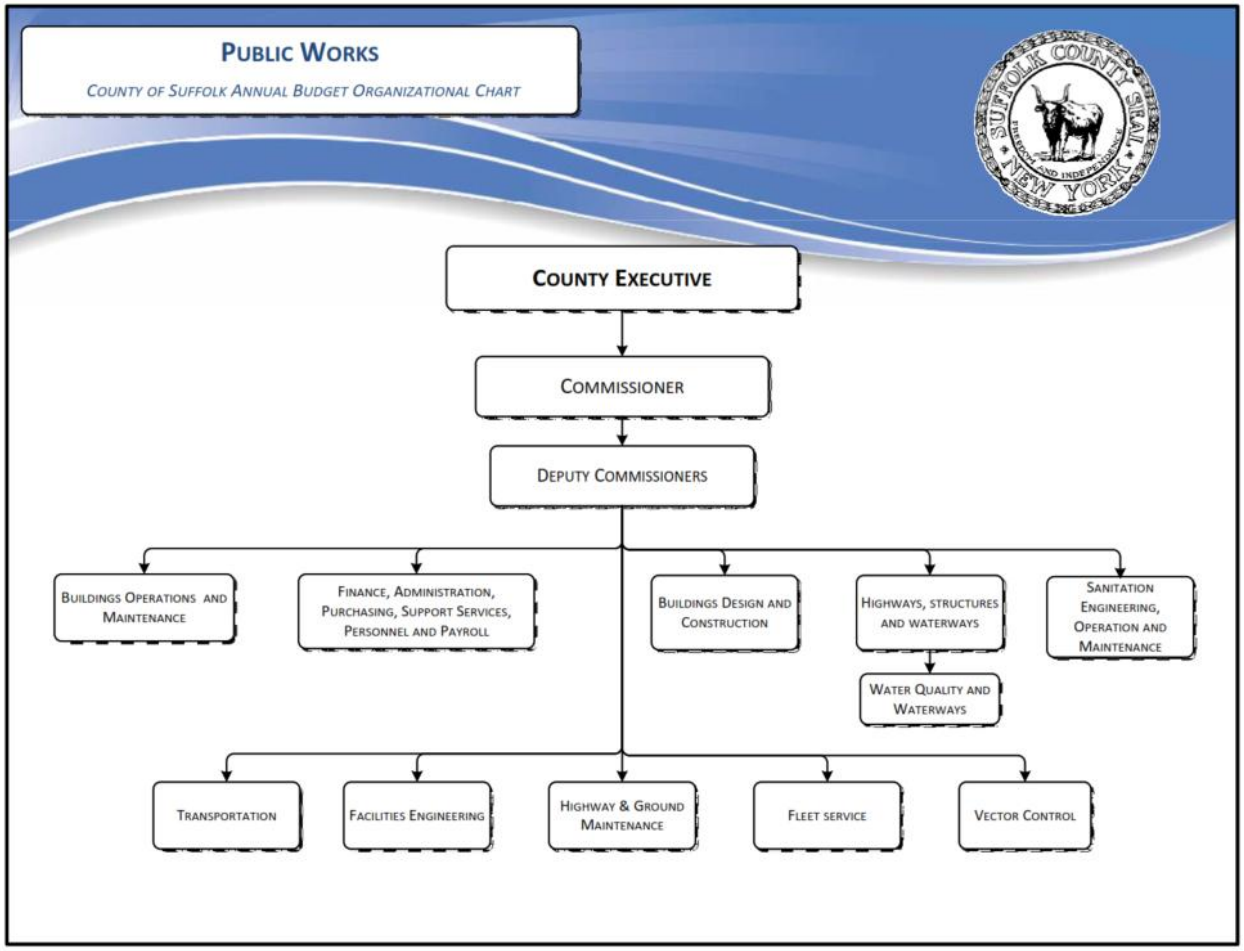
3.2. The Need for a Wastewater Management Entity

The need for a centralized entity to regulate and reduce nitrogen pollution emanating from private wastewater systems in the County is well documented. The Comp Plan, among other documents, lays out a detailed case for an entity such as the CWMD to be that entity. The entity needs, at minimum, the authority to perform the following functions:

- Collect and distribute funds for program administration and to fund – partially or in whole – the installation and maintenance of I/A OWTS private wastewater treatment systems, cluster wastewater systems, and public sewer extensions;
- Receive and administer grant and loan funds related to its purpose;
- Allow for the flexibility to convert its I/A OWTS grant program to a program where the County directly installs and provides upfront payment for I/A OWTS installations, and then amortizes a portion of these costs to property owners through a benefit assessment;
- Maintain a professional and administrative staff to administer nitrogen reduction programs;

[34] NY Cty L § 277 (2012).

Figure 3-1: Organizational Chart for the Department of Public Works



- Collect and manage data related to nitrogen pollution and program administration;
- Establish and regulate suitable technologies for I/A OWTS; and
- Communicate effectively and share resources with other entities within County Government and externally to perform its activities.

DHS is required by New York State Public Health Law and the County Charter to oversee all County Public Health Services operations. Under this authority, the DHS serves as the RME for administering and conducting a comprehensive set of activities with the legal authority and technical capacity to ensure the long-term operation, maintenance, and management of all I/A OWTS in the County. As the annual number of I/A OWTS system upgrades ramps up over time, DHS is not staffed or structured to handle the full volume of I/A OWTS system work anticipated when the program reaches its peak in about 2024.

Some stakeholders envision an expanded role for a CWMD, where the entity would have jurisdiction over the entire water cycle including drinking water, enact regulations on other pollutants such as phosphorus, or set requirements to reduce nitrogen pollution from sources such as fertilizer application. The entity could also assume responsibility for the County sewer districts in a consolidated fashion.

These other functions are already the jurisdiction of one or more other state or county entities. There are both pros and cons to expanding the jurisdiction of the RME to this extent, as well as potential conflicts with the responsibilities of other entities.

3.3. Wastewater Governance Structures in New York State

There are several different sewer organizational and governance structures in New York State that exist for the purposes of enabling wastewater-related functions. These include:

- Departments of the municipality
- Districts
  - Water Quality Treatment Districts (aka Sewer Districts)
  - Wastewater Disposal Districts (established under a County[35] or joint town/village action[36])
  - Watershed Protection Improvement District
  - Aquifer Protection Districts
  - Soil & Water Conservation Districts
- Authorities
- Private Utilities
- Standalone Legislation

However, there are few examples of governance organizations in New York where a dedicated tax or user charge system is established not only for sewer, but also for I/A OWTS improvements. This is because the scale of both the aquifer itself, and the number of onsite systems in the County is unlike that found anywhere else in New York State. The number of properties with septic/cesspool systems (estimated at approximately 380,000) is significantly more than in other counties in the state; the next highest county has around 50,000 septic/cesspool systems. The prevalence of the sewer-related governance and organizational structures highlighted above are a result of New York State laws and statues, which authorize these types of structures.

3.3.1. County Department

A wastewater entity may be organized and governed as a department within a County. County Law §220-a authorizes a county to designate a water quality management agency to oversee all water quality programs and related activity in the County. Further, County Law §251 authorizes a county to designate a water, water quality treatment, sewer, wastewater disposal, drainage, refuse or public inland lake protection and rehabilitation agency. Currently, DPW serves as the designated water quality treatment, sewer, and wastewater disposal agency for sewered areas of the County, while DHS is the relevant wastewater disposal agency for private disposal systems.

[35] https://www.nysenate.gov/legislation/laws/CNT/250

[36] https://www.nysenate.gov/legislation/laws/TWN/190-E

3.3.2. Sewer Districts

A county may form a district with the acceptance of a resolution stating such by the county legislature. County Law 5-A authorizes the establishment of sewer, drainage and wastewater treatment, wastewater disposal, and water quality treatment districts.

A sewer district is a county improvement district in which the district is required to pay the principal and interest on all indebtedness contracted for the purposes of the district.[37] The County is granted the authority to establish such a district pursuant to New York Environmental Conservation Law § 17-0301, Classification of waters and adoption of standards.[38] A sewer district can determine how to collect revenues to equitably allocate and finance capital and operating costs. Payments for operations and maintenance (O&M), administration, payments to reserve funds and payments of debt principal and interest using district revenues is permissible. Revenue collection by districts can be structured as a ratio of full valuations of real property, as a user charge for past or future service, in accordance with the increase in taxable assessed value attributable to the district, or on any other equitable basis, including the levying of taxes or assessments to pay costs across the entire area of the district, or on a part thereof, which benefits or receives a given service component.

3.3.3. Wastewater Disposal Districts

Upon the establishment of a wastewater disposal district, county designated agencies also have the authority to administer and plan (including educational programs), design, install, construct, rehabilitate, replace, operate and maintain (including pumping and inspections), and monitor residual treatment and disposal and regulation of private on-site wastewater disposal systems. Further, a sewer district may also exercise all the powers of a wastewater disposal district if the map and plan for the district is redefined to include on-site wastewater disposal systems.[39] The County does not currently have an established wastewater disposal district for onsite systems. Formally establishing a wastewater disposal district for OWTS management, and then combining that district with existing sewer districts may be an option in unifying County wastewater management functions.

3.3.4. Watershed Protection Improvement Districts

Chapter 378 of the New York State Law as passed in 2012 granted local municipalities the power to create watershed protection improvement districts. These districts were granted the authority to implement recurrent revenue streams for the purposes of upgrading septic systems on private property to protect surface and ground water bodies. Then, in 2015, legislation was introduced (but not passed) that would grant the same powers to county governments in New York State using the 2012 law as a model. Given that the New York State Assembly is already familiar with this language, this approach with some modification appears to be among the most sensible pathways for pursuing clarification from the State on the establishment and powers of the CWMD in the County.

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[37] New York State General Municipal Law, Article 5-G Municipal Cooperation.

[38] http://codes.findlaw.com/ny/environmental-conservation-law/env-sect-17-0301.html#sthash.7zpbTjCx.dpuf

[39] https://www.nysenate.gov/legislation/laws/CNT/250

3.3.5. Aquifer Protection Districts

New York State Municipal Law applicable to towns and villages also permits municipalities to create local land use regulations within a special groundwater protection area that is in some communities referred to as an aquifer protection district. Aquifer protection districts exist in the Village of Cortlandville, New York,[40] and the Village of Virgil, New York.[41] However, because the County's goals are broader than just aquifer protection, and because of the authorities granted by New York State to the County for management of on-site wastewater disposal systems are sufficiently broad, the local groundwater protection area law would not provide any added authorities that the County does not already have.

3.3.6. Soil & Water Conservation Districts

A soil & water conservation district is yet another form of County district that is sometimes employed for the management of OWTS, most typically for inspection programs, in support of technology education, or in the management of available grant funds for system upgrades. Often these districts are most active in OWTS management activities where the county they support is found in agricultural areas that also have locally sensitive water sources. An example of one such soil and water conservation districts that is active in OWTS management is the Ontario County Soil & Water Conservation District.[42] New York State County Law appears to require that these districts engage in a certain amount of focused activity in support of agriculture. However, broader soil and water protection for general economic well-being and other sectors, such as tourism, are also within the remit of these districts. Further, agriculture sector specific requirements, such as the requirement that a certain portion of district directors be sourced from local grange organizations, have been amended in several counties presumably to focus the remit of the district to non-agricultural roles. In addition, in other states such as Oregon, soil and water conservation districts have been granted taxing and bond issuance authorities that could allow for more of the function the County seeks depending on the rate structure pursued.[43]

While soil and water conservation districts do have a somewhat vaguely defined role in protecting water sources from non-point sources of pollution,[44] it would appear that the County could perhaps more easily modify Article 5A to establish the District they desire. If it is determined that soil and water conservation districts are free from certain County requirements that are currently driving inefficiencies in the I/A OSTS grant program, it may still be easier to focus on improving the current County process, than it would be to shift responsibilities to the soil and water conservation district. This is because there appears to be no precedent for transforming a soil and water conservation district into an organization operating at the scale the County seeks and collecting a user charge to help achieve the water quality goals in densely populated areas. This is not to say that such an approach would not be possible with success in amending New York State County Law, but the likelihood of success of such an endeavor may be equally as difficult or more difficult than achieving the same goals through Article 5A amendment. Creating such an unprecedented soil and water conservation district could potentially raise red flags for

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[40] https://ecode360.com/8479129

[41] https://img1.wsimg.com/blobby/go/663d7efa-2fb5-4ed7-aa0e-84059d53f8ce/downloads/Virgil%20Zoining%20Law%202013.pdf?ver=1576091926685

[42] https://www.ontswcd.com/septic-system-programs

[43] https://www.oregonlegislature.gov/bills_laws/ors/ors568.html

[44] https://www.nysenate.gov/legislation/laws/SWC/9

legislators that traditionally think of these districts as more targeted support services for the agricultural sector or threatened surface water supplies.

3.3.7. Public Authority

A public authority is a public benefit corporation established by the State Legislature to construct and/or operate a public improvement, such as water and sewer systems. Most public authorities are created by special acts specifying in detail their organization, powers and limitations. Public authorities may incur debt and collect user charges but may not levy taxes or benefit assessments on real property unless specified upon their establishment. A public authority is independent and autonomous and has legal flexibility not otherwise permitted to a state department or agency. For example, authorities can circumvent public debt limits, issue bonds without voter approval and have fewer restrictions on financial reporting, employment, procurement and contracting.[45] Public authorities usually raise money through the sale of revenue bonds. A public authority is self-supporting and able to meet debt obligations through revenues obtained from its own assets, such as user fees.[46] New York State examples of county sewer authorities include:[47]

- Cayuga County Water and Sewer Authority
- Dutchess County Water and Wastewater Authority
- Livingston County Water and Sewer Authority
- Nassau County Sewer and Storm Water Finance Authority
- Rensselaer County Water and Sewer Authority
- Wayne County Water and Sewer Authority

The creation of an authority offers advantages and disadvantages for the County. The unique and less restrictive contracting mechanisms of an authority offer the potential to simplify procurements and save money. For example, authorities are often setup legislatively such that they are able to bid design/build projects, whereas a municipal entity cannot. Further, authorities take on the responsibility for operations and for financing capital projects, which unlocks municipal borrowing capacity and tax revenues. However, where employees are transferred to an authority, they are no longer available support other municipal functions and some redundancy in support staff is therefore created. Perhaps most critically, an authority must be created by an act of the State Legislature and therefore takes more time and is more difficult to enact than other options not requiring state legislation. Given the County's desired timeline for the CWMD implementation, it is not recommended that an authority governance structure be considered as the first step in establishment of a CWMD.

3.3.8. Private Utility

Privatizing the wastewater management functions of the County could involve transferring or leasing owned physical assets, as well as operational and programming responsibility, to a private entity or bidding out just the operation of County-owned systems and associated wastewater programming to a private contractor. These arrangements are sometimes also executed with third party investors who may

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[45] http://www.osc.state.ny.us/pubauth/whatisauthority.htm

[46] Administration of Public Water and Sewer Utility Systems, New York State Conference of Mayors and Municipal Officials, October 2000.

[47] https://www.abo.ny.gov/reports/annualreports/ABO2018AnnualReport.pdf

assist with capital financing, particularly where aging systems require significant investment above and beyond what the municipal entity is capable of or interested in taking on. Private operators may also bring significant expertise to a struggling system. However, ultimately the success of privatization is dependent on how well constructed the agreement is in terms of performance, risk allocation, and cost. Given that a large portion of the County's focus is on I/A OWTS grant management and programming, and given the scale of that work, it is unlikely that multiple private operators exist in the marketplace for a competitive procurement. Privatization may eliminate taxation as a revenue option and may require more expensive private debt financing. It does not appear at this time that the County is interested in or in need of a private sewer operator. Still, if the County sees portions of the intended programming that are attractive to private contractors such as bidding out Countywide I/A OWTS inspection and maintenance contracts to achieve scale efficiencies that individual homeowners could not, then such an alternative might be worth exploring.

3.3.9. Standalone Legislation

Despite all the potential pathways to CWMD establishment that appear to exist under existing law and precedent in New York State, yet another possible approach could be to tailor legislation that is not predicated on existing laws. By not amending existing legislation that the representatives of the state have already vetted, a standalone act may garner more scrutiny and attention and might have a lower likelihood of passage. Therefore, this option could be considered if other options described above do not prove viable.

3.4. New York State Law Pertaining to Sewer System Governance

New York State County Law Article 5-A (hereinafter "Article 5-A") provides a comprehensive statutory scheme for county governments to "establish, consolidate, or extend county water, water quality treatment, sewer, wastewater disposal, drainage or refuse districts" (County Law § 250). The statute enumerates various purposes for a county district which includes "administration and planning (including educational programs), design, installation, construction, rehabilitation, replacement, O&M (including pumping and inspections), monitoring, residual treatment and disposal and regulation of private on-site wastewater disposal systems of such district (County Law § 250 (3)).

The statute also enumerates the process by which a district is created, administered, operated and maintained and financed. Some of the relevant sections include:

- Establishment of a county district (County Law §§ 254, 256);
- Appointment of an administrative head or body of the district by the board of supervisors (County Law § 261);
- Water rates, water quality treatment, sewage, wastewater disposal and refuse collection charges and revenues (County Law § 266);
- Extension and consolidation of county districts (County Law §§ 274, 274-A and 274-B);
- Process by which county sewer districts in Suffolk County acquire, operate and maintain town and village districts (County Law § 277).

Considering the comprehensive nature of Article 5-A, it can be presumed that state pre-emption applies (Albany Area Builders Assn. v. Town of Guilderland, 74 N.Y. 2d 372 (1989)) which would require

adherence to Article 5-A. Thus, amendment to the current law is appropriate to clarify and specifically authorize the County to establish a CWMD.

Furthermore, based on Section 254 definition of "benefits", there is uncertainty as to whether the existing statute would allow for the combining of separate sewer districts into a single district with a single wastewater service pricing structure. However, this appears to have been accomplished by Nassau County when it established its Sewer and Stormwater Financing Authority. Again, state authorizing legislation that specifically authorizes the dissolution of separate sewer districts into one CWMD would eliminate any uncertainty as to what the existing statute currently allows.

3.5. Evaluation of Roles and Responsibilities of the CWMD

County departmental staff provided input on the functions of the CWMD through a series of working sessions that led to the development of a Roles and Responsibilities Matrix that is included as Appendix B. The matrix was ultimately used to identify all the functions that the CWMD would need to perform, which department would perform them, and how many funded staff full-time equivalents (FTEs) would be required to execute each function. The matrix was developed to reflect peak I/A OWTS levels so that revenue requirement modeling would then scale up staffing gradually as the program ramped up to those peak levels. Per the SWP, peak staffing levels may need to be achieved quite early in the CWMD timeline. The County confirmed that supporting staff for the CWMD in County departments other than DHS will not be funded by the new recurring revenue stream, as those departments are supported by general fund tax and other revenues. This is a typical utility practice for select general overhead functions that are more efficiently held as centralized government support services for multiple departments.

The I/A OWTS program can be viewed in three functional phases that lead to a successful project for a homeowner: the Grant Phase, the Installation Phase, and the Post-Installation Maintenance Phase.

While existing I/A OWTS upgrade programs have often pointed to the post-installation maintenance phase as the most critical to the long-term success of a program seeking to improve area water quality, a robust and efficient grant phase is essential to encourage property owner participation. Currently in the County, the installation phase is challenging for some contractors resulting in delayed applications, burdened County staff, and a certain amount of contractor frustrations. Section 8.3 details important process improvements that will be needed to ensure the success of this program in the County, but first it is important to understand how the process currently works, and how that informed the planned CWMD functions, governance structure, and staffing levels.

The Grant Phase involves scoring and document verification steps in the application process, as well as signature and notarization steps that can be challenging for both the homeowner and County staff. Currently the state and local grant application process involves redundancy, differential requirements, and unnecessary complication from statewide requirements for system failure that do not even apply in the County. Applications are submitted online by homeowners through the www.reclaimourwater.info website before being vetted by the County. If successful, the grant contract process then begins, which for the local grant requires a physical signature of five notarized copies of the grant contract (note that the state grant permits electronic signature and ultimately only requires three copies without any notarization requirements).

For the grant to be finalized, the project must be designed and priced. State education requirements for development of installation designs by licensed engineers or architects appear to be a barrier to program scale in the future. Currently, the majority of licensed engineers and architects work for firms that do not engage in homeowner level work because of the small scale and per project revenue. As the number of designs increases with the program there may not be enough licensed engineers and architects for the program to move as rapidly as desired. County staff also note that many applications never reach the installation phase of the process due to the amount of difficulty obtaining documents that some homeowners experience.

The Installation Phase begins once the grant contract is fully processed and signed. The installation phase is currently inhibited by contractor availability and County payment processing delays and will need to both become more efficient and scale up as the program accelerates to peak levels. Invoices are paid directly to installation contractors by the County. However, contractors have reported materials indebtedness of up to $100,000 to the County and indicated that they have not been able to work at the pace that they otherwise would if the County could release grant funds to them sooner. As improvements in this area are pursued, it should be noted that DHS did an analysis of the problem, which indicates that when contractors follow County procedures (both DHS and Audit and Control), payment is made within 60-90 days. Further, contractors have lines of credit with manufacturers and may owe $100,000 to local distributors but they should not be paying for the I/A OWTS materials in advance of the installation.

The Post-Installation Maintenance Phase is key to keeping nutrients out of local watersheds and is highly dependent upon enforcement as required by Article 19 of the Suffolk County Sanitary Code. Article 19 requires property owners to have an active maintenance contract for installed systems and requires certified I/A OWTS maintenance contractors to report their activities to the County for each system. In addition to tracking these Article 19 requirements remotely, County staff will also sample and monitor system performance periodically to verify contractor reporting.

The County is currently managing approximately 1,500 grant applications, with over 320 I/A OWTS installations completed as part of SIP and 700 installed overall. The CWMD will need to both scale up substantially and improve performance over all three project phases in order to service possible peak levels of up to 7,000 I/A OWTS upgrades per year. More conservative projections based on rates of market uptake for a similar program in Maryland, as well as other environmental incentive programs, indicate that the peak volume of annual applications may be more in the range of 1,000 to 4,000 applications per year.

Currently, DHS is managing this program with a mix of dedicated departmental staff, partial DHS FTEs, and partial FTEs in other departments. Upon CWMD implementation, an increase in the dedicated staff proportions will drive efficiency. Currently, there are approximately 17 FTEs within DHS involved in the I/A OWTS program, while projected peak level requirements are estimated at 115 FTEs. Section 3.8.2 details the recommended functional breakouts for CWMD staff at peak levels. With the more conservative estimates of annual I/A OWTS applications, staffing levels of approximately 80 FTEs may be sufficient.

3.6. Identification and Evaluation of CWMD Governance Options

3.6.1. Stakeholder Engagement

Several internal (County) and external stakeholder groups were solicited for input on the governance and organizational alternatives for the CWMD and the funding source(s) that it would employ. In addition to County representatives from several different departments, representatives from the following external stakeholders participated in the process:

- Citizens Campaign for the Environment
- Group for the East End
- Long Island Builders Institute
- Long Island Board of Realtors
- Long Island Regional Planning Council
- New York State Department of Environmental Conservation
- The Nature Conservancy
- Suffolk County Legislature
- Suffolk County Water Authority

Meetings were held monthly from July through December 2019 to identify, discuss, and review various governance and organizational structure options.

3.6.2. Governance Structure Alternatives

The scope of the CWMD, as well as the funding mechanism(s), has a direct bearing on the governance and organization of the entity. A more limited scope, one which only addresses regulation of nitrogen pollution emanating from private wastewater systems, may favor certain types of structures, while an entity with a much broader scope may require an entirely different structure.

In some other states, the regulation of nitrogen pollution emanating from private wastewater systems is predominantly handled at the state level with support from local and regional jurisdictions. Massachusetts, and Maryland, for example, have extensive state level programs. These programs are well described in the Comp Plan. Because the issue of nitrogen pollution in the County is regional, largely contained within the County and only impacting a relatively small portion of New York State, it is very unlikely that a state managed entity is an appropriate solution here. A regional (county-wide) solution is recommended in the Comp Plan and by the major stakeholders.

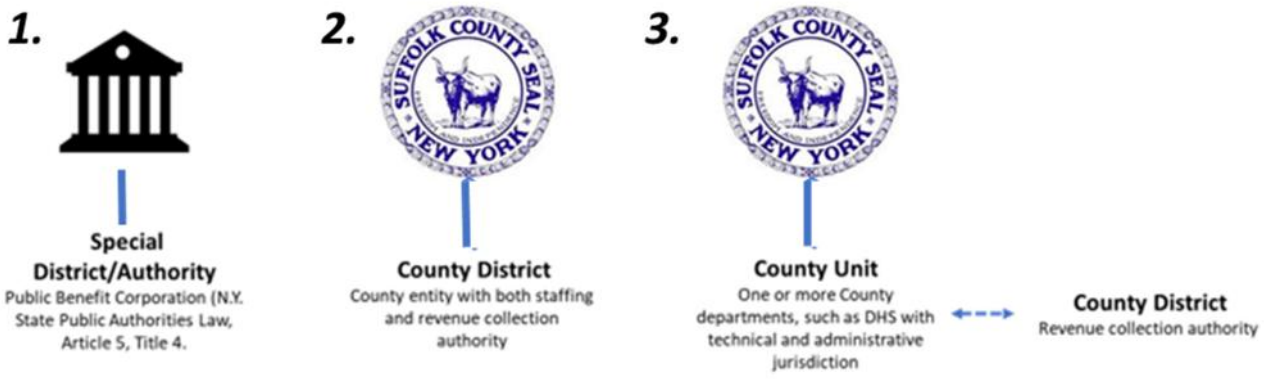
Given that a regional model is supported by stakeholders and appears to be the most appropriate, there are three broad models of CWMD governance that are applicable:

1. **Special District/Authority** (external) – This type of entity would be created at the state level as an independent public-benefit corporation and exist outside of the County government, much the same way that the SCWA operates. This entity would have dedicated staff and resources, as well as a dedicated revenue stream(s) and authorities. The governing body could be appointed (like SCWA) or elected.

2. **County District** (internal) – A Watershed Protection Improvement District with modifications is the preferred district structure, as it would provide the County with the authorities that it desires. This type of entity would likely need to be created at the state level and administrated at the county level. It would exist under County government much like a department, but would have dedicated staff and resources, as well as a dedicated revenue stream(s) and authorities. The County would be the oversight body, or a separate governing body could be created. Hybrid arrangements are also possible; for example, the County could be the governing body, but with a separate advisory board.
3. **County Unit (department, division, etc.)** (internal) – DHS is currently functioning as the RME with support from several other county departments. This model could be continued or augmented with the establishment of a CWMD to establish a funding source and jurisdictional authority. A separate advisory board could also be used for this model.

A diagram of the three possible governance models is provided in Figure 3-2.

Figure 3-2: Possible CWMD Governance Models



3.7. Evaluation and Development of a CWMD Organizational Structure

3.7.1. An Incremental Approach to Building the CWMD

While some stakeholders support the idea of a single water resources entity that manages public water and wastewater systems along with I/A OWTS systems, others are opposed to the idea or believe that it is too ambitious as a first step. It is recommended that the governance priorities of the entity should be as follows, in order:

1. **Revenue Stream** - Establish an entity with revenue generation/collection authority and one or more dedicated revenue streams to fund I/A OWTS system management activities.
2. **Consolidate I/A OWTS System Management** – Consolidate administrative, technical and managerial functions for I/A system in one entity.
3. **Consolidate County Public Wastewater Districts** – Consolidate the management and operations of the public wastewater districts that are currently administered by DPW into the new entity.

4. **Expanded Water Cycle Management Functions** – Consolidate other functions under the new entity, such as the provision of drinking water, fertilizer regulation, stormwater, management of other contaminants, etc.

Based on New York State County Law and the present organizational structure of the County, as well as analysis of similar operations across the country, it is recommended that the County proceed with an incremental approach to the creation of a CWMD organizational structure.

Specifically, in Phase I it is recommended that the County create a CWMD that is initially charted to simply collect and administer revenue to fund I/A OWTS system grants and management activities. Under this initial phase, the I/A OWTS system implementation and management activities will be performed by the DHS as the RME, and through support of other County departments, specifically the Department of Economic Development & Planning (DEDP) and the DPW.

In Phase II, the CWMD effectively assumes command & control of wastewater programming countywide. County sewer districts are operationally integrated with each other, and their rates are equalized gradually. O&M for higher numbers of I/A OWTS upgrades are contracted to private sector operators under continued oversight of a DHS-based RME. The district can now expand when called for, and the obligation for both sewer connection and I/A OWTS can be assigned as a benefit assessment to properties. In later stages of this phase, RME responsibilities are associated staffing may move from DHS and be reorganized as part of the CWMD to help achieve greater efficiencies. The consolidation of all wastewater related staff as well as the RME designation under the CWMD may be ideal to most efficiently and comprehensively manage wastewater. However, the County may choose at its discretion to keep the RME and the majority of OWTS staff within DHS and sewer staff within DPW to reduce the level of disruption to the current administrative framework.

An optional Phase III might facilitate County collaboration with and/or consolidation of the management of both wastewater and water functions currently performed separately by the County and the SCWA. The management of the full water cycle by a single entity could help optimize water management and improve cost effectiveness. Combined water/wastewater organizations are prevalent in the water industry, such as the Dutchess County Water and Wastewater Authority in New York, Metropolitan District Commission in Connecticut, and Capital Region Water in Pennsylvania to name a few. However, most stakeholders agreed that the priority of the new entity should be on developing a sustainable revenue stream first.

There are a number of drinking water providers in the County, with the SCWA serving approximately 80% of the County population. These water entities operate independently from wastewater service providers, as well as from one another. Such separation may cause decisions to be made in a localized manner without full consideration of overall County needs or with full consideration of the impacts on the entire water cycle. In addition, this construct contributes to duplication of efforts, most notably in the areas of administration, sampling and lab services, customer contact centers and billing, and procurement. One of the recommendations of the County's 2015 Comprehensive Water Resource Management Plan was to combine public water and wastewater services across the County to facilitate a more integrated management approach. The combined operations could bring an array of benefits, such as alignment on levels of service and more equitable cost sharing.

The next subsection describes the creation of a CWMD with associated governance, revenue collection and management characteristics.

3.7.2. CWMD Governance and Organization

Based on considerable input from County staff and external stakeholders, it is recommended that the County create a CWMD that will initially be charted to collect and administer revenue to fund I/A system implementation and management activities. The actual I/A system implementation and management activities will be performed by the RME (staff in the DHS) and through support of other County departments, such as the DEDP. The proposed initial structure is shown as an organizational chart in Appendix B.

Specifically, in 2021 under the initial CWMD organizational structure, the District would be unstaffed. DHS would serve as the RME and would retain responsibility for managing the I/A OWTS program in-line with its current structure. DHS opportunities include:

- Core Plan Review
- Approval/Oversight
- Grant Administration
- Grant Contracts
- Miscellaneous
- Private/Clustered STP Systems Oversight

Note that both the CWMD, RME/DHS, and DPW funded staffing estimates exclude any allocated FTE for accounting, billing, and finance functions, which could be the responsibility of SCWA under an SFE or consumption-based rate structure, or existing County departments under an AV-based rate structure.

Appendix B shows how the CWMD would be structured if the staffing were moved from DHS to the CWMD in 2024. For illustration purposes, the same peak staffing levels and roles are shown in the 2024 org chart, though staffing divisions are laid out in a somewhat more intuitive format given the organizational consolidation. Functional breakouts include:

- Support Services
- Grant Management
- Engineering & Planning
- Construction
- O&M
- Enforcement

It is also recommended that the County establish a Stakeholder Advisory Board to ensure independent community input, accountability, and oversight of the CWMD, its use of funds, and its programming decisions. The Board would be comprised of representatives from inside and outside of County government including seven positions with representation from:

- County Executive
- Deputy County Executive for Administration
- Presiding Officer

- Minority Leader of the Legislature
- Commissioner of DHS
- Countywide environmental groups
- Countywide economic development organizations

The recommended structure is based on the Suffolk County Land Bank Board of Directors and would include initially staggered terms of up to three years to ensure varied input. This body would meet regularly, document meeting minutes for public review, and have the ability to provide input to CWMD administrators on a range of topics such as programmatic decision making, budgeting, procurement, and organizational strategy. Specific clauses regarding terms, vacancies, removal, conflicts of interest, meetings, powers, quorum and action, liability, and committees are detailed in the Land Bank Bylaws and should be amended as needed to fit the CWMD upon establishment of the district and depending upon related constitutional legislation and code changes at the State and County level.[48]

3.7.3. Public Outreach and Communications

The need for Nitrogen reduction has been discussed for more than 50 years on all levels of government; but while the problem has long been recognized and discussed, it has never been adequately addressed, and can only be managed with a coordinated effort from all stakeholders. The County is not standing alone in this effort and has the support of the environmental and science communities, business, developer and labor interests, and other levels of government.

An effective public outreach and communications strategy will help secure public support for the CWMD. The CWMD will be the most important and ambitious wastewater management initiative in the County's history and imperative to protecting the groundwater, surface waters and environment for generations to come. An informed and engaged public is essential to the successful implementation of the CWMD.

As the creation of a CWMD is one of the most significant structural undertakings in the County's history, the County can expect to hear a substantial amount of public opinion. Although the benefits to the environment will far outweigh the financial requirements, the immediate perception of impact—most notably the costs—should not be overlooked. Overcoming this negative attitude and addressing those concerns are key elements in the outreach program.

The early opinion will be split between strong supporters, detractors, and the undecided.

- Supporters will be convinced of the environmental benefits of establishing the CWMD.
- Detractors will criticize the CWMD and may scrutinize components, primarily the funding mechanisms and their cost to homeowners and businesses. The detractors could also question the need for a CWMD and spread inaccurate information about its workings and financial impact, creating confusion about the CWMD.

[48] https://suffolkcountylandbank.org/Portals/35/Documents/Policies/SCLBC%20Bylaws.pdf

- Undecided residents likely want to protect the environment and improve water quality but will require further information to determine that the benefits outweigh the costs before supporting the CWMD.

Key decision-making by the County will influence outreach and communications. Specifically, the Legislature may put the CWMD to a public referendum, which will involve extensive public outreach to create awareness of the need for the CWMD, highlight the environmental benefits, and address cost concerns to win voter approval. Alternatively, the Legislature could vote to approve the CWMD, which will require an equally extensive campaign to launch CWMD throughout the County.

Whether put to a public referendum or a legislative vote, a successful stakeholder outreach program will include a series of integrated communications strategies with consistent and effective messaging. There will be the design, implementation, and management of strategies that reach stakeholders directly (such as face-to-face meetings) and indirectly (such as mailers, and online messaging and media coverage).

3.8. I/A OWTS Process Management Optimization

The current I/A OWTS process can be lengthy for property owners, County staff, and contractors. If the matters causing delays are not addressed, grant application, system installation, and slow contractor payment processing will lead to slower program implementation and the inability of the County to meet its nitrogen reduction goals. Naturally, it is expected that over time staff experience, consolidation of water quality management functions, and supporting technology will lead to greater program efficiency. However, several areas were identified as near-term opportunities to enhance the pace of the I/A OWTS program. The current grant, installation, and contractor payment process flow charts are included in Appendix B and were reviewed to identify areas causing program bottlenecks. In addition, an optimized process with full digitization of data entry, form field population, output generation, workflow routing, and digital signatures is included in Appendix B as an aspirational goal.

The most critical process challenges for the County to address are included below with recommended solutions also noted.

1. **Challenge:** Overlap between County SIP and State SSRP grant procedures.

   Solution: Complete an audit of the grant application fields and ensure property owners are not asked for the same information or documents twice. Align submittal process so that any duplicated fields are automatically populated on the back-end by County systems. It is our understanding that much of the IT work that will enable this has already begun and is expected for 2020. Note that DHS is currently working both internally to streamline the IT system handling grant applications, and externally with NYCDEC and EFC to modify State forms, if possible.

2. **Challenge:** Statewide grant application sections attempting to verify system failures that do not apply to the County.

   Solution: Request that the state revise their application and exclude those fields from the automated single stream process design where applicants apply for both County and State grants as a single submittal. If the State does not revise their form, automatically populate the relevant fields with "N/A in Suffolk County" or an entry as agreed to by the state.

3. **Challenge:** County inability to accept electronic signatures.

Solution: The County has already agreed that this policy change needs to occur, and is working towards it, however DHS has indicated that the policy change is not proceeding at the necessary pace. This is should be expedited given the number of signatures required in the current grant process and given the observation that some property owners are abandoning grant applications and I/A OWTS installations due to the lengthy and complicated process. Printing, signing, and mailing a form is an inefficient and costly way of finalizing documents and should be avoided where simpler online solutions are ubiquitous. New York State is already accepting electronic signature supported by technology such as DocuSign and the County should follow suit. DHS has a stretch goal to switch to e-signatures by late 2021.

4. **Challenge:** Lack of electronic contract automation and routing between homeowners and County staff, and between County departments.

   Solution: As referenced in #1 above the County is already pursuing several IT process automation and digitization opportunities that could eliminate errors, automate quality and completion checks, and efficiently route documents, forms, signatures and contracts between program participants and the County. The effort should be considered from end to end to ensure that not only the property owner process is improved through technology, but that the internal County procedures are also made smoother. Currently select contract finalization steps require signatures from numerous County departments and through carefully planned IT optimization the County can ensure that these checks move as swiftly as possible from one step to the next. DHS has a stretch goal to switch to electronic contracts by late 2021.

5. **Challenge:** Grant agreement recording requirements that require five notarized copies.

   Solution: If current County Law is inhibiting the modification of these requirements, then all efforts should be engaged to change such laws to accommodate this process -- provided that no substantial legal risk is created by such changes. If these requirements are merely County policies, then they should be revisited to determine if they are truly necessary. DHS has indicated that the County is treating the I/A OWTS grant contracts in a manner akin to more intensive contracting processes. DHS also notes that this is not consistent with how funds are distributed by the County in support of other grant programs. Notarization adds an extra step for property owners that requires them to find and often pay a notary public, and in this case, five copies must be produced, potentially adding to costs further. Reducing the number of copies will also eliminate downstream processing and filing steps. DHS and the County Department of Law have begun drafting SIP Law change to remove the requirements for notarized copies, which would also help with Challenge 6 described below.

6. **Challenge:** County paperwork requirements for properties held as trusts, LLCs, or corporations.

   Solution: Many properties are held as trusts, LLCs, or corporations for various reasons pertaining to business operation, reduction in property owner liabilities, tax benefits, or other financial incentives. As a result, paperwork requirements for these properties as part of the I/A OWTS program are prevalent and burdensome for many property owners. The County should seek to offer these homeowners other mechanisms for validating their residency and completing the grant contracting process. Whether this is a law or policy change it should be amended in the context of this program to ensure these many differently held properties due not face significant hurdles in accessing grant funds. DHS is currently working with the Department of Law to

examine potential modifications to minimize the amount of paperwork required for properties held in Trusts, LLC's, or Corporations.

7. **Challenge:** Lack of clarity regarding taxing of grants as property owner income.

   Solution: The County Comptroller's Office determined that the Internal Revenue Service (IRS) is not clear on their position as to who, if anyone, should be required to pay income taxes on grant revenues as part of the I/A OWTS State and County grant programs. The County distributes the funds directly to contractors doing the work, but property owners ultimately receive the improvement. The County has since requested that the IRS provide an opinion as to the proper taxing approach but at the time of this writing had not yet received a formal response. One of the reasons that the County specifically distributes funds to contractors is to avoid property owner tax burden.

   The establishment of a CWMD can address this uncertainty in tax treatment by providing the County with the flexibility to convert its I/A OWTS grant program to a program in which the County directly installs and provides upfront payment for I/A OWTS installations, and amortizes a portion of these costs to property owners through a benefit assessment. A benefit assessment is an obligation that is levied on a property owner's property tax assessment for infrastructure projects, such as installation of sewers, that benefit the property. A benefit assessment-type program may be advantageous if the IRS rules that County grants to homeowners are required to be included as taxable ordinary income on personal tax returns.

8. **Challenge:** State requirement for installation design plan by a licensed engineer or architect.[49]

   Solution: The County should engage in a rigorous contractor training program to expand the pool of contractors capable of completing I/A OWTS installation designs. With a sufficiently staffed County design review process, a contractor training program would eliminate the bottleneck which is limiting the scale of the program due to the lack of availability and willingness of engineers and architects to engage in small residential projects. Amending the relevant State Law as it applies in Suffolk County would ensure that the program can proceed without contractor capacity constraints. If the County is not successful in this approach perhaps bundling contracts for this step of the design process could help to draw in larger national firms and generate a sufficient pool of licensed engineers and architects.

9. **Challenge:** Need for routine County payments to provide certainty to industry.

   Solution: Contractors have indicated they could complete more installations per month if there was the certainty of a weekly check run for SIP. Delays attributable to County payment procedures should be scrutinized to ensure reliable and routine payments to contractors.

Collectively, the challenges noted above should be overcome to ensure that the program is as efficient as possible prior to peak I/A OWTS program levels. The I/A OWTS process from grant application, to system installation, to contractor payment is a process that touches several County departments and divisions including, Health Contracts Administration, Law, IT, Consumer Affairs, and others. Only by addressing these issues collectively and simplifying the overall process as a result, will the many involved County departments be optimally positioned to support the program as needed. The County should seek

[49] http://www.ongov.net/health/env/documents/FACTSHEETResidentialOWTSNeedforLicensedDesignProfessionals.pdf

to implement the recommended improvements as quickly as possible to ensure that the process is as smooth as possible for homeowners, County staff, and participating contractors, and to ensure water quality goals are achieved Countywide.

Throughout the process of estimating staffing levels, current County staff worked to develop accurate estimates of peak program FTE levels, while recognizing that some level of improved efficiency would be achieved. However, the estimates are only as useful as their experience to date can inform them. The County expects that process optimization, program scaling, staff experience, and a more isolated focus on water quality, rather than Health Services more broadly, will lead to some reduction in the number of staff required to execute the program on a per upgrade basis. As a result, the funded FTE estimate of 115 may be conservatively high for out-year programming, however without knowing which of the recommended process improvements will be successfully achieved, the total number of FTEs was -- for now -- not revised downward following the process management optimization analysis. It is estimated that the recommended process changes, if successfully implemented will allow the County to expand the program without overburdening homeowners, existing County staff, and the contractor community. Furthermore, with more conservative estimates of annual I/A OWTS applications, staffing levels of approximately 80 FTEs may be sufficient.

3.8.1. Management of I/A OWTS Maintenance Costs

The annual I/A OWTS costs to the property owner for electric and other O&M expenses are estimated to be $475 per year. Additionally, a pump out of the system is required every five years, costing $300 and a component replacement is required every ten years, costing $700. This contrasts to capital costs for a conventional, non-performing on-site sewage disposal system (OSDS) of estimated to be $6,000 to 8,000, with a septic pumping every five years at a cost of $300.[50]

Enforcement of ongoing I/A OWTS maintenance will be required and the County will need to layout a detailed plan for how to regulate and monitor I/A OWTS. In the future, the County could leave maintenance up to the homeowner, or possibly charge a fee to provide maintenance service. However, the maintenance shortcomings associated with the Maryland program highlight the importance of having an active and effective maintenance component. The County will need to determine the best way to ensure that maintenance on I/A OWTS is performed. Both Maryland and Rhode Island stumbled on this, while the perception is that Massachusetts is overregulated and slowing things down.

One model to ensure maintenance is completed would be similar to a zoned garbage pickup area operates. In the "garbage" model, a municipality contracts with a private carter to complete garbage pickups within a designated geographic zone. In this case, the County would contract with on-site system maintenance contractors to complete a cycle of required maintenance for a given service area within a certain amount of time. The advantage would be that the maintenance contractors would be cost competitive in order to win zones and the County would have more certainty that the work was being done. Property owners are likely to benefit as well with reduced costs from the County aggregating the maintenance work. The success of such a program would be dependent upon the ability of the County to keep administrative costs low, while ensuring strong contractor oversight. If the zones are too small for instance, the administrative cost becomes more burdensome for the County. As such, the County might

[50] Subwatersheds Wastewater Plan. pg. 2-125.

need to attract a large national service provider or might potentially drive consolidation in the local marketplace if such a service provider does not exist.

3.8.2. I/A OWTS Information Management

The County is in the process of enhancing the information management foundation of the I/A OWTS program using a tool referred to as the Environmental Health Information Management System (EHIMS). EHIMS runs off of a software product called Acela, which is a lifecycle and asset management technology developed by LookingPoint. Development of EHIMS began in 2018 and much of the functionality has a 2020 launch target. Currently EHIMS is not used for grant administration but the County may support the exploration of expanding EHIMS in the future to incorporate grants, processing of grant applications, or CWMD procurement of I/A OWTS, where efficiencies can be realized.

The EHIMS tool has the ability to reduce the amount of paperwork required for grant applications and approvals, as well as integration of spatial data and other fields pertaining to installed I/A OWTS systems such as the installed technology, capacity, and other design and performance monitoring parameters associated with ongoing maintenance activities. EHIMS should be leveraged beyond the grant phase as much as possible and will be designed to feed information to the downstream installation and payment processes and beyond for permitting, oversight, and system maintenance enforcement. EHIMS will serve as a central source of program information with different levels of access for the general public, grant applicants/property owners, licensed professionals, and County staff and the ability to route workflows to these stakeholders as each property enters the database. Indeed, following sufficient testing, when live EHIMS will accomplish many of the recommendations detailed in the optimized process schematic found in Appendix B.

The LiRo Group developed an integrated spatial geodatabase of Countywide information as part of this Study that will be useful for future rate design, billing, and program tracking initiatives. This tool will need to be maintained following delivery to keep the information contained within it current. The geodatabase with the cooperation of the Department of Information Technology (DOIT) to ensure it can be integrated into EHIMS and other County GIS products as seamlessly as possible.

Another goal of this Study was to develop an estimate of annual investments needed for repair and replacement of aging sewer assets. This effort was limited by the lack of a comprehensive sewer asset registry. DPW should work to invest in an asset management tool supported by technology such as IBM Maximo to ensure that sewer assets receive the same level of tracking that EHIMS will deliver for the I/A OWTS program (for an expanded discussion of asset management see section 6.2.4).

3.8.3. Code Changes

The County Department of Consumer Affairs, as well as other Departments, are involved in processing permits for I/A OWTS installations, but DHS works closely with them. The estimated processing capability is about 1,000 permits per year, but the County will need to increase this amount to 5,000 to 7,000 per year in order to meet the SWP plans. Achieving these goals requires local code changes.

In 2016, proposed revisions to the County Sanitary Code were developed. These revisions to the sanitary code focus on mandatory upgrades to wastewater infrastructure. The revisions are broken down into two phases: Phase 1 consists of changes that can be made immediately like establishing permit requirements for replacements; Phase 2, consists of changes that require a longer timeline, further analysis, and funding

due to their potential scale, such as requiring I/A OWTS for new construction, existing failing systems, and property transfers. 2019 Sanitary Code Changes included requirements for registration of septic systems with DHS and the elimination of a replacement system loophole that permitted cesspools to be replaced. While cesspools for new construction have been banned since 1973 only in 2019 were replacement cesspools banned with the requirement that they must be upgraded to septic tanks. However, requirements for both new systems and replacement of systems with I/A OWTS (the proposed Phase 1 and Phase 2 changes), which are more expensive than non-performing conventional septic tanks, would optimally arrive in 2024 with a supporting, recurring revenue stream for grant funds in support of voluntary upgrades, failures, and property transfers. To achieve these policy changes, several recommendations are detailed in Section 8.3.2.

4. CWMD Revenue Requirements

Revenue requirements of the CWMD are broken down into program administrative expenses (which include salaries, benefits, materials and supplies) and capital expenditures (which include cash funds for I/A OWTS grants and debt service to finance sewer extensions). In addition, in the future, as sewer district management is included in the CWMD organizational structure, the CWMD revenue requirements will also include the costs of operating and maintaining the County's sewer districts. However, it is anticipated that sewer district costs will be recovered by sewer user charges, separate from the CWMD charge.

4.1. I/A OWTS Expenses

4.1.1. I/A OWTS Grant Program

The County plans to provide grants to property owners that have conventional, non-performing septic/cesspool systems to help fund the installation of I/A OWTS. However, if the IRS rules that County grants to property owners are required to be included as taxable ordinary income on personal tax returns, then the County may consider converting the grant program to a benefit assessment-type application. Table 4-1 provides a summary of the anticipated eligibility of property owners to receive I/A OWTS grants per the SWP. Table 4-2 provides a summary of the anticipated pace of upgrades from conventional, non-performing septic/cesspool systems to I/A OWTS systems.

Table 4-1: County I/A OWTS Grant Eligibility

Property/Business Type	Grant Eligibility
Type 1: Existing property that volunteers to upgrade failed cesspool/septic system to I/A OWTS	100% (up to $20,000)
Type 2: Existing property with failed cesspool/septic and mandatory upgrade to I/A OWTS	100% (up to $20,000)
Type 3: Existing property mandatory upgrade at property transfer	0%
Type 4: New Construction Additions of pre-developed property	50% (up to $10,000)
Type 5: New Construction on vacant land	0%

The projection of annual property I/A OWTS installations shown in Table 4-2 assumes that a relatively high rate of I/A OWTS adoption occurs. It is possible that a slower rate of adoption will occur, particularly for the voluntary upgrade category. More conservative projections based on rates of absorption realized for a similar program in Maryland, as well as other environmental incentive programs, indicate that the volume of annual applications may be more in the range of 1,000 to 4,000 applications per year. At peak implementation, the SWP estimates approximately 7,300 upgrades of existing OWTS to I/A OWTS per year. However, the authors of the SWP acknowledge that the rate of system failure assumed in the SWP is based upon limited data, and as such refinement the projected upgrade pace may be needed based on actual data collected as part of the Adaptive Management and Long-Term Monitoring Plan. Similarly, property transfer rates vary annually, and the County anticipates

that a portion of individual OWTS upgrades may require a grace period or exemption under certain conditions. Based upon these unknowns, it is recommended that the initial funding that is established be conservatively estimated initially and include a ramp up period, such as detailed in Table 4-2. The ramp up period would accommodate:

- Refinement of the anticipated rate of I/A OWTS upgrades including:
  - Establishing more accurate system failure rates through use of the Septic Haulers Information Portal ("SHIP"); and,
  - Establishment of estimated exemption rates (if applicable) through advancement and clarification of proposed policy language (e.g., final draft language on proposed revisions to the Article 6 of the Suffolk County Sanitary county and construction standards).
- Clarity on the organizational structure of the proposed CWMD and refinement of the associated operational/administrative costs;
- Clarity on the final financial model agreed upon by policymakers; and,
- Additional clarity on the status of sewer proposals that may be pursued in lieu of individual upgrades using I/A OWTS.

Table 4-2: Projection of Annual Property I/A OWTS Installations[51]

Property/Business Type	2020-2023	2024-2025	2026-2036	2037-2038	2039-2043
Type 1: Voluntary Upgrades	632	600	600	600	600
Type 2: Mandatory Upgrades at Failure	0	2,096	1,987	2,302	2,126
Type 3: Mandatory Upgrades at Property Transfer	0	0	3.003	1,014	3,213
Type 4: Mandatory Upgrades at Property Addition	492	492	492	492	492
Type 5: New Construction on vacant land	916	916	916	916	916
Annual Total	**2,040**	**4,104**	**6,998**	**5,324**	**7,347**

Based on an estimated cost of installing I/A OWTS systems of $23,000 on average, and the County's grant eligibility for the various types of properties shown in Table 4-1, it is projected that from 2024-2043, the annual cost of the County's I/A OWTS grant program could range from $59.4 million to $66.1 million, with annual I/A OWTS installations ranging from 4,100 to 7,300 during that period 2024-2043, as shown in Table 4-3. This cost assumes no additional State funding to support the program and that a relatively high rate of I/A OWTS adoption occurs. More conservative estimates are in the $15.0 million to $60.0 million range with annual I/A OWTS installations ranging from 1,000 to 4,000. To the extent

[51] From SWP Report, supporting file labeled 'Detailed SWP IAOWTS Cost Sheet.xlsx'.

that additional State funding is awarded to the County or property owners within the County, or a lower rate of I/A OWTS adoption occurs, the projection of the County's annual revenue requirements may be lower than shown in Table 4-3.

Table 4-3: Projection of Annual County Cost of I/A OWTS Grant Program

Property/Business Type	2020-2023	2024-2025	2026-2036	2037-2038	2039-2043
Type 1: Voluntary Upgrades	$13,272	$12,600	$12,600	$12,600	$12,600
Type 2: Mandatory Upgrades at Failure	0	$44,023	$41,733	$48,347	$44,652
Type 3: Mandatory Upgrades at Property Transfer	0	0	0	0	0
Type 4: Mandatory Upgrades at Property Addition	$5,166	$5,166	$5,166	$5,166	$5,166
Type 5: New Construction on vacant land	0	0	0	0	0
Annual Total	**$18,438**	**$61,789**	**$59,499**	**$66,113**	**$62,418**

Values shown in $1,000s.

The County's existing SIP program is funded by a portion of the ¼% County sales tax dedicated to the Drinking Water Protection Program for Environmental Protection program. The County provides up to $20,000 in SIP funds per eligible parcel, including a base grant of $10,000 with a $5,000 incentive for low-to-moderate income property owners, and an additional $5,000 for those homeowners who utilize pressurized shallow drainfields in conjunction with their IA OWTS.

4.1.2. Personnel Expenses

Personnel costs were estimated based on the staffing estimates described in Section 3, and the following additional estimates and assumptions:

- Annual staffing level needs will increase in proportion to annual I/A OWTS installations with a total maximum staffing need of 115 FTEs, as discussed in Section 3. With the more conservative estimates of annual I/A OWTS applications, staffing levels of approximately 80 FTEs may be sufficient.
- An average salary cost per FTE of $56,156 in 2018 (average for DPW and DHS).
- Annual salary cost escalation of 3.0% per year.
- Employee benefit costs of approximately 58% of direct salaries. Benefits costs include healthcare, state retirement, social security, welfare, and unemployment contributions, vacation, holiday, and longevity pay.
- Contribution to AME Welfare fund at $1,456 per FTE.

The resulting annual personnel-related costs are projected as shown in Tables 4-5, 4-6, and 4-7 at the end of this section of the report.

4.1.3. Other Program Administrative Expenses

Other annual program administrative costs include general office supplies, materials, contract expenses, and equipment costs estimated at approximately 10% of salary expenses, and County General Fund indirect cost allocations for County Executive, Management & Budget, Law, Purchasing, Labor Relations, and Support Services departments estimated at 3% of direct expenses based on the County's 2017 Central Services Cost Allocation Plan. These annual costs are shown in Tables 4-5, 4-6, and 4-7.

4.2. Sewer Extension-Related Costs

The County plans to fund several sewer extension projects over the next several years through sewer district fees and ASRF funds, including:

Oakdale – Phase 1A – This sewer extension project will provide sewers to 420 residential properties and is expected to remove 30 pounds per day of nitrogen that currently discharges to the environment. This project is anticipated to cost $30.2 million.

Ronkonkoma Hub – This project includes construction of 1.5 MGD pump station and force main to connect the Ronkonkoma Hub Transit Oriented Development to the Bergen Point STP.

Kings Park Business District – This project involves connection of approximately 140 businesses in the Kings Park business district, an apartment complex of approximately 100 units served by a failing septic system, and 27 residential parcels to Sewer District #6. This project is anticipated to be funded with a $20 million state grant.

In addition to these projects, there are also several Town/Village projects that are in various stages of advancement.

As discussed in Section 1, the SWP includes three different total annual funding scenarios, for County I/A OWTS grants and sewer extensions in unsewered areas. Scenario 1 assumes a recurring revenue source of $75 million per year. A second scenario was developed in the SWP that starts with a recurring revenue source of $75 million per year from 2024-2033 and increases to a recurring revenue source of $93.7 million from 2034. Scenario 3 assumes a recurring revenue source of $93.7 million per year.[52] Based on the SWP, the higher funding level is required to meet the County's 50-year target timeframe for completion of identified sewer projects.[53] The County's plan for implementing the highest priority sewer extension projects under Scenarios 1 and 3 are shown in Table 4-4.

4.2.1. Capital Financing

The assets associated with the sewer extension projects are non-recurring assets with long useful lives, likely exceeding 50 years. Therefore, long-term financing of these projects is an option for the County to consider spreading the costs over multiple years and lower the annual revenue requirements. For the purposes of this implementation plan, an interest rate of 4.5% per annum and an amortization period of 30 years was assumed. To the extent that the County seeks alternative funding for sewer extension projects, such as through State grants or tax increment financing (TIF), the revenue requirement needs

[52] Subwatersheds Wastewater Plan, pg. 4-45.

[53] Ibid. pg 4-53.

would be reduced. Capital financing assumptions were prepared for scenario analysis purposes only and should not be considered municipal securities advice. The County should consult its registered municipal advisor prior to taking any specific actions.

Table 4-4: Sewer Extension Project Costs

Project	Estimated Cost (in $1,000s)					
	Scenario 1			Scenario 3		
	2024-2033	2034-2043	2044-2053	2024-2033	2034-2043	2044-2053
Carlls River 108-1	$33,330			$33,330		
Carlls River 108-2	$49,940			$49,940		
Smithtown Business District	$55,000			$55,000		
Sayville Extension – Phase 1b		$27,280		$27,280		
Sayville Extension – Phase 2		$36,630		$36,630		
Huntington Station		$51,500		$51,500		
Forge River - Phase 3			$100,000		$100,000	
Carlls River 110-1			$28,490	$28,490		
Wyandanch – Town of Babylon			$3,997	$3,997		
Northport Expansion – Village of Northport				$11,000		
Patchogue Expansion – Village of Patchogue						$10,400
Carlls River 108-3					$104,005	
Sayville Extension – Phase 3					$66,220	
Carlls River 110-4						$27,830
Sayville Extension – Phase 4						$123,750
Riverside – Town of Southampton						$56,000
Sayville Extension – Phase 7						$57,187
Total Project Cost	**$138,270**	**$115,410**	**$132,487**	**$297,167**	**$270,225**	**$275,167**

4.3. CWMD Revenue Requirement Projection

A projection of the CWMD revenue requirements in five-year intervals from FY 2024 to FY 2043 is summarized in Table 4-5 for Scenario 1 – Slower Pace Scenario, Table 4-6 for Scenario 2 - Medium Pace Scenario, and in Table 4-7 for Scenario 3 – Faster Pace Scenario. The annual revenue requirements from 2024-2043 to fund the County's planned I/A OWTS grant program, debt service for sewer extension projects, provide nitrogen reduction monitoring and enforcement activities and management of the CWMD could range from an estimated average of $51.1 million per year (under a slower pace scenario assuming the maximum rate of I/A OWTS installations is 2,500 per year, Table 4-5), $67.3 million per year (under a medium pace scenario assuming the maximum rate of I/A OWTS installations is 4,000 per year, Table 4-6) to $125.5 million per year (under faster pace scenario assuming the maximum rate of

I/A OWTS installations is 7,000 per year and sewer extension projects are funded at a more robust level, Table 4-7). Based on the SWP, the higher funding level is required to meet the County's 50-year target timeframe for completion of identified sewer projects. These revenue requirement projections assume the County proceeds with its planned grant program. A more detailed annual revenue requirement forecast for this period is provided in Appendix C.

Table 4-5: CWMD Revenue Requirement Forecast - Slower Pace Scenario

Line No.	Description	1 FY 2024	5 FY 2028	10 FY 2033	15 FY 2038	20 FY 2043
1	Program Administrative Expenses					
2	Salaries	$ 2,456,403	$ 3,707,045	$ 4,297,481	$ 4,249,590	$ 5,952,547
3	Employee Benefits	1,489,607	2,251,878	2,616,385	2,593,289	3,641,421
4	Materials & Supplies	245,640	370,704	429,748	424,959	595,255
5	General Fund Indirect	125,750	189,889	220,308	218,035	305,677
6	Total Program Administrative Expenses	$ 4,317,400	$ 6,519,517	$ 7,563,923	$ 7,485,873	$ 10,494,899
7	Capital Expenditures					
8	Debt Service (Sewer Extensions	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 27,073,648	$ 27,073,648
9	Cash Funded Capital (I/A OWTS Loans)	22,072,750	21,254,820	21,254,820	26,720,998	28,542,920
10	Total Capital Expenditures	$ 34,962,563	$ 34,144,633	$ 34,144,633	$ 53,794,646	$ 55,616,568
11	Total Program Administrative and Capital	$ 39,279,963	$ 40,664,149	$ 41,708,555	$ 61,280,519	$ 66,111,467
12	Rate Revenue Requirement	$ 39,279,963	$ 40,664,149	$ 41,708,555	$ 61,280,519	$ 66,111,467

Table 4-6: CWMD Revenue Requirement Forecast – Medium Pace Scenario

Line No.	Description	1 FY 2024	5 FY 2028	10 FY 2033	15 FY 2038	20 FY 2043
1	Program Administrative Expenses					
2	Salaries	$ 2,924,447	$ 4,799,237	$ 5,563,632	$ 5,277,984	$ 7,760,402
3	Employee Benefits	1,773,438	2,915,341	3,387,240	3,220,861	4,747,361
4	Materials & Supplies	292,445	479,924	556,363	527,798	776,040
5	General Fund Indirect	149,710	245,835	285,217	270,799	398,514
6	Total Program Administrative Expenses	$ 5,140,039	$ 8,440,337	$ 9,792,452	$ 9,297,443	$ 13,682,317
7	Capital Expenditures					
8	Debt Service (Sewer Extensions	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 27,073,648	$ 27,073,648
9	Cash Funded Capital (I/A OWTS Loans)	35,316,400	34,007,711	34,007,711	42,753,597	45,668,672
10	Total Capital Expenditures	$ 48,206,213	$ 46,897,524	$ 46,897,524	$ 69,827,245	$ 72,742,320
11	Total Program Administrative and Capital	$ 53,346,252	$ 55,337,861	$ 56,689,977	$ 79,124,688	$ 86,424,638
12	Rate Revenue Requirement	$ 53,346,252	$ 55,337,861	$ 56,689,977	$ 79,124,688	$ 86,424,638

Table 4-7: CWMD Revenue Requirement Forecast - Faster Pace Scenario

Line No.	Description	1 FY 2024	5 FY 2028	10 FY 2033	15 FY 2038	20 FY 2043
1	Program Administrative Expenses					
2	Salaries	$ 3,440,306	$ 8,028,045	$ 9,306,705	$ 7,559,102	$ 13,288,449
3	Employee Benefits	2,086,264	4,876,710	5,666,092	4,612,901	8,129,097
4	Materials & Supplies	344,031	802,805	930,670	755,910	1,328,845
5	General Fund Indirect	176,118	411,227	477,104	387,837	682,392
6	Total Program Administrative Expenses	$ 6,046,719	$ 14,118,786	$ 16,380,571	$ 13,315,751	$ 23,428,783
7	Capital Expenditures					
8	Debt Service (Sewer Extensions	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 59,914,206	$ 59,914,206
9	Cash Funded Capital (I/A OWTS Loans)	61,788,580	59,498,935	59,498,935	74,800,491	79,900,624
10	Total Capital Expenditures	$ 89,442,918	$ 87,153,274	$ 87,153,274	$ 134,714,696	$ 139,814,830
11	Total Program Administrative and Capital	$ 95,489,638	$ 101,272,060	$ 103,533,845	$ 148,030,447	$ 163,243,613
12	Rate Revenue Requirement	$ 95,489,638	$ 101,272,060	$ 103,533,845	$ 148,030,447	$ 163,243,613

These cash flow projections are based on data and information provided as of the date of this report. If the IRS rules that County grants to property owners are required to be included as taxable ordinary income on personal income tax returns and the County decides to restructure its grant program to a benefit assessment-type program, the projected revenue requirements shown in Tables 4-5 through 4-7 would likely need to be revised. In addition, any additional information that is provided or received subsequent to the date of this report could have a material effect on the findings and conclusions contained in this report. Any estimates or statements contained in this report are not predictions of the future and were created for the specific purpose of the preliminary cash flow analysis and are subject to change. In preparation of this cash flow projection, we have relied on certain assumptions and information provided by others with respect to conditions which may exist or events which may occur in the future. It is believed that such sources are reliable, and that the information obtained is as accurate as possible and appropriate for the analysis undertaken and the conclusions reached herein. However, as is often the case, there will likely be differences between actual and projected results, some estimates used in this report may not be realized, and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the results presented in this report and actual results achieved, and those differences may be material.

5. CWMD Funding

5.1. Existing Funding

A summary of the existing sources that the County currently uses to fund I/A OWTS grants and sewer extension projects is discussed below.

5.1.1. Suffolk County Coastal Resiliency Initiative (SCCRI) Grant

In 2014, the County was awarded $383 million in grant funding from the Governor's Office of Storm Recovery's (GOSR) post-Sandy resiliency funding for connecting about 10,000 existing properties to sewer systems to increase coastal resiliency and reduce nitrogen pollution. [54] The County is in the process of implementing three sewer extension projects with this funding. In January 2019, the Babylon, Mastic, and Great River sewer projects went to ballot for three separate votes. The Village of Patchogue project did not require a public vote because it involved an expansion of the Village's sewer district. The Babylon and Mastic projects were approved through the ballot while the Great River project was defeated. Oakdale has been awarded the allocation from Great River to forward sewering in that community. As a result, the following three sewer projects are currently being advanced by the County:

Carlls River Watershed in North Babylon, West Babylon and Wyandanch, Town of Babylon - This sewer extension project will provide sewers to 3,958 residential parcels and is expected to remove 357 pounds per day of nitrogen that currently discharges to the environment. This project is anticipated to cost $140.2 million.

Forge River Watershed in Mastic, Town of Brookhaven – This sewer project consists of the construction of a new STP and will provide sewers to 1,879 residential parcels initially, allow for the eventual sewering of 10,500 parcels, and is expected to remove 193 pounds per day of nitrogen that currently discharges to the environment. This project is anticipated to cost $191.3 million.

Patchogue River Watershed in the Village of Patchogue – This sewer extension project will provide sewers to 513 residential properties and is expected to remove 75 pounds per day of nitrogen that currently discharges to the environment. This project is anticipated to cost $29.6 million.

5.1.2. State Septic System Replacement Program (SSRP) Grants

In 2018, New York State awarded $10.025 million in grant funds to the County through the SSRP and from the New York State Septic Replacement Fund. The SSRP funds are allocated by the State to the County, which then makes them available to residents as grants. The grants provide up to $10,000 toward the purchase of an I/A OWTS. In addition, homeowners can qualify to finance any remaining cost of the systems over 15 years at a low 3 percent fixed interest rate through loans administered by the Community Development Corporation of Long Island Funding Corp.

[54] Ibid. pg. ES-48

5.1.3. Existing Sewer District Fees and ASRF Funds

The County generated approximately $70 million from sewer district fees (assessments and user charges) in FY 2018 to fund sewer district operations and a portion of the Districts' capital investment needs. A detailed description of the existing Sewer District Fees is provided in Section 6.

In addition to sewer district fees, the ASRF has been a component of the County's sewer system revenue stream since its enactment through state legislation in the mid 1980s. The ASRF is funded through a dedicated portion of sales tax collected in the County (the Suffolk County Drinking Water Protection Program tax) equal to $0.25 per $100 of eligible purchases. The use of ASRF funds is restricted as follows:[55]

- 31.10% to the Suffolk County Environmental Programs Trust Fund for open space acquisition and farmland development rights initiatives;
- 11.75% to the Suffolk County Environmental Programs Trust Fund for Water Quality Protection and Restoration Programs and Land Stewardship initiatives;
- 32.15% to the Suffolk County Taxpayers Trust Fund to reduce or stabilize the County's general property taxes and/or police/public safety property taxes for the subsequent fiscal year by being credited to revenue in direct proportion to real property taxes assessed and collected from parcels within the County.
- 25.00% to be used to reduce or stabilize sewer taxpayer property taxes provided that the applicable sewer district experiences an increase in rates of at least 3% in aggregate for user charges, O&M charges, per parcel charges and AV assessments in the calendar year for which these revenues are being allocated.

In 2011, the County Legislature adopted a resolution (#625-2011) regarding the use of ASRF surpluses to enhance sewer capacity and provide tax relief by establishing a limit for the balance of the Sewer District Tax Rate Stabilization Fund at $140 million for fiscal years 2011 through 2021. Should the fund balance exceed $140 million in 2014 through 2021, the excess fund balance is required to be used exclusively for sewer projects as approved by legislature resolutions.

In 2014, the County Legislature adopted a resolution (#579-2014), amending the program for enhanced water quality protection, wastewater infrastructure, and general fund property tax relief for the County. This legislation provides for an Enhanced Water Quality Protection Program funded at $29.4 million designed to provide funding for the purpose of protecting the groundwater in the County's sole source aquifer from discharges of pollutants. The purpose of the program is to acquire, by fee, lease or easement, interests in land and to protect and/or enhance groundwater, for water quality protection and restoration program and land stewardship initiatives, and for the installation, improvements, maintenance and operation of sewer infrastructure and STPs and for installation of residential and commercial enhanced nitrogen removal septic systems. This program became effective December 1,

[55] Suffolk County Final Official Statement, 2019 Series A Bonds. pg. A-24.

2014 and will expire December 31, 2020.[56] To date, funds from the Drinking Water Protection Program have been used to acquire 21,427 acres of land for preservation at a cost of approximately $609 million.

To be eligible to receive support from the ASRF funds, a sewer district must increase its fees by 3% per year and then demonstrate that it is still unable to fund its operating budget for the coming year. Each disbursement of ASRF funds is technically a loan to the receiving sewer district. The level of required subsidy for each district varies in any given year. For sewer districts where expenses far exceed revenues, there is an upward trend in reliance on ASRF funds, resulting in some district's becoming more dependent on the ASRF fund over time. The ASRF is a temporary funding source that has a sunset provision defined by statute that eliminates the revenue stream altogether in 2030. The County desires to extend this program, rather than let it sunset.

The FY 2017 and FY 2018 receipts and disbursements for ASRF Fund 404 (applicable for all sewer districts, except SD#3) are provided in Table 5-1.

Table 5-1: ASRF Fund 404 Receipts and Disbursements

Fiscal Year	Beginning Balance	Sales Tax Revenue	Transfers in from Sewer Districts	Transfers out to Sewer Districts	Ending Balance
FY 2017	$4.1 M	$19.8 M	$12.4 M	($19.4 M)	$16.9 M
FY 2018	$16.9 M	$20.6 M	$15.5 M	($18.1 M)	$34.9 M

ASRF Fund 405 (exclusive for SD#3) had a fund balance of $146.4 million and $137.6 million at the end of FY 2017 and FY 2018, respectively.

5.1.4. Community Preservation Funds

The East End towns of East Hampton, Riverhead, Shelter Island, Southampton, and Southold have established the Community Preservation Fund (CPF) by voter referendum in 1998 that created a real estate transfer tax of 2% on each transaction occurring in these towns. In 2016, the East End towns extended the CPF to 2050 and added the opportunity for each Town to invest up to 20% of the funds toward water quality improvement projects, which includes funding for I/A OWTS rebate programs. The CPF proceeds collected over the past 10 years have ranged between $40 million and $98 million per year.[57]

The Towns of Southampton, East Hampton, and Shelter Island have established I/A OWTS rebate programs, funded by the CPF, to offset the cost of installing I/A OWTS within their respective jurisdictions. A summary of the Town's rebate program is provided in Table 5-2.[58]

[56] Ibid. pg. A-31.
[57] SWP. pg. 8-24.
[58] Ibid.

Table 5-2: Town I/A OWTS Community Preservation Fund Rebate Program

Town of Southampton CPF Rebate	Town of East Hampton CPF Rebate	Town of Shelter Island CPF Rebate
⎫ Rebates up to $20,000 ⎫ Residential & Non-residential in high and medium priority areas are eligible ⎫ No restrictions on ownership ⎫ Seasonal properties, rental properties & second homes are eligible ⎫ New construction is eligible ⎫ Income eligibility requirements in place ⎫ No restrictions related to home occupations ⎫ No covenants required	⎫ Rebates up to $16,000 in the Water Protection District or for homeowners who qualify for affordable housing ⎫ Rebates up to $10,000 for all other eligible applicants ⎫ Residential and commercial property owners eligible ⎫ No restriction on ownership ⎫ Second homeowners and rental properties are eligible ⎫ New construction not eligible ⎫ Income eligibility for residential owners based on NYS STAR Program	⎫ Rebates of up to $15,000 to residential property owners ⎫ No restrictions on ownership ⎫ Seasonal properties, rental properties, & second homes are eligible ⎫ No covenants required

5.2. Summary of Other I/A OWTS Programs

Several other municipalities in the Eastern U.S. and beyond have developed programs to help fund upgrading of cesspool/septic systems with I/A OWTS to reduce the release of excessive nitrogen to the environment. A brief summary of the I/A OWTS programs and funding sources used by these municipalities is provided below as a comparison to both the currently voluntary SIP/SSRP programs in the County, and future programs based on the SWP and this report.

5.2.1. Maryland Bay Restoration Fund Program

The State of Maryland created the Bay Restoration Fund Program (BRF) in 2004. This program included the creation of a dedicated source of revenue to reduce nutrient pollution in the waters of the State. The main goal of the BRF was to provide grants to local governments and other owners of WWTPs to reduce nutrient pollution. The enabling statute established a bay restoration fee for users of wastewater facilities, septic systems, and sewage holding tanks. After doubling in 2012, the fee is now $5.00 per month for residential users, and $5.00 per month for commercial/industrial users for each equivalent dwelling unit (EDU), not exceeding 2,000 EDUs, up to a $120,000 annual maximum.[59] One EDU is the equivalent of 250 gpd of water usage or 91,250 gallons per year. Fee waivers exist for certain users, including residential users that demonstrate substantial financial hardship, as well as certain legal municipal

[59] http://www.ccgov.org/government/finance/property-tax/bay-restoration-fee

entities, including counties, municipal corporations, bi-county or multi-county agencies, housing authorities, school boards, community colleges, and other units of county or municipal corporations and local fire departments. In 2030, the $5.00 fee per month per dwelling unit will be reduced to $2.50 per month per dwelling unit.[60] Approximately 60% of the fees collected are deposited into the Onsite Disposal Systems Fund, a separate account used to upgrade failing septic systems in critical areas at no cost to the homeowner. The remaining 40% will be used for cover crop funding. Grants are awarded to municipalities, which then award them to eligible homeowners.

As of 2018, the BRF has awarded approximately 1,000 grants per year for I/A OWTS technology and has collected over $1.2 billion in revenues for a range of purposes.[61] In the programs first 10 years 12,485 OWTS systems were upgraded of the 420,000 that exist statewide, for a replacement rate of about 0.30% per year.[62] Eligible projects for grant funding include:

1. The cost attributable to upgrading an existing OWTS to one that uses Best Available Technology (BAT) for nitrogen removal.
2. The cost differential between a conventional OWTS and one that uses BAT for nitrogen removal for new construction.
3. The cost of replacing multiple conventional OWTS located in the same community with a new community system that is owned by a local government and meets enhanced nitrogen removal standards, up to the sum of the cost of each individual BAT system.
4. The cost to connect properties to an existing municipal biological or enhanced nutrient removal STP, up to the sum of the cost of each individual system using BAT.

Grant assistance is provided based on the grant eligibility shown in Table 5-3:[63]

Table 5-3 – Maryland Bay Restoration Program Grant Eligibility

Property/Business Type	Grant Eligibility
Homeowners with household income less than or equal to $300,000 per year	.100%
Homeowners with household income more than $300,000 per year	50%
Non-profit entities	100%
Small businesses	75%
For-profit businesses	50%

[60] *Funding Strategies for Decentralized Wastewater Systems*, prepared by the Environmental Financial Advisory Board for EPA Administrator Scott Pruitt, USEPA, dated November 28, 2017.

[61] SWP, pg. 8-23.

[62] https://conduitstreet.mdcounties.org/wp-content/uploads/2017/07/testimony-2017-07-26-et-septic-system-workgroup-maco-env-hlth-dirs.pdf, https://mde.maryland.gov/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/index.aspx

[63] Bay Restoration (Septic) Fund (BRF) Program Implementation Guidance for FY 2020. Available at: https://mde.maryland.gov/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/index.aspx

Some direct comparisons between the Maryland BRF Program and the scale of the County's I/A OWTS goals are provided below:

- There are approximately 420,000 septic systems in Maryland vs 380,000 in the County;
- There are 52,000 systems in priority areas in Maryland vs ~200,000 in the County;
- Maryland started their Grant program for BAT systems (I/A OWTS) in 2012, and the program produces $27 million a year, with 60% of that used for I/A OWTS systems, and 40% for cover crop programming;
- In the 5-year period of Maryland's Grant Program they installed 9,722 BAT/IA systems, or approximately 1,944 per year as compared with the County's peak program goals of 7,000 installations;
- As of December 31, 2018, Maryland has spent ~$119 million on 9,722 BAT/IA systems. This represents only $12,240 per system, whereas the County's SWP plans on paying for a majority of the upgrade costs which are expected to be greater than this amount; and
- In April 2018, Maryland changed their regulations to authorize/expand the use of BRF funds to incentivize nitrogen, phosphorus, and sediment reductions through the purchase of credits generated by applicant projects employing Best Management Practices. The BRF funded credit purchases help support demand in a nutrient credit trading program when the marketplace produces a credit supply surplus.

5.2.2. Rhode Island Programs

The General Law 23-19.15, Rhode Island Cesspool Act of 2007 requires cesspools within 200 feet of the coastal shoreline, public drinking water wells and drinking water reservoir impoundments to be removed from service by January 1, 2014. The requirement for I/A OWTS in Rhode Island is limited and were put in place in 2008 only for critical resource areas in a small section of coastal Rhode Island, and development of lots less than 10,000 square feet, or if required by a local municipality. There is no grant program only loan programs. Further, loans are only offered to communities with Established Wastewater Management Plans and currently only 17 out of 39 Rhode Island municipalities are participating in the Community Septic System Loan Program (CSSLP).[64] Of the 1,035 cesspools initially subject to the Act, as of February 2015, 526 cesspools were replaced, 148 connected to a sewer system, and 361 were identified that still need to be replaced.[65]

The Act is supported by two programs that offer loans to properties requiring some form of OWTS upgrade, the Community Septic System Loan Program (CSSLP), and the Sewer Tie-In Loan Fund (STILF). The CSSLP (cesspool/septic upgrade loans) program has distributed $12.4 million in loan funds to communities since 1999 across approximately 783 closed loans, most of which were for conventional septic systems. The average CSSLP loan amount is $15,435, and the monthly payment for a $15,000 loan with a 10-year term would be $131. As of February 2018, the STILF (cesspool/septic upgraded to sewer) program closed 42 loans totaling $149,170. The average loan amount was $3,552, and the monthly payment for a $4,000 loan with a 5-year term would be $68. However, though most were installed

[64] https://www.riib.org/CSSLP

[65] http://www.dem.ri.gov/programs/benviron/water/quality/pdf/wqmp2035.pdf

without any direct relationship to state loan programs or the 2007 Rhode Island Cesspool Act, as of January 2015, 20,827 systems with alternative or experimental (A/E OWTS) technologies and drain fields were installed in the State. Most of this larger cohort of A/E OWTS upgrades were installed in place of failed systems or as part of home expansion or modernization initiatives.[66]

The Comprehensive Water Resources Management Plan (CWRMP) notes that the replacement rate in Rhode Island is about 0.21% per year, or slightly slower than the first ten years of the Maryland program.[67] For context, it is worth noting that 31% of Rhode Island relies on onsite systems compared to approximately 74% in the County, and accordingly only 25% of the septic system applications to Rhode Island Department of Environmental Management are for I/A OWTS.[68]

5.2.3. Massachusetts Community Septic Management Program

The Massachusetts Title V Community Septic Management Program was created in 1996 to assist homeowners with the financial burden of replacing their failing septic systems. Since its creation, the Massachusetts Clean Water Trust (the Trust) and the Commonwealth's state revolving loan fund (SRF) have provided over $22 million in funding to municipalities, which in turn has resulted in repairs or replacements of over 4,000 systems. Under the program, the Trust provided up to $5 million per year from either tax-exempt proceeds or from the Clean Water SRF program assets to fund septic replacement needs. The interest rate on the SRF loan is 2% for 20 years. The SRF loan is disbursed to the municipality and is secured under the municipality's general obligation pledge. The municipality then loans this money out to homeowners that meet certain qualifications that are specific to each municipality. For example, for a homeowner to be eligible for a loan, the Town of Plymouth requires that household income cannot exceed $150,000, all real estate taxes and fees for service must be paid and up to date, and a betterment agreement must be signed with the Town. Once the homeowner's application is approved, the Town can offer a loan for a period of five, 10, or 15 years at a fixed rate of 5% interest. Other Commonwealth municipalities have different program terms and conditions. For example, Barnstable County does not have an income restriction, but requires monthly loan repayments that can extend out for 20 years.[69]

In addition, the Massachusetts Department of Revenue offers a 40 percent tax credit on septic system upgrades and replacement costs up to $15,000. Therefore, qualified homeowners can receive up to a $1,500 per year tax credit benefit with a total maximum tax credit benefit of $6,000.[70]

5.2.4. Maine Septic System Repair and Replacement Removal Program

In 1995, the State of Maine created the Septic System Repair and Replacement Removal Program to provide low interest loans for septic system upgrades and replacements for eligible households. The Clean Water SRF Program, administered by the Department of Environmental Protection, partnered with the Maine State Housing Authority (MSHA) to create a loan fund to provide financial assistance to low-income households that needed to replace their failing septic systems. Eligible households are those

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[66] https://health.hawaii.gov/wastewater/files/2019/10/OWTSReport.pdf

[67] CWRMP, pg 156.

[68] Provided by DHS

[69] *Funding Strategies for Decentralized Wastewater Systems*, prepared by the Environmental Financial Advisory Board for EPA Administrator Scott Pruitt, USEPA, dated November 28, 2017.

[70] https://www.mass.gov/service-details/view-residential-property-tax-credits#Repair

that do not exceed a household income greater than 120 percent of the County's median income by family size. These eligible households could then receive a 20-year, one percent loan, which they would make monthly payments on. Over approximately 20 years since the program's inception, the program was able to fund 466 loans totaling over $2.6 million in septic upgrades. The program was eventually terminated in July 2016 because the program's administrative costs were not fully being covered by the loan payments being charged and because the program required that households fully amortize their loan within 20 to 30 years, which was deemed to be too financially burdensome for many low-income households.[71]

5.2.5. Other Programs

There are other septic management and funding programs and local codes that have been implemented in New York, in other States, and in Europe to address nutrient loading into the environment. A brief description of some of these programs follows:

- *EPA National Onsite Demonstration Program & Onondaga County Division of Environmental Health Septic System Replacement Funding Program (NY).*

  In 2003, the United States Environmental Protection Agency (EPA) began a National Onsite Demonstration Program that together with the City of Syracuse Department of Water co-funded a program designed to install and study I/A OWTS technologies in the Skaneateles Lake watershed. The goal was to identify the performance of the systems while also continuing work to protect public health and the City's water source, which 250,000 residents rely on. An estimated 1,750 homes in the Skaneateles Lake watershed, including over 70% of shorelines properties were served by onsite septic systems at the time of the study.[72] With I/A system effectiveness now established, the Onondaga County Division of Environmental Health today participates in the New York State EFC/NYSDEC's SSRP as they continue to work to encourage upgrades in the Skaneateles Lake and Otisco Lake watersheds. In 2018, the State awarded $225,000[73] to Onondaga County, of which $33,836[74] was secured as grants for system upgrades in the Skaneateles Lake watershed. No additional recurring revenue source exists, beyond the state grant program, to provide assistance for I/A OWTS upgrades.

  The Onondaga County Division of Environmental Health sits within the County Department of Health and is separate from both the Onondaga County Department of Water Environment Protection, that runs the sewer infrastructure, and the independent Onondaga County Water Authority. The City of Syracuse's Department of Water, as part of its ongoing efforts to maintain a Filtration Avoidance Determination from EPA for the Skaneateles Lake supply, also employs a dedicated Sanitarian and Watershed Inspector[43] to ensure onsite systems in the watershed are maintained. These staff help enforce New York State Department of Health Title 10 CRR-NY 131.1 that includes specific watershed protections.[75]

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[71] *Funding Strategies for Decentralized Wastewater Systems*, prepared by the Environmental Financial Advisory Board for EPA Administrator Scott Pruitt, USEPA, dated November 28, 2017.

[72] https://www.epa.gov/sites/production/files/2015-06/documents/skaneatelesny_final-report.pdf

[73] https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/Septic_Funding_Awards_by_County.pdf

[74] http://www.ongov.net/health/documents/2018OCHDAnnualReport.pdf

[75] https://govt.westlaw.com/nycrr/Document/I4fdf77a1cd1711dda432a117e6e0f345?viewType=FullText&originationContext=documenttoc&transitionType=StatuteNavigator&contextData=(sc.Default)

- *Otsego County Onsite Wastewater Management Program (NY).*

The Village of Cooperstown, Otsego Lake Watershed Supervisory Committee, as authorized by the Village's Board of Water Commissioners, along with the Otsego County Water Quality Coordinating Committee worked together to implement the 1998 Plan for the Management of the Otsego Lake Watershed. The Village Board of Water Commissioners is granted the authority to delegate these responsibilities in the protection of Otsego Lake to the Watershed Supervisory Committee by New York State Department of Health Title 10 CRR-NY 136.3.[76]

Their activities include the administration of local university, private foundation and public grant funds that support watershed coordination and inspection staff and homeowner grants, as well as NYSDEC research. Taken together, these efforts have combined to upgrade, inspect, and monitor 375 onsite wastewater management systems in the Otsego Lake Watershed. Approximately 99% of these systems were inspected in the 2005-2009 cycle, resulting in a 51% failure rate of which 86% were upgraded. A second cycle of inspections and upgrades began in 2010.[77] In addition, Otsego County has been granted $75,000 from the New York State EFC/NYSDEC's SSRP for the protection of Goodyear Lake, which is another water source in the area that is overburdened with failing septic systems.

- *Town of Virgil and Town of Cortlandville Aquifer Protection Districts (NY).*

The Towns of Virgil and Cortlandville in Cortland County, New York have created Aquifer Protection Districts that specifically prohibit septic systems from being installed on lots below a certain size. Multifamily properties are prohibited from utilizing septic systems within the District boundaries. Where sewers are not available these regulations essentially prohibit dense development patterns and therefore limit excessive nutrient loading from leach fields into the aquifers. No specific recurring revenue source is used to help fund this program.

- *Ontario County Soil & Water Conservation District (NY)*

Ontario County in the Finger Lakes Region manages a septic system inspection program through the County Soil & Water Conservation District. The District charges $175 per inspection. Inspections are required at the time of property transfers and periodically for certain shoreline properties along Canandaigua Lake, which is a water supply for several area municipalities.[78]

- *Santa Cruz County Service Area No. 12 (CA).*

This County charges all households $6.90 annually to fund septic tank sludge disposal facilities at the wastewater treatment facility, public education on septic system maintenance, and computerized record keeping system that tracks pumping, inspections, and repairs. In one particular watershed of concern residents pay an additional $18.54 annually to fund a comprehensive water quality testing, septic system inspections for all properties once every six years, and other wastewater management programming.

- *Clackamas Soil & Water Conservations District (OR)*

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[76] https://govt.westlaw.com/nycrr/Document/I4fe013decd1711dda432a117e6e0f345?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

[77] https://wri.cals.cornell.edu/sites/wri.cals.cornell.edu/files/shared/documents/Canadarago_February_Waterfield.pdf

[78] https://www.ontswcd.com/

Oregon State Law permits Soil & Water Conservation Districts to take issue bonds and levy property taxes.[79] This District has begun doing both of those things and is engaging in expansive conservation and water quality programming,[80] including the co-management (with Clackamas County Septic and Onsite Wastewater Systems office[81]) of a state financed SSRP offering property owners zero percent interest loans.[82]

- *Spokane County Aquifer Protection Area (WA).*

Aquifer Protection Areas are defined in Washington State Code RCW 36.36, and provide a mechanism for the creation of districts that may finance the protection, preservation, and rehabilitation of groundwater, and impose special assessments upon households within that district to finance facilities for such purposes. The Aquifer Protection Area is administered by the County Environmental Services Department, which provides water, sewer, and solid waste services for residents. A per household fee assessed as part of the property tax levy of $1.25 per month for water and $1.25 per month for sewer for a maximum of $30 per year was approved for 20 years as part of local ballot measures. Since the program began in the 1980's over 30,000 septic systems have been connected to the County's expanding sewer network through these efforts.[83]

- *Environmental Protection Agency National Inspection Program (Ireland).*

Following a 2009 European Court of Justice ruling forcing action, as of 2012 Ireland regulates 400,000 OWTS at the national level through a program that mandates local governments to register, inspect, and enforce upgrades of OWTS upon failure. Registration costs are €50 and means tested grants of up to 80% of costs are available for household incomes of up to €50,000.[84]

- *New York City Toilet Replacement Program*

The New York City Toilet Replacement Program replaced 13,000 of a targeted 250,000 toilets at multi-family residential properties from 2013 to 2019.[85,86] The program provided rebates of $125 per toilet to property owners for replacement with low-flow toilets through approved vendors. This translates to an annual replacement rate of 0.87% of the target per year. This relatively low replacement rate as a percentage of target is worth considering since it is a large public incentive program. The results demonstrates the difficulty in achieving rapid widespread pubic adoption of public programs through incentives.

- *Long Island Green Homes*

The Long Island Green Homes program was a local Property Assessed Clean Energy (PACE) program, and the first of its kind in the nation. The program provided free energy audits and financing assistance for energy efficiency upgrades. The average amount of financing was

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[79] https://www.oregonlegislature.gov/bills_laws/ors/ors568.html

[80] https://conservationdistrict.org/2019/budget-adopted-fy-2019-2020.html

[81] https://www.clackamas.us/septic

[82] https://conservationdistrict.org/programs/septic-system-repair-loans

[83] https://www.spokanecounty.org/1530/Aquifer-Protection-Area

[84] https://www.citizensinformation.ie/en/housing/owning_a_home/home_owners/domestic_wastewater_treatment.html

[85] https://www1.nyc.gov/site/dep/news/190905/toilet-replacement-program

[86] https://www1.nyc.gov/html/dep/html/press_releases/13-043pr.shtml#.XjBqc2hKiUk

$13,000, which was recovered from property owners as a benefit assessment. The CWRMP noted that in the best years this program achieved a success rate of 1% of its target despite net savings to homeowners.[87]

Taken together, the programs described above include many elements that the County is interested in implementing. These examples serve to reinforce that the County's challenges and goals are not wholly unique. That is, in New York State and beyond, the number of I/A OWTS, size of the local water supply aquifer, and dense population of the County distinguish this program from others to be sure. Yet, the goals of water supply protection or other environmental efficiencies for mutual benefit are universal. The impact of poorly maintained septic systems on water resources is now clear to public environmental stewards around the world and the models being developed to spur the installation of newer and better I/A OWTS technologies are many.

From, November 2019 to March 2020, the County's voluntary SIP averaged approximately 95 applicants per month, or 1,140 projected applicants in 2020 – without any policy mandates. The programs detailed in this section can help to inform the County regarding the pace of I/A OWTS upgrades that may be realized in the County in the future. As described above, other programs have experienced a pace of adoption in the 0.2% to 1.0% per year range, which is a much slower pace of adoption than projected in the SWP. However, the County has a much larger number of properties with non-performing cesspools/septic systems located in high priority areas and a robust grant incentive program is planned. Therefore, it may be difficult to directly compare the pace of adoption for the County compared to other programs. As a result, the program pace and revenue requirements detailed in Section 4 of this report span a range of possible adoption rates for I/A OWTS from more conservative to more optimistic.

5.3. Identification of Funding Alternatives

Several funding alternatives were identified and considered to provide a recurring revenue source to fund the County's nitrogen reduction programs as outlined in the County's SWP. The alternatives were identified based on a review of the County's existing funding sources and programs implemented by municipalities in other states, as well as discussions with the County and various County stakeholders, including TNC, the LIRPC, and the Citizens Campaign for the Environment. The alternatives that were considered included the following:

1. **Extend Sunset on the ASRF:** The ASRF is currently used to subsidize sewer rates for those customers served by a County sewer district and funded by a 25% portion of the ¼ percent County sales tax. The County should extend the ASRF program, which is set to expire on at the end of 2030. In addition, the ASFR could be repurposed to fund sewer extensions and I/A OWTS installations and enforcement activities. Sewer district rates could be adjusted to fully or more fully recover the cost of centralized sewer service. This alternative may also include repurposing the 32.15% of the ASRF funds dedicated to the County Taxpayers Trust Fund.
2. **AV Property Tax:** A new AV tax, based upon each property's assessed value, would be added to the tax bill of each parcel within the County. The tax rate would be the same for parcels, but the tax amount would vary depending upon each property's assessed value.

[87] CWRMP, pg 156.

3. **Sales Tax Increase:** Under this alternative, the ¼ percent sales tax would be increased as necessary, and expanded to fund sewer extensions and I/A OWTS installations and enforcement activities.
4. **Property Transfer Tax:** A County property transfer tax would be established, similar to the existing property transfer tax that funds the CPF for the East End Towns. The tax would be a percentage of the value of the property, paid by property owners at the time of property transfer.
5. **Fixed Charge:** A fixed charge would be established and assessed as an annual flat per property that is collected on the tax bill. As an option, the fixed charge could vary based on a property's parcel size, building size, water meter size, single-family equivalent (SFE) water usage, or another parcel attribute.
6. **Water Consumption Charge:** Under this alternative, a charge based on water consumption would be established, at a uniform rate per 1,000 gallons of billed water consumption. All properties (sewered and unsewered) would pay this charge, including those served by SCWA and other water providers. Those properties that have their own well would pay a fixed charge based on typical water usage for their property type.
7. **Tiered Fee Structure:** A multi-tiered fee structure could be included as part of some of the alternatives described above, as a "pay to pollute" charge. For example, under a multi-tiered fixed charge, the charge would vary based on the type of wastewater treatment utilized by that property. Properties with an I/A OWTS system, or those located within a County sewer district or connected to a centralized WWTP, would pay a lower fixed charge because these properties discharge less nutrients to the environment than other properties. Properties that have a conventional, non-performing cesspool or septic system would pay a higher fixed charge because these properties discharge more nutrients to the environment than other properties. This higher charge also provides an added incentive to upgrade to an I/A OWTS system to avoid the higher fixed charge.

Tax Increment Financing: TIF is an approach that could be used as part of the financing solution for sewer extensions. TIF is sometimes referred to as a self-financing approach because the increased tax revenues generated by the project being financed is used to pay for the financing. TIFs can be used to finance infrastructure projects, including water and wastewater improvements. The most significant advantage of TIFs is that there is minimal upfront cost to the taxpayer, and a direct increase in property tax rates is not required to generate revenues to fund the project.[88] New York State's tax increment financing law, originally passed in 1984, authorizes the use of TIFs to finance a broad list of projects, including the construction of public infrastructure, but requires that municipalities demonstrate the existence of blight and that redevelopment would not be feasible "but for" the use of TIF.[89] A TIF could allow the County to promote economic development in areas targeted for sewer extensions by earmarking property tax revenues from increases in development spurred by the sewer extensions, along with increases in assessed values, to pay for a portion of the sewer extension costs. According to research completed by CoreLogic, connecting properties to a sewer system increases the value of the property by an estimated 5%. Further, CoreLogic analyses of home prices in

[88] New and Emerging Capital Providers for Infrastructure Funding. Mastracchio, Petersen, and Huestis, published by the Water Research Foundation, 2016.

[89] General Municipal Law, Sec. 970-o (1984).

Charlestown, RI, Barnstable, MA and Anne Arundel county, MD indicated a price premium for homes with an advanced septic system relative to those with standard septic systems, ranging from 13%-19%.[90] While TIF may not be feasible as a stand-alone funding option for sewer extensions, it could be used along with other recurring revenue streams, to finance sewer extensions in some areas within the County.

Several of the alternatives identified above could be combined to develop an overall recurring revenue strategy for the County. For example, the County, under a comprehensive funding program, could repurpose the ASRF (to right-size sewer district rates while dedicating funds to sewer extension projects and I/A OWTS installation and enforcement activities), establish TIFs in various development zones within the County (to provided added funding for sewer extensions), and establish a new fixed charge to generate additional revenues necessary to fund the program.

5.4. Evaluation of Funding Alternatives

5.4.1. Evaluation Criteria

The funding alternatives were evaluated based on the following set of evaluation criteria that were developed and discussed with the County and various stakeholders.

- **Revenue adequacy:** Considers whether the alternative can generate revenues sufficient to fund nutrient reduction programming, and whether there is flexibility to adjust the fee to match revenue needs over time.
- **Ease of understanding/simplicity:** Considers how easily understandable and intuitive the alternative appears to a typical property owner, how easy will it be for the County to communicate the fee structure to County residents, and the simplicity of the structure, method of calculation, etc.
- **Ease of implementation/administrative burden:** Considers how difficult it will be for the County to implement and maintain the funding alternative given the administrative requirements of billing, collections and customer service, required staff and expertise, necessary partners, required technology and data, and current or expected County resource levels.
- **Fairness and equity:** Considers whether the alternative is fair and equitable in terms of the service or benefit received versus the cost to the property owner, and the sewer-related costs already assessed to some property owners for wastewater system management.
- **Legality:** Considers the potential legislative steps needed to implement the alternative and perceived ability to obtained legislative success.
- **Affordability:** Considers the relative affordability of the alternative to average and low-income households, and the ability to help mitigate affordability impacts.
- **Provides incentive for desired actions:** Considers whether the alternative provides for incentives for the actions that the County is interested in promoting, such as whether the alternative provides an incentive for property owners with septic/cesspools to upgrade to a new

[90]See Appendix E, Impact of Advanced Septic Installation and Sewer Connection on House Prices, Report prepared for Suffolk County, NY by CoreLogic, December 2019.

I/A OWTS. Considers whether the alternative can charge a property owner more or less depending upon its nutrient loading to the environment.

- **Political/stakeholder acceptance:** Considers whether the alternative is generally considered to be broadly accepted by the full range of stakeholders and constituents, including how much resistance is expected, and how feasible is approval of the fee structure given the expected response.
- **Cost implications:** Considers how costly it would be for the County to implement and maintain the alternative, including the relative cost of establishing, updating the fee, billing, collection, and administration of the fee.

5.4.2. Advantages and Disadvantages

A summary of the applicability, advantages, and disadvantages of the funding alternatives identified above are provided in Table 5-4.

Table 5-4: Summary of CWMD Funding Alternatives

Description	Applicability	Advantages	Drawbacks / Limitations
Extend Sunset on the ASRF			
Extend and repurpose the revenues generated from the portion of the County's ¼% sales tax that are used to support sewer district costs and dedicate them to support sewer extensions and I/A OWTS grants.	Under the current enabling legislation, these revenues are dedicated to sewer districts. It would require a state legislative change to make this an applicable alternative. If enabled, repurposing the ASRF could be phased-in over time.	• Equity. Could help to improve the equitability of sewer user charges. • Stability. Revenues are subject to sales fluctuations but considered generally stable. • Implementation. Redirecting existing ASRF revenues would make use of existing taxes without requiring new taxes or fees to be implemented.	• Sufficiency. ASRF revenues would likely be insufficient to fully fund the CWMD revenue needs. • Customer Impact. Would require significant increases in some of the sewer district rates. • Implementation. Requires changing state legislation to allow revenue repurposing, which may be challenging.
AV Property Tax			
A new AV tax added to each property's tax bill. The tax amount would vary depending upon each property's assessed value.	Applicable to all taxable properties within the County. If desired, the AV tax could differ by type of parcel, with a lower AV tax rate assessed to parcels connected to a centralized STP or an I/A OWTS, and a higher charge for those with a cesspool/septic system.	• Affordability. Properties with a lower assessed value would pay proportionately less than higher valued properties. • Stability. Stable revenue from year to year. • Implementation. Relative ease in adding another line to existing tax bills and modifying the tax each year to meet revenue needs.	• Equity. Everyone pays, but there is limited connection of property value and benefits received, and limited ability to charge differently based on level of pollution contribution. • Implementation. Would be included under the County's tax cap limitation. • Implementation. Requires successful voter referendum.
Sales Tax Increase			
The existing ¼% sales tax would be increased to generate sufficient revenues to support sewer extensions and I/A OWTS grants.	Applicable to all eligible purchases within the County.	• Equity. Everyone in the County shares in the cost of the program. • Stability. Revenues subject to sales fluctuations but considered generally stable.	• Equity. Everyone pays, but there is limited connection of qualifying purchases with the benefit received, and no ability to charge differently based on level of pollution contribution. • Affordability. Depending on definition of qualifying purchases, it could disproportionately and negatively impact low income households. • Implementation. Difficult to modify the tax each year to match annual revenue needs.

Description	Applicability	Advantages	Drawbacks / Limitations
			) Implementation. Requires modifying state legislation and/or voter referendum.
Property Transfer Tax			
A new tax would be added upon the sale of real estate within the County in proportion to the value of real estate sale.	The tax could apply to all properties equally or the tax could differ by type of parcel, with a lower or no tax assessed to properties connected to a centralized STP or an I/A OWTS, and a higher tax for those with a cesspool/septic system.	) Equity. Some ability to charge differently based on level of pollution contribution.) Affordability. Properties sold with a lower sales price would pay proportionately less than higher valued properties.	) Equity. Only those residents that sell property would share in the program's cost.) Stability. Revenues subject to real estate market fluctuations.) Implementation. Difficult to modify the tax each year to match annual revenue needs.) Implementation. Requires voter referendum.
Fixed Charge (Flat)			
A new charge assessed to each property in the County. The charge would be a flat charge per property.	The charge could apply to all properties equally or could differ by type of parcel, with a lower or no charge assessed to properties connected to a centralized STP or an I/A OWTS, and a higher charge for those with a conventional, non-performing cesspool/septic system.	) Equity. Everyone in the County shares in the cost of the program with some ability to charge differently based on level of pollution contribution.) Stability. Stable revenue from year to year.) Implementation. Relative ease in adding a fixed charge line to the tax bill, and relative ease in modifying the charge each year to meet revenue needs.	) Equity. Large and small properties within the same rate tier would pay the same amount.) Affordability. Lower value properties within the same tier would pay the same amount as high value properties.) Implementation. Requires County legislature approval and/or a voter referendum depending upon whether the charge is deemed a fee or a tax.) Implementation. May be considered a tax rather than a charge for service and covered under the County's tax cap limitation.
Fixed Charge (by Meter Size)			
A new fixed charge assessed to each property in the County based on the property's water meter size.	Properties with larger size water meters, corresponding to greater water usage, would pay more than those with smaller size water meters. All single-family residential properties with the same meter size and in the same tier would pay the same amount. Could differ by type of parcel, with a lower or no charge assessed to properties connected to a centralized STP or an I/A OWTS,	) Equity. Everyone in the County could share in the cost of the program with an ability to charge differently based on level of pollution contribution.) Affordability. Larger properties with larger water meters would pay more than smaller properties.) Stability. Stable revenue from year to year.) Implementation. Relative ease in adding a fixed charge line to the tax bill, and	) Affordability. All single-family properties in the same tier and with the same meter size would pay the same, limiting the ability of low-income customers to control the size of their bill.) Ease of Understanding. May be more difficult for residents to understand the fee structure than other alternatives.) Implementation. Requires either County legislature approval or a voter referendum

Description	Applicability	Advantages	Drawbacks / Limitations
	and a higher charge for those with a cesspool/septic system.	relative ease in modifying the charge each year to meet revenue needs. • Implementation. More likely to be considered a user charge than a tax, and thus may not be covered under the County's tax cap limitation.	depending upon whether the charge is deemed a fee or a tax. • Implementation. Requires County to obtain water meter size information for each property within the County from SCWA and maintain/update such information.
Fixed Charge by SFE Unit			
A new fixed charged assessed to each property in the County based on the property's SFE consumption units. Most residential properties assigned 1 SFE while each commercial property is assigned a multiple number of SFE units corresponding to their prior year's water consumption.	Properties that utilize significantly more water than a typical single-family household would be charged a higher fee in general proportion to their water usage. Could differ by type of parcel, with a lower or no charge assessed to properties connected to a centralized STP or an I/A OWTS, and a higher charge for those with a cesspool/septic system.	• Equity. Everyone in the County would share in the cost of the program with an ability to charge differently based on level of pollution contribution. • Affordability. Larger properties with more water usage would pay more than smaller properties. • Stability. Stable revenue from year to year. • Implementation. Relative ease in adding a fixed charge line to the tax bill or sewer bill, and relative ease in modifying the charge each year to meet revenue needs. • Implementation. More likely to be considered a user charge than a tax, and thus may not be covered under the County's tax cap limitation.	• Ease of Understanding. May be more difficult for residents to understand fee structure than other alternatives. • Implementation. Requires use and potential purchase of SCWA and other water provider water billing records, which could add to the cost of implementing this option. • Implementation. Requires County legislature approval and/or a voter referendum depending upon whether the charge is deemed a fee or a tax.
Water Consumption Charge			
A new charge assessed to each property based on the amount of metered water consumption used by each property in each billing period	Properties that utilize more water would pay more in proportion to their water usage. The water rate could differ by type of parcel, with a lower or no rate assessed to properties connected to a centralized STP or an I/A OWTS, and a higher rate for those with a cesspool/septic system.	• Equity. Everyone in the County would share in the cost of the program with an ability to charge differently based on level of pollution contribution. • Affordability. Larger properties with more water usage would pay more than smaller properties. • Implementation. Relative ease in adding the charge to an SCWA water bill, and relative ease in modifying the charge each year to meet revenue needs.	• Stability. Revenues potentially volatile and subject to water consumption variability from year to year. • Implementation. Requires County to regularly obtain and purchase billing records from SCWA and other water providers, which could add to the cost of implementing this option. Likely requires proportionately more effort to administer a charge based on water consumption, particularly if SCWA is unwilling to help perform the billing function.

Description	Applicability	Advantages	Drawbacks / Limitations
		) Implementation. More likely to be considered a user charge than a tax, and thus may not be covered under the County's tax cap limitation.) Ease of Understanding. Fee structure generally easy to understand.	) Implementation. Requires County legislature approval and/or a voter referendum depending upon whether the charge is deemed a fee or a tax.
Tiered Fee Structure			
Properties with an I/A OWTS system and those located within a County sewer district or connected to a centralized STP would pay a lower fee. Properties that have a conventional, non-performing cesspool or septic system would pay a higher fixed charge.	Applicable to several of the alternatives described above. May help provide an incentive for properties to upgrade to an I/A OWTS system to avoid paying a higher fixed charge.	) Equity. Everyone in the County would share in the cost of the program, but charge would be different based on whether or not the property pays a separate sewer user charge. Ability to charge differently based on level of pollution contribution.) Implementation. Relative ease in adding the tiered charge to a tax or water bill, and relative ease in modifying the charge each year to meet revenue needs.) Implementation. More likely to be considered a user charge than a tax, and thus may not be covered under the County's tax cap limitation.	) Affordability. Decreases the base of properties that would pay the full fee thereby either impacting revenues or resulting in a higher fee. A higher fee would increase the burden on low-income customers.) Ease of Understanding. May be more difficult for residents to understand the fee structure than other alternatives.
Tax Increment Financing			
Establishment of a TIF district in a planned sewer extension area. Dedicate the incremental tax revenue generated within the TIF district (from increasing property values and new development) to pay for sewer extension debt service.	Enabled by NYS 1984 Tax Increment Financing Law. Law requires that municipalities demonstrate the existence of blight and that redevelopment would not be feasible "but for" the use of TIF.	) Affordability. Minimal upfront cost to the taxpayer. No increase in the property tax rate would be required.) Equity. The development value and increases to property values that would occur as a result of the sewer extension would pay for the cost of the sewer extension project.	) Revenue Sufficiency. Risk associated with a failed development and insufficient revenue to fund the sewer extension debt.) Ease of Understanding. Relatively complex. May be more difficult for residents to understand this financing structure. Structure not typically used in Suffolk County.) Implementation. Requires County legislature approval and most likely a detailed redevelopment plan for a specific sewer extension area. Requires voter referendum for sewer extension approval.

5.4.3. Stakeholder Input

Several meetings were held with the County and various stakeholders, including TNC, the LIRPC, Long Island Builders Institute, Long Island Board of Realtors, SCWA, and the Citizens Campaign for the Environment to discuss the alternatives and solicit feedback. These meetings were held on July 17, 2019, August 29, 2019, September 26, 2019, and October 28, 2019. The following is a summary of specific comments received from the stakeholder meetings:

- The cost of funding of County-wide programs to address nutrient loading into the environment should be shared by all residents within the County. Everyone will benefit from the implementation of programs to reduce nutrient loading, so all should share in the cost.
- The cost to discharge nutrients and other pollutants into the environment today is free. However, if property owners could save money by polluting less, it would provide an economic incentive for installing I/A OWTS systems.
- Consider joint funding of centralized sewer systems and I/A OWTS, with possible establishment of different tiers of service to keep sewer and I/A charges segregated.
- Consider a consumption-based charge. Such a charge is logical because it scales with pollution and is easy to understand.
- AV would be an acceptable second choice if there is significant resistance by SCWA and others to supporting a consumption-based charge.
- Any fee imposed would need to be a dedicated fee that could not be used for other County government purposes.
- The Long Island Builders Institute opposes the real estate transfer tax alternative. Affordable housing and water quality are good ideas, but everybody should have to pay for them not just those selling property.
- The simplicity of the alternative is important to ensure that the fee is understandable and acceptable by the public. However, equitability and affordability are also important which may require a somewhat more complex fee structure.

As part of the stakeholder involvement process, County staff, the LIRPC, and TNC were asked to rank and score the funding alternatives against the criteria that were established and discussed at the stakeholder meetings. The two alternatives that scored the highest are summarized below:

- Water Consumption Charge
- Multi-Tiered Fixed Charge

Other alternatives that also scored high by some of the stakeholders included fixed charge by water meter size, AV property tax, and a property transfer tax.

5.4.4. Community Polling

In December 2019, the most recent in a series of polls conducted by FM3 Research and commissioned by TNC revealed continuing community support for several different rate structures designed to fund the CWMD. The polling was completed following focus groups completed earlier in 2019. Overall, general support for some kind of recurring revenue stream to fund water quality management activities was

found in the polling (67% support such a program), and this finding was consistent with what was observed in the earlier focus groups. The poll sample included 600 County residents. One third of the respondents evaluated each of the three priority rate options and responses were then analyzed and compared to understand community preferences. The polling was carefully structured to ensure gender, age, political preference, geographic, and other important aspects of demographic balance relevant in the County, and the resulting sample reflected those intentions. The rate structures tested in the poll included a simplified version of the SFE approach that was presented as a fixed charge that varies by customer type (63% support), a consumption-based rate (65% support), and an AV tax (56% support). Overall, the fixed charge, and the consumption-based rate were preferred over the AV tax funding option. While the consumption-based rate option was preferred slightly more than the fixed charge, the difference was not greater than the statistical margin of error that resulted from the sample size. These results suggest that both the SFE and consumption-based rate options might garner greater than 60% support if a ballot measure were put forth. It is also worth noting that the expected higher administrative cost of the consumption-based rate option was not tested as part of the poll.

5.4.5. Legal and Regulatory Considerations

The County, under County Law § 266, has the authority to assess wastewater disposal and refuse collection charges and currently does so for providing wastewater collection and treatment services to properties located within the County's existing sewer districts. However, in addition to collecting revenues for centralized sewer system operations, the County also desires to collect revenues to fund County grant programs to provide financial incentives for property owners to replace conventional, non-performing cesspool/septic systems with I/A OWTS that have enhanced nitrogen removal capabilities. The existing County law appears to allow the collection of revenue for such purposes. County Law § 266 authorizes a district to enter into an agreement with the owner of a benefited parcel of property setting forth the amount to be paid by the owner for "procurement, installation and modification, as the case may be, of the water quality treatment unit or device, and … for monitoring, testing, O&M [which] shall be determined annually" (County Law § 266(3)(a)). However, the section does not expressly authorize a grant program to incentivize property owners to replace cesspool/septic systems. Therefore, state law could be amended to expressly authorize the County to create such a program and associated funding source.

5.4.6. New York State Tax Cap Limitations

The New York State Property Tax Cap limits the amount local governments can increase its property tax to the lower of (1) two percent, or (2) the rate of inflation. Local government boards must pass a local law by at least a 60 percent vote to override the tax cap. The Property Tax Cap Legislation states that for the purposes of the tax cap, taxes shall include "special AV levies and special assessments."

According to the tax law, the following definitions apply:

- "Special AV levy" means a charge imposed upon benefited real property in the same manner and at the same time as taxes for municipal purposes to defray the cost, including operating and maintenance, of special district improvement or service, but not including any charge imposed by or on behalf of a city or village.
- "Special assessment" means a charge imposed upon benefited real property in proportion of the benefit received by such property to defray the cost, including O&M, of a special district

improvement or service or of a special district improvement or service, but does not include a special AV levy.

The New York State Department of Taxation and Finance, Publication 1000 (10-11) clarified the applicability of the tax cap. This guidance states:

- A tax levy that supports the operations of a special district that is established, administered and governed by the governing body of another local government – such as a tax levy imposed by a town or county board, under its authority, to support an improvement district created, administered and governed by that town or county board – is part of that town or county's tax levy, and is to be applied to the tax levy limit of that town or county – it is not to be separately reported by the special district.
- A special district that raises revenue solely through fees based on use is not subject to the tax levy limit.

Based on this guidance, fees charged based on their assessed value would be considered a "special AV levy" and would be subject to the County's tax cap. However, fees that are based solely upon individual quantity of usage, would not be subject to the tax cap. Therefore, the form or structure of a consolidated sewer district user charge and the CWMD fee may impact whether it is included under the County's tax cap limitations.

5.4.7. Taxable Status of Grant Funds to Property Owners

If the IRS rules that County grants to property owners are required to be included as taxable ordinary income on personal tax returns, it would minimize the effectiveness of the grant program as a means to incentivize property owners to install I/A OWTS. In this case, the County may consider converting its grant program to a benefit assessment-type program. This type of program may require the County to install, own, and maintain the I/A OWTS. Under this approach, the County would likely be required to pay upfront for the full cost of I/A OWTS installation, but then could charge the property owner for a portion of the installation cost over-time through a benefit assessment. The difference between the full cost of I/A OWTS installation and the property owner's benefit assessment would be equivalent to providing the property owner with a grant to pay for a portion of the install cost. As such, the County and SSRF grant programs would offset the amount of cost that the property owner would be responsible for though the benefit assessment. Under a benefit assessment approach, the County would still need a recurring revenue source to provide funding for the upfront cost of I/A OWTS installation, for the portion of cost not included in the benefit assessment to property owners (i.e. the County grant portion), and the annual cost of I/A OWTS maintenance.

A benefit assessment-type program, in addition to a work around to avoid personal income tax, could provide an added advantage to the County of having more control over I/A OWTS maintenance. In addition, it would allow for the County to amortize the property owner's share of the installation cost, thereby lowering the upfront financial burden to property owners. However, because the County would pay for the upfront cost of installation and maintenance, and then charge these costs back to the property owner, the County would require more working capital than a program that simply offers grants to property owners.

5.5. Recurring Revenue Source Recommendations

Based on the considerations, analyses, and stakeholder feedback described above, it is recommended that the County consider establishing either a tiered water consumption-based charge or a tiered fixed charge by SFE. These recurring revenue sources would fund I/A OWTS construction grants, planned sewer extensions, and other nutrient reduction programs throughout the County. The County can also consider repurposing the ASRF funds to be used for I/A OWTS installation assistance. A water consumption-based charge is a charge based on the amount of metered water consumption used by each property within the County. This alternative has the advantages of distributing the cost of the program to all properties within the County based on the usage of water, which is a reasonable proxy for the amount to nutrients generated by properties, it is considered equitable in that properties with more water usage would pay more than properties with less water usage, the charge structure is relatively easy to understand, and the charge would not likely be covered under the County's tax cap limitation.

A fixed charge by SFE is a fixed charged assessed to each property based on the property's SFE number of consumption units. Most residential properties would be assigned one SFE unit, and in essence be a fixed charge. Commercial properties would be assigned a multiple number of SFE units corresponding to their prior year's billed water consumption. A fixed charge by SFE has the advantage of distributing the cost of the program to all properties within the County generally based on the usage of water, it is considered equitable in that properties with more water usage would pay more than properties with less water usage, the fixed charge would produce stable revenues for the County from year to year, implementation would be relatively easy since the County already uses a fixed charge by SFE as a fee structure for some of its existing sewer districts, and the fee structure would not likely be covered under the County's tax cap limitation.

The ultimate selection of a preferred alternative may depend upon the cooperation of the SCWA in providing water consumption data to the County on routine basis at a reasonable cost. The County currently pays SCWA $0.50 per water billing record. If a water consumption-based charge is used and the SCWA continues to charge the County for billing records at the same unit cost, the total cost to the County is estimated at $790,000 per year. Furthermore, SCWA's cooperation in including the water consumption charge on the water bills issued by SCWA would be necessary to avoid significant cost in the County preparing and issuing its own bills based on water consumption. The County Legislature could conceivably direct the SCWA and the County to work together to implement a billing approach that is as cost effective as possible. If SCWA cooperation is not realized, then the water consumption-based billing approach would be deemed to be infeasible, and the County should proceed with a fixed charge by SFE approach. Since this approach uses approximate water consumption as the basis of billing, it obviates the need for consumption records as most residential customers would be billed one SFE unit. Further, it would require the County to obtain water consumption information from only commercial customers on a regular basis, which comprises only approximately 6% of the approximately 395,000 customers served by SCWA. In addition, the County could add the fixed charge on each property owner's tax bills or send separate bills to these property owners.

The County should also consider establishing either a tiered water consumption charge or a tiered fixed charge by SFE. Such a tiered structure could be established to reflect the cost-causation relationship and may help incentivize property owners with conventional, non-performing septic/cesspool systems to upgrade to I/A OWTS systems. A cost-causation relationship means that those that cause the costs to be incurred share in the cost of the program. For example, those properties within a County sewer district

that are connected to a centralized wastewater treatment system pay the sewer district user charge generally in proportion to the sewer collection and treatment service being provided. Since these sewer district customers are generally paying for this County service, under a tiered fee structure, these customers would pay a nominal CWMD fee as opposed to those with a conventional, non-performing septic/cesspool system. Furthermore, under a tiered structure, property owners that upgrade to an I/A OWTS system could also pay a nominal CWMD fee, reflecting the reduced nitrogen loading, and costs incurred in installing and maintaining the system. As a policy matter, the County will need to decide whether a tiered charge that improves the equitability of the charge structure is worth the added complexity and greater administrative burden to maintain.

It is recommended that, over the long-term, the County consider a multi-faceted approach to funding its nutrient reduction program. This includes making best efforts to advocate for and obtain additional grant funding resources through New York State programs to supplement the County's revenue needs. In addition, the County should consider alternatives, such as TIFs specifically to help support funding the sewer extensions as part of the County's overall strategy in specific development zones.

Over the long-term, if the County desires to improve the equitability of its sewer user charge structure, it may want to consider making changes to the allocation of ASRF funds that are currently used to subsidize sewer district costs. Since ASRF funds are derived from sales tax revenues from all, the County may want to consider reallocating the ASRF funds to nutrient reduction programs that benefit everyone in the County rather than subsidizing sewer district user charges. In doing so, customers connected to a centralized County sewer system would pay the equitable cost of sewer service, while unlocking additional revenues to support nutrient reduction programs. Given the impact on sewer user charges, this option would need to be phased-in over several years. The feasibility of this option is contingent upon modification of State legislation to allow for the rededication of ASRF funds.

5.6. CWMD Charge and Customer Bill Projections

The annual revenue projections under several CWMD charge levels are shown in Table 5-5 assuming a CWMD charge structure without tiering. A uniform CWMD charge without tiering is anticipated to generate stable revenue from year-to-year.

Given the pace of I/A OWTS upgrades, the planned County grant funding program outlined in the SWP (described in Section 3 of this report), and assuming either continued State Grant funding or repurposing a portion of ASRF funds in the amount of $10 million per year, a non-tiered CWMD charge of approximately $61 per single-family residential property per year would be required to fund the program under the slower uptake of I/A OWTS installation and lower sewer extension cost scenario (assuming the maximum rate of I/A OWTS installations is 2,500 per year). A CWMD charge of approximately $85 per single-family residential property per year would fund the program under the medium uptake of I/A OWTS installation and lower sewer extension cost scenario (assuming the maximum rate of I/A OWTS installations is 4,000 per year), a CWMD charge of $172 per single-family residential property per year would fund the program under the faster uptake of I/A OWTS installation and higher sewer extension cost scenario (assuming the maximum rate of I/A OWTS installations is 7,000 per year). The slower and medium pace scenarios assume $257 million in sewer extension funding over 20-years, and the faster pace scenario assumes $567 million in sewer extension funding over 20-years. These scenarios also assume that the CWMD charge would remain the same over the forecast period.

Based on the SWP, the higher funding level of Scenario 3 is required to meet the County's 50-year target timeframe for completion of identified sewer projects.[91] Also shown in Table 5-5 are estimates of annual revenues that are projected to be generated by adopting a water consumption charge or an SFE-based charge ranging from $50 per year to $200 per year for a typical residential property.

Table 5-5: Annual Revenue Projection vs. CWMD Charge Level (without Tiering)

Annual Residential CWMD Bill	Annual Revenue ($ Millions)	Uniform Charge ($ / 1,000 gals)
$50 per year	$33.5	$0.44
$61 per year (Low Scenario)	$41.1	$0.54
$85 per year **(Med Scenario)**	$57.3	$0.76
$99 per year	$66.4	$0.88
$150 per year	$100.6	$1.33
$172 per year **(High Scenario)**	$115.5	$1.53
$200 per year	$134.2	$1.78

Assumes typical residential customer uses 112,700 gallons of water per year (1 SFE = 112,700 gallons).

Revenue projections do not consider population growth and exclude potential State grants and potential revenue from repurposing a portion of ASRF funds.

Uniform charge assumes the CWMD charge and annual residential bill is flat over the forecast period, and all properties regardless of whether they are connected to a centralized sewer system or whether they use a conventional, non-performing septic/cesspool system or an I/A OWTS system would pay the same charge.

A second set of scenarios was developed for the CWMD charge that incorporates tiering the charge. These scenarios assume that customers connected to a centralized wastewater collection and treatment system and properties with I/A OWTS systems would pay a lower charge than properties with conventional, non-performing septic/cesspool systems. For these projections, the amount of the tier discount was allowed to range from 0% to 100%, and it was assumed that the CWMD charge would increase each year by approximately the rate of inflation (assumed to be 2.5% per year). If an annual escalator is not employed another approach that could be considered might be a larger step-wise increase such as the doubling of the rate after seven years that the Maryland program employed.

These projections reflect three revenue requirement levels: (1) a 20-year average revenue requirement of $41.1 million, which corresponds to the slower pace scenario, (2) a 20-year average annual revenue requirement of $57.3 million, which corresponds to the medium pace scenario, and (3) a 20-year average annual requirement of $115.5 million per year, which corresponds to the faster pace scenario. Each of these revenue requirement scenarios assumed supplemental funding of $10 million per year from a combination of continued State Grant funding to the County, repurposing the ASRF funds, or other revenue sources.

As shown in Table 5-6, the tiered CWMD charge under the slower pace scenario ($41.1 million 20-year average annual revenue requirement scenario) for a typical residential property with a conventional, non-

[91] Subwatersheds Wastewater Plan, p.4-53.

performing septic/cesspool system would vary from approximately $48 to $68 per year. For a property with an I/A OWTS or connected to a centralized wastewater treatment system, the CWMD charge would range from $0 to $48 per year for a typical residential property with, depending upon the amount of tier discount.

Under the medium pace scenario ($57.3 million 20-year average annual revenue requirement scenario), the tiered CWMD charge for a Tier 2 property (with a conventional, non-performing septic/cesspool system) would range from approximately $67 to $98 per year; while charges for a Tier 1 property (with an I/A OWTS or connected to a centralized wastewater treatment system) would range from $0 to $67 per year depending upon the amount of tier discount.

Under the fast pace scenario ($115.5 million 20-year average annual revenue requirement scenario), the CWMD charge for a typical Tier 2 residential property would vary from approximately $135 to $216 per year, and the typical Tier 1 property charge would range from $0 to $135 per year, depending upon the amount of tier discount.

Revenues from a tiered CWMD charge are anticipated to decline each year as more and more properties upgrade to an I/A OWTS and are connected to a centralized wastewater system through sewer extensions. However, this decline would be mitigated by escalating the CWMD charge by the rate of inflation each year or periodically over time. The annual bill amounts shown in Table 5-6 and the water consumption rates shown in Table 5-7 were calculated such that the water rates produce the average revenues shown for each of the three scenarios as more properties receive the tier discount over time. In addition, the fee tier scenarios were structured so that once properties are upgraded to I/A OWTS or are connected to sewers, there are sufficient funds collected on an annual basis to enforce and manage the ongoing I/A OWTS maintenance activities that are required.

Table 5-6: Typical Annual Residential Bill at Different Tier Discounts and Funding Levels

Tier Discount	$41.1 M per yr		$57.3 M per yr		$115.5 M per yr	
	Tier 1 ($/SFE/Yr)	Tier 2 ($/SFE/Yr)	Tier 1 ($/SFE/Yr)	Tier 2 ($/SFE/Yr)	Tier 1 ($/SFE/Yr)	Tier 2 ($/SFE/Yr)
0%	$47.96	$47.96	$66.87	$66.87	$134.78	$134.78
10%	$44.42	$49.36	$62.20	$69.11	$126.06	$140.06
20%	$40.71	$50.89	$57.18	$71.47	$116.59	$145.74
30%	$36.76	$52.52	$51.80	$74.00	$106.32	$151.89
40%	$32.55	$54.25	$46.02	$76.71	$95.15	$158.58
50%	$28.05	$56.10	$39.81	$79.62	$82.94	$165.89
60%	$23.23	$58.09	$31.11	$82.77	$69.56	$173.91
70%	$18.07	$60.22	$25.85	$86.17	$54.82	$182.74
80%	$12.50	$62.51	$17.79	$89.87	$38.50	$192.51
90%	$6.50	$64.98	$9.39	$93.90	$20.34	$203.39
100%	$0.00	$67.66	$0.00	$98.30	$0.00	$215.58

The tiered charge is shown for 2024 and assumes that the charge will be escalated by 2.5% per year over the forecast period.

Tier 1 = Properties with an I/A OWTS or connected to a centralized wastewater system.

Tier 2 = Properties with a conventional, non-performing cesspool/septic system.

1 SFE = 112,700 gallons of consumption per year.

The water consumption charges (in $ per 1,000 gallons of billed consumption) corresponding to the three funding levels for the tiered charge structure are summarized in Table 5-7.

Table 5-7: Projected Water Consumption Charge at Different Funding Levels with Tiering

Tier Discount	$41.1 M per yr		$57.3 M per yr		$115.5 M per yr	
	Tier 1 ($/1,000 gals)	Tier 2 ($/1,000 gals)	Tier 1 ($/1,000 gals)	Tier 2 ($/1,000 gals)	Tier 1 ($/1,000 gals)	Tier 2 ($/1,000 gals)
0%	$0.43	$0.43	$0.59	$0.59	$1.20	$1.20
10%	$0.49	$0.44	$0.55	$0.61	$1.12	$1.24
20%	$0.36	$0.45	$0.51	$0.63	$1.03	$1.29
30%	$0.33	$0.47	$0.46	$0.66	$0.94	$1.35
40%	$0.29	$0.48	$0.41	$0.68	$0.84	$1.41
50%	$0.25	$0.50	$0.35	$0.71	$0.74	$1.47
60%	$0.21	$0.52	$0.29	$0.73	$0.62	$1.54
70%	$0.16	$0.53	$0.23	$0.76	$0.49	$1.62
80%	$0.11	$0.55	$0.16	$0.80	$0.34	$1.71
90%	$0.06	$0.58	$0.08	$0.83	$0.18	$1.81
100%	$0.00	$0.60	$0.00	$0.87	$0.00	$1.91

The Tiered charge is shown for 2024 and assumes that the charge will be escalated by 2.5% per year over the forecast period.

Tier 1 = Properties with an I/A OWTS or connected to a centralized wastewater system.

Tier 2 = Properties with a conventional, non-performing cesspool/septic system.

1 SFE = 112,700 gallons of consumption per year.

The County's policy decision regarding the CWMD fee tier structure, combined with its policy decisions regarding its I/A OWTS grant program and a sewer district equalization rate plan, should be part of an overall strategy and program that encourages I/A OWTS upgrades and provides no disincentives to property owners to installing sewers where feasible.

5.7. Affordability Analysis

An affordability analysis was completed to estimate the economic burden the new CWMD charge might place upon households within the County. The analysis consisted of documenting current income levels and the prevalence of poverty in the County and measuring the affordability of the proposed new CWMD charge by examining the future annual residential costs as compared to income levels.

Based on American Community Survey data, the County's median and lowest quintile household income levels are $92,838 and $38,799 per year, which are both higher than the median and lowest quintile household income levels for New York State and the U.S., as shown in Table 5-8. However,

there are a significant number of households within the County with income levels below the Federal Poverty Level, as shown in Table 5-8. A map depicting household income levels within the County by Census Blocks is provided in Appendix C.

Table 5-8: Suffolk County Income Statistics

Description	Suffolk County	New York State	U.S.
Median Household Income	$92,838	$62,765	$57,652
Lowest Income Quintile	$38,799	$23,178	$23,584
% of Households Below FPL	7.2%	14.6%	13.8%
% of Families Below 200% of FPL	13.5%	25.8%	26.18%

Source: 2013-2017 American Community Survey, 5-Year Estimates. FPL = Federal Poverty Level.

The EPA generally considers wastewater service providers to be in the "low", "medium", and "high" financial impact categories if wastewater-related residential cost as a percentage of median household income (MHI) is below 1%, between 1% and 2%, and at or above 2%, respectively.[92] Based on the projected residential cost as a % of MHI under the various CWMD charge levels shown in Table 5-9, the financial impact burden of the CWMD is considered low using the EPA criteria.

Table 5-9: Projection of Residential Cost as % of MHI (Without Tiering)

CWMD Charge Level	Centralized WWTP System[1]	I/A OWTS System[2]	Conventional Septic/Cesspool[3]
$50 per year	0.7%	0.6%	0.2%
$61 per year	0.7%	0.6%	0.2%
$85 per year	0.7%	0.6%	0.3%
$99 per year	0.7%	0.6%	0.3%
$150 per year	0.8%	0.7%	0.3%
$172 per year	0.8%	0.7%	0.3%
$200 per year	0.8%	0.7%	0.4%

[1]Assumes typical annual residential sewer district cost of $567 per year in 2024

[2]Assumes annual operation and maintenance cost of $475 per year.

[3]Assumes annualized operation and maintenance cost of $140 per year.

Even with low financial impact, some residential households within the County are already experiencing economic hardship, and the introduction of the CWMD charge would contribute. Therefore, the County may want to consider adding a low-income customer assistance program along with the implementation of the CWMD charge, providing a reduced CWMD charge for low income households that qualify. The

[92] Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development (EPA, 1997).

County could consider leveraging the County's Low-Income Home Energy Assistance Program (LIHEAP) to identify households that would be eligible for the low-income discount program. LIHEAP is a program that helps qualifying low-income households within the County pay for the cost of heating their homes. According to the County Department of Social Services, in 2018 there were approximately 46,800 households, or approximately 9.6% of households within the County, that receive LIHEAP benefits.[93] In addition to an I/A OWTS grant program that provides additional grant support to eligible low income households, the County could consider a reduced CWMD charge for low income households that qualify and receive LIHEAP benefits.

[93] Email correspondence from Marie Buday from the County Department of Social Services, November 7, 2019.

6. Sewer District Rate Equalization

County sewer districts are funded by sewer rates, ASRF (i.e. sales tax) revenues, and state grants for infrastructure improvements, as described in Section 6.1.

6.1. Existing Sewer Rate Structures

Each of the County's 26 sewer districts has its own operating budget and sewer rate structure, and its finances are independent of all of the others. An unexpected spike in operating costs, or required capital, in one district must be absorbed or accommodated by that district alone. The County has used the ASRF Fund as a financial mechanism to mitigate rate spikes, to a certain extent, and manage the budgets in each sewer district.

Residential rates for sewerage collection and treatment are primarily assessed in two ways: (1) an AV charge based on each property's assessed value; and (2) SFE units, which assigns a number of SFE units to each property based on the property's prior year annual water consumption, with most single-family residential properties assigned 1 SFE unit. In-District customers for nine of the 26 sewer districts are charged by each respective Town based on assessed value. In-District customers for 12 of the 26 sewer districts are charged by the County based on SFE units. Customers for three of the 26 sewer districts are charged based on a proportional percentage of flow. Customers located within one sewer district, SD#3, are charged based on a combination of assessed value, SFE units, and a flat rate per parcel. In general, customers located within the district boundaries are charged by their respective Towns, and customers located outside the district boundaries but who are served by the district (i.e., contractees) are charged by the County. A summary of the sewer district billing methods is provided in Table 6-1.

The assessment rates, SFE fees, and other charges vary widely among the sewer districts, as does the cost of service on a per household basis. In many districts, there is little correlation between the cost of sewage collection and treatment and the per household charge for this service. A summary of the 2019 sewer rates, fees, and user charges is also provided in Table 6-1. The 2019 average annual bills for residential customers located in each sewer district are summarized in Table 6-2. As shown, the average residential bills in 2019 vary by sewer district from approximately $166 to $1,189 per year.

Table 6-1: Summary of Sewer District Billing Methods and Rates (2019)

Sewer District	Billing Methodology	Billing Entity	Billing Frequency	Rates
SD#1 – Port Jefferson	In-District - AV	Town	Annual	$64.1626 / 1,000 AV
	Res Contractees – AV+5%	DPW	Quarterly	$1.68 / 100 AV
	Com Contractees – AV+5%	DPW	Annual	$67.37 / 1,000 AV
SD#2 – Talmadge Woods	Res – Flat Rate per SFE	DPW	Quarterly	$169.75 per SFE
	Com – Flat Rate per SFE	DPW	Annual	$679 per SFE
SD#3 - Southwest	Res - Flat Rate per SFE	DPW	Quarterly	$41.75 per SFE
	Com – Flat Rate per SFE	DPW	Annual	$167 per SFE
	AV billed by Town	Town	Annual	$0.67 per 1,000 FEV
	Flat Rate billed by Town	Town	Annual	$35.76 per parcel
	Res Contractees	DPW	Quarterly	Above + 5% Admin fee
	Com Contractees	DPW	Annual	Above +5% Admin fee
SD#4 – Smithtown Galleria	Res - Flat Rate per SFE	DPW	Quarterly	$176.50 per SFE
	Com – Flat Rate per SFE	DPW	Annual	$706 per SFE
SD#5 – Strathmore (Huntington)	Zone A – AV	Town	Annual	$212.6572 per 1,000 AV
	Zone B – AV	Town	Annual	$158.1396 per 1,000 AV
SD#6 – Kings Park	In District – AV	Town	Annual	$11.9363 per 1,000 AV
	Res Contractees – Flat Rate per SFE	DPW	Quarterly	$35.67 per SFE
	Com Contractees – Flat Rate per SFE	DPW	Annual	$142.68 per SFE
SD#7 - Medford	In District – AV	Town	Annual	$238.9916 per 1,000 AV
	Res Contractees – AV	DPW	Quarterly	$6.27 per 100 AV
	Com Contractees – AV	DPW	Annual	$250.94 per 1,000 AV
SD#8 – Strathmore (Ridge)	In District - AV	Town	Annual	$858.5896 per 1,000 AV
SD#9 – College Park (Farmingville)	In District - AV	Town	Annual	$193.2581 per 1,000 AV
SD#10 – Stony Brook	In District - AV	Town	Annual	$200.3349 per 1,000 AV
SD#11 - Selden	In District – AV	Town	Annual	$171.89 per 1,000 AV
	Res Contractees – AV	DPW	Quarterly	$4.51 per 100 AV
	Com Contractees – AV	DPW	Annual	$180.48 per 1,000 AV
SD#12 – Birchwood / Holbrook	In District – AV	Town	Annual	$99.1928 per 1,000 AV
	Res Contractees – AV	DPW	Quarterly	$2.60 per 100 AV
	Com Contractees - AV	DPW	Annual	$104.15 per 1,000 AV
SD#13 – Wind Watch	In District - Flat Rate per SFE	DPW	Quarterly	$167 per SFE
	Res Contractees – Flat Rate per SFE	DPW	Quarterly	$175.35 per SFE
	Com Contractees – Flat Rate per SFE	DPW	Annual	$701.40 per SFE
SD#14 - Parkland	Res Zone A – Flat Rate per SFE	DPW	Quarterly	$102.25 per SFE
	Res Zone B – Flat Rate per SFE	DPW	Quarterly	$82.75 per SFE
	In District Com – Flat Rate per SFE	DPW	Annual	$409 per SFE

Sewer District	Billing Methodology	Billing Entity	Billing Frequency	Rates
	Res Contractee A – Flat Rate per SFE	DPW	Quarterly	$107.36 per SFE
	Res Contractee B – Flat Rate per SFE	DPW	Quarterly	$86.89 per SFE
	Com Contractees – Flat Rate per SFE	DPW	Annual	$429 per SFE
SD#15 – Nob Hill	In District Res - Flat Rate per SFE	DPW	Quarterly	$127.50 per SFE
	Res Contractees – Flat Rate per SFE	DPW	Quarterly	$133.88 per SFE
SD#16 – Yaphank	Com – Flat Rate per SFE	DPW	Annual	$803 per SFE
SD#18 – Hauppauge Ind	In District Com – Rate per unit flow	DPW	Annual	$18.00 per 1,000 gal
	Com Contractees – Rate per unit flow	DPW	Annual	$18.90 per 1,000 gal
SD#19 – Haven Hills	In District Res - Flat Rate per SFE	DPW	Quarterly	$61.50 per SFE
SD#20 – William Floyd	In District Res - Flat Rate per SFE	DPW	Quarterly	$91.00 per SFE
	In District Com – Flat Rate per SFE	DPW	Annual	$364 per SFE
	Res Contractees – Flat Rate per SFE	DPW	Quarterly	$95.55 per SFE
	Com Contractee Apt-Flat rate per SFE	DPW	Quarterly	$95.55 per SFE
SD#21 – SUNY Stonebrook	Rate per unit of metered flow	DPW	Annual	Manual
SD#22 Hauppauge Mun	Res Contractees – Flat Rate per SFE	DPW	Quarterly	$165.75 per SFE
	Com Contractees – Flat Rate per SFE	DPW	Annual	$663 per SFE
SD#23 – Coventry Manor	Flat Rate per SFE	DPW	Quarterly	$141.25 per SFE
SD#24 Gabreski Airport	Com – Rate per unit of metered flow	DPW	Annual	Manual
SD#26 – Melville Huntington	Res – Flat Rate per SFE	DPW	Quarterly	$121 per SFE
	Com – Flat Rate per SFE	DPW	Monthly	$484 per SFE
SD#28 – Fairfield at St. James	Res - Flat Rate per SFE	DPW	Quarterly	$100.50 per SFE
	Com – Flat Rate per SFE	DPW	Monthly	$402 per SFE

Table 6-2: Summary of Average Annual Residential Bill by Sewer District

Sewer District	Avg Residential Bill*
SD#1 - Port Jefferson	$166.47
SD #2 - Tallmadge Woods	$679.00
SD#3 - Southwest	$489.52
SD #4 - Galleria	$706.00
SD#5 - Strathmore (Huntington) Zone A	$1,188.88
SD#5 - Strathmore (Huntington) Zone B	$955.06
SD#6 - Kings Park	$75.98
SD#7 - Medford	$584.69
SD#8 - Strathmore (Ridge)	$595.40
SD#9 - College Park (Farmingville)	$592.32
SD#10 - Stony Brook	$591.71
SD#11 - Selden	$454.14
SD#12 - Birchwood/Holbrook	$298.44
SD #13 – Wind Watch	$668.00
SD #14 - Parkland - Zone A	$409.00
SD #14 - Parkland - Zone B (Condos)	$331.00
SD #15 - Nob Hill	$510.00
SD #19 - Haven Hills	$246.00
SD #20 - William Floyd	$364.00
SD #23 - Coventry Manor	$565.00
SD #26 - Melville Huntington	$484.00
SD #28 - Fairfield at St. James	$379.00

*Average bill estimated by dividing 2019 projected residential revenue by the total number of residential connections.

6.2. Sewer Rate Equalization Alternatives

Several sewer rate equalization alternatives were developed to unify and simplify the rate structures of each of the sewer districts and equalize the customer bills in each district over-time. These are discussed in the ensuing subsections.

6.2.1. Sewer Rate Survey

A survey of sewer rate structures used by other sewer service providers in New York State were reviewed to identify typical sewer rate structures and to help develop sewer rate equalization alternatives. Table 6-3 provides a summary of the sewer rate structures employed by other sewer service providers:

Table 6-3: Summary of Sewer Rate Structures Survey Results

Sewer Service Provider	Billing Methodology	Rates
Erie County Sewer Districts 1-8	Res - Flat Charge per property	Varies $50 - $295/yr
	Com – Flat charge per parcel, consumption charge per 1,000 gallons above flat charge allowance	Varies $2.55 - $4.50/1,000 gal
Monroe County	*Northwest Quadrant* Capital Charge/SFE Unit O/M Charge/1,000 Gallons Parcel Charge	 $28.56/SFE Unit $1.46/1,000 gal $1.00/yr
	Irondequoit Bay South Central Capital Charge/SFE Unit O/M Charge/1,000 Gallons Parcel Charge	 $27.39/SFE Unit $1.45/1,000 gal $1.00/yr
	Gates-Chili-Ogden Capital Charge/SFE Unit O/M Charge/1,000 Gallons Parcel Charge	 $94.69/SFE Unit $2.24/1,000 gal $1.00/yr
	Rochester PWD Capital Charge/1,000 AV O/M Charge/1,000 Gallons	 $1.34/$1,000 AV $2.47/1,000 gal
Nassau County	AV Property Tax (Residential)	$22.49 per $100 AV/yr
	AV Property Tax (Rentals, Condos)	$17.07 per $100 AV/yr
	AV Property Tax (Utilities)	$170.28 per $100 AV/yr
	AV Property Tax (Commercial)	$24.70 per $100 AV/yr
Onondaga County	Fixed Charge per SFE Unit	$438.89/yr per Unit
	Multifamily – Fixed Charge Per SFE Unit	$329.17/yr per Unit
Rockland County	AV Property Tax	Varies $0.94-$3.61 per $1,000 of AV
	Fixed charge per unit classification	$267/yr per unit
Westchester County	AV Property Tax	Varies $0.46-128.60 per $1,000 AV/yr

SFE = Single-family equivalent unit based on average residential water consumption.

As shown in Table 6-3, Counties in New York State employ sewer billing structures that include AV property tax assessments, fixed charges per SFE, fixed charges per other unit classifications, and water consumption charges. Most utilities incorporate two billing approaches in their billing structure, one for capital and one for operating cost recovery.

The American Water Works Association and Raftelis completed a national water and sewer rate survey to compare water and sewer rates of service providers of different sizes and regions within the U.S. The 2019 Water and Wastewater Rate Survey compares rates and charges from 42 different states.[94] A summary of the 2018 median annual sewer bill for residential customers using 7,480 gallons per month (89,760 gallons per year) by region within the U.S. is provided in Figure 6-1.

Figure 6-1: National Wastewater Rate Comparison - Median Annual Sewer Charges

As shown in Figure 6-1, the median residential sewer bill for service providers located in the Northeastern U.S was $52.55 per month or $630.60 per year, assuming 7,480 gallons of usage per month. This median bill is lower than the typical residential customer bill for customers located in most of the County's sewer districts, as shown in Table 6-2. Only five of the 22 County sewer districts had a 2019 typical residential sewer bill that was larger than the median reported in the survey. Additionally, some sewer districts' rates are considerably lower than the regional median. This survey comparison indicates that in general, County sewer rates are lower than the median charged by other sewer service providers, and if the County were to equalize its sewer rates, the equalized rate would also be lower than the median reported in the sewer rate survey.

6.2.2. Legal and Regulatory Considerations

The EPA User Charge Regulations, included as part of the Clean Water Act (Section 204), state that Federal grant applicants shall be awarded grants only after the Regional Administrator has determined that the applicant has adopted or will adopt a system of charges to assure that each recipient of waste treatment services will pay its proportionate share of the cost of operations, maintenance, and replacement (OM&R) costs.[95] The intent of the regulation with respect to user charges is to distribute the cost of OM&R of publicly owned treatment works (POTWs) among its users and to promote self-

[94] 2019 Water and Wastewater Rate Survey, prepared by Raftelis Financial Consultants, Inc. for the American Water Works Association, April 2019.

[95] 40 CFR Part 35, Subpart E, Section 204 (b)(1)

sufficiency with respect to O&M costs. These regulations limit the rate alternatives for the OM&R portion of the County's revenue requirement, but not the capital portion.

The interpretation of each user paying its proportionate share has evolved into at least two basic acceptable types of user charge systems. The first is to charge each user a share of the wastewater treatment OM&R costs based on an estimate of measured proportional contribution of the total wastewater flow and loading. The second system establishes classes for users having similar flows and wastewater characteristics; (i.e., levels of biological oxygen demand, suspended solids, etc.). Each class is then assigned its share of the wastewater OM&R costs based on the proportional contribution of the class to the total wastewater loading. Either of these user charge structures can be calculated based on proxies for wastewater flow, such as formulas dependent upon water consumption data, and each of these options complies with the guidelines.[96] The County's existing sewer user charge structure already considers wastewater strength as a factor, as it has implemented separate charges for excess strength wastewater, and "objectionable/hazardous waste monitoring" charge for non-residential customers. Further, in largely residential areas within the County, where each customer's wastewater strength does not typically exceed domestic strength, and where residential customer wastewater flow contributions are approximately the same, a flat charge for the OM&R portion of the rate structure may be appropriate.

Article 5-A provides a comprehensive statutory authority for county governments to "establish, consolidate, or extend county water, water quality treatment, sewer, wastewater disposal, drainage or refuse districts" (County Law § 250). Based on Section 254 definition of "benefits", there is uncertainty as to whether the existing statute would allow for the combining of separate sewer districts into a single district with a single wastewater service pricing structure. However, if the CWMD boundaries were defined as the entire County, it is possible that the County could satisfy the requirement that properties within the County all receive a "benefit". Furthermore, this appears to have been accomplished by Nassau County when it established its Sewer and Stormwater Financing Authority.[97] State authorizing legislation that specifically authorizes the dissolution of separate sewer districts into one CWMD would eliminate any uncertainty as to what the existing statute currently allows.

6.2.3. Tax Cap Considerations

As discussed in Section 5.4, the New York State Property Tax Cap limits the amount local governments can increase its property tax to the lower of (1) two percent, or (2) the rate of inflation. Local government boards must pass a local law by at least a 60 percent vote to override the tax cap.[98] Based on the tax cap considerations described in Section 5.4, fees charged to sewer district users based on their assessed value are subject to the tax cap. Fees based solely upon individual quantity of usage are not subject to the tax cap.

Further, it is likely that the cost of maintaining sewer district assets in good, working condition will significantly increase in the future due the current age and condition of the sewer system infrastructure. Reinvestment in sewer system infrastructure will put added pressure on sewer district rates and revenue needs. For example, based on a high-level sewer infrastructure repair and replacement projection, it is

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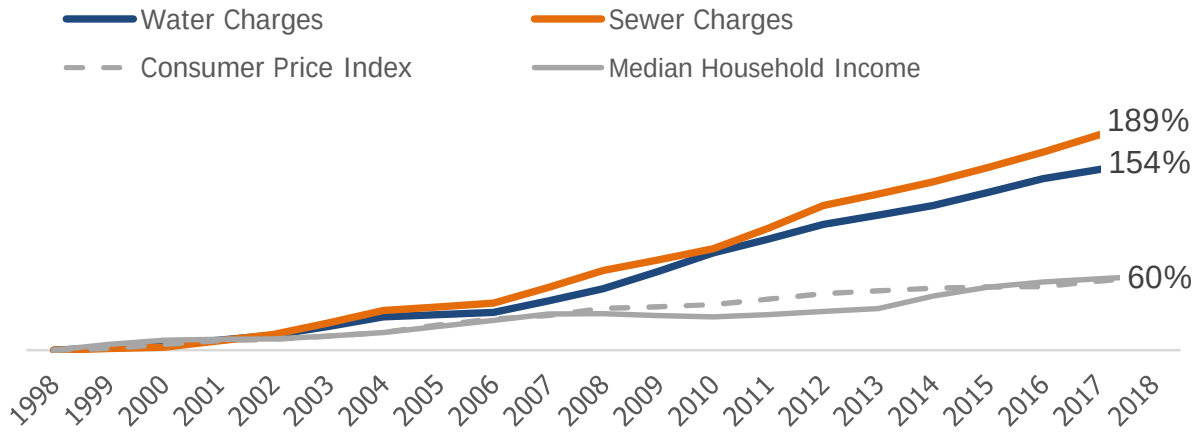
[96] Appendix B to Subpart E of Part 35 – Federal Guidelines - User Charges for Operation and Maintenance of Publicly Owned Treatment Works.

[97] See Chapter 685 of 2003 - creation of Nassau County sewer and stormwater finance authority.

[98] https://www.osc.state.ny.us/localgov/realprop/whatis.htm

likely that the County may need spend 2% to 3% of sewer collection system asset value per year and 3% or more of sewer treatment plant value per year on capital repair and replacement. On a combined basis, it is estimated that the County may need to spend $55 million or more annually (in 2019 dollars) on capital repair and replacement.[99] Due to aging infrastructure and utility regulations, water and sewer cost for utilities across the Country have increased at a rate much faster than the rate of general inflation (as shown in Figure 6-2), indicating that keeping County sewer rate increases below the tax cap will be difficult in the future. As the County's sewer districts are not immune to these increases in costs, it may be advantageous to the County to establish an equalized sewer district rate structure that is excluded from the County tax cap limitations in order to more easily accommodate necessary increases in sewer use charges that exceed inflationary levels. Several user fee alternatives are available that could accomplish this, as identified Table 6-4.

Figure 6-2: Historical Trend in Water and Sewer Cost Compared to Inflation



American Water works Association / Raftelis National Rate Survey, 10 ccf bill, National Median

6.2.4. Sewer Asset Management

The County maintains an extensive collection of public wastewater assets across its 26 County owned and operated sewer districts. It will be taking on the responsibilities for a growing inventory of I/A OWTS systems, eventually encompassing 380,000 systems. In addition, public sewer extensions and numerous infrastructure renewal projects are anticipated. This extensive addition of assets will require improved asset management practices, procedures, and systems to achieve efficiencies in infrastructure renewal, management and maintenance activities.

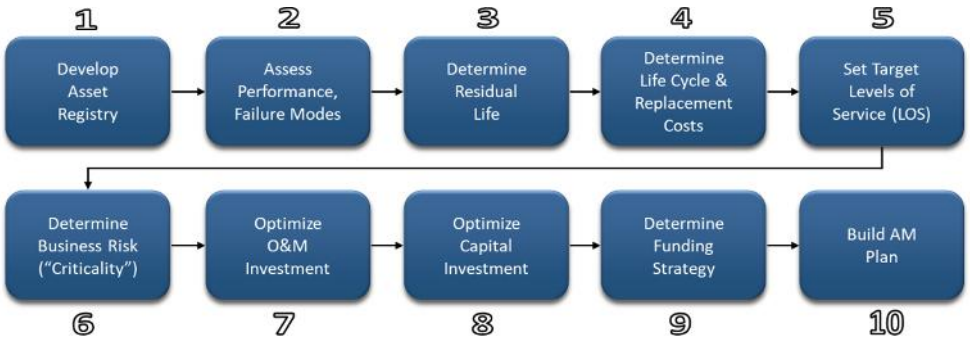
The NYSDEC has developed a municipal sewage system asset management guide to help utilities make informed decisions about maintenance and replacement of critical equipment and assets.[100] In addition, the U.S. EPA advocates for a linear ten-step approach to asset management for water, wastewater and stormwater assets, which first requires collecting data to establish an asset registry, and then addressing

[99] Based on information provided by LiRo Engineers in December 2019.

[100] Information on NYSDEC's asset management guide can be accessed at: https://www.dec.ny.gov/chemical/101412.html

core questions about levels of services, capital planning, competencies and capabilities, and required maintenance later in the process. Figure 6-3 shows the EPA approach graphically. This model outlines a linear process for a high functioning asset management program for water, wastewater, and stormwater assets.

Figure 6-3: The EPA Asset Management Model



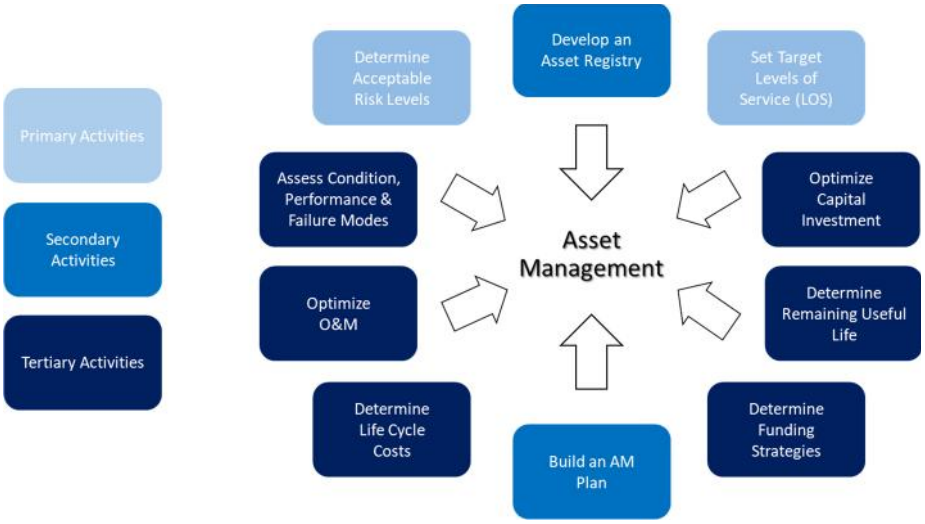
EPA Asset Management Model

The County is already practicing some elements of asset management outlined in these ten steps, such as having a capital plan, but lacks many elements, including the first step, a complete asset registry. The lack of a complete asset registry makes it difficult, for example, to establish highly accurate annual repair and replacement investment needs. To advance the County's asset management efforts, the County should implement something like the more flexible and less linear approach shown below in Figure 6-4, which will allow the County to achieve the proper balance between capital needs and program administrative expense requirements. It differs from the EPA model slightly in that it allows the county to establish acceptable asset risk levels and set target levels of service (LOS) before, or in parallel with, establishing a full asset registry. The reason for this change is that many organizations find that it takes years to complete a full and accurate asset registry and following a linear program prevents the organization from advancing on other areas of asset management that do not require a full asset registry. Water, wastewater and stormwater entities across the country have generally found this approach to be more implementable. In developing an enhanced asset management approach, the County should also monitor the NYSDEC pilot program outcomes and related guidance that has already been released or is expected in 2020.[101]

The revised model considers that asset performance and customer satisfaction are related but separate concepts. LOS is directly related to the cost of the service and the level of acceptable business risk that the County and its stakeholders are willing to accept and willing to pay for. LOS is constantly subjected to the forces of change such as growth vs. cost-cutting, regulatory requirements, customer demands, asset deterioration, changing technology, and gained operational efficiencies.

[101] NYSDEC, "Municipal Sewage System Asset Management", https://www.dec.ny.gov/chemical/101412.html

Figure 6-4: A Hybrid Asset Management Approach Recommended for the County



A full description and plan for implementing all aspects of asset management for the County's public sewer districts and its growing list of I/A OWTS systems is beyond the scope of this effort. There are numerous publications that provide details on each element of proper wastewater asset management, including the International Infrastructure Management Manual, ISO 55000, and implementing Asset Management: A Practical Guide published by the Water Environment Federation (WEF). The initial data gathering to establish a complete asset registry is perhaps the most important initial step for the County to focus on, because it is preparing for a massive influx of data on new I/A OWTS systems.

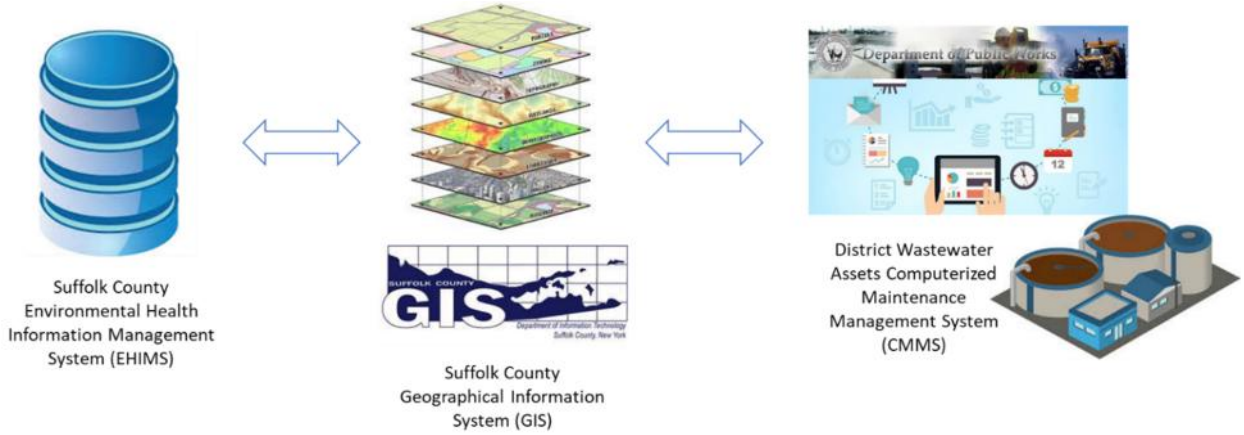
The asset registry information should exist in several different, but linked systems with common asset identification numbers and location information such as property parcel (I/A OWTS systems) and latitude and longitude information for assets in the public way (sewer district linear assets). Each of the assets should be georeferenced and contained in the County's Geographical Information system (GIS) organized into appropriate asset layers as described in the Esri® Local Government Information Model (LGIM), a schema that provides the architecture and framework to manage municipal and utility data such as wastewater assets. This model is considered a starting point for users, as it can be customized by adding additional fields, feature classes, and relationships.

Information about the I/A OWTS systems, including asset management information such as installation costs, maintenance information and service intervals will be stored in the County EHIMS. EHIMS is a database linked to the GIS used to support permitting, oversight, enforcement, installation and maintenance of I/A OWTS systems. In addition to the internal data management functions, EHIMS will allow citizens to submit applications, upload documents, make payments, and get real-time status updates through an online portal. The system will also automate certain process workflows, such as the I/A permitting process.

While EHIMS will be the main repository for asset management information associated with I/A OWTS systems, the County DPW will need a common, GIS Computerized Maintenance Management System

(CMMS) such as CityWorks®, Lucity® or IBM's Maximo®[102] to manage its district wastewater assets. A CMMS is an effective tool for managing work order information and associating it with asset information for asset management purposes. Consideration can also be given to using a common CMMS across other DPW functions such as roads, building and other public assets. Figure 6-5 shows the anticipated relationship between EHIMS, GIS and a DPW Computerized Maintenance Management System (CMMS). As shown, asset information for wastewater assets should reside in the interconnected DHS EHIMS system, the County GIS, and the DPW CMMS.

Figure 6-5: Asset Information and Relationship Between EHIMS, GIS, and the CMMS



In order to accurately determine County revenue requirements and the corresponding rates that will be required to sustain existing sewer assets, bring new extensions online, and sustain the expanded system over the longer-term, investment in a best practice asset management system will be required. Without such an investment, the County will find itself in a reactive position where costly failures occur, service levels suffer, and funding is inadequate, particularly as assets age.

6.2.5. Sewer User Charge Alternatives

Based on the considerations described above, the following sewer rate structure alternatives should be considered by the County:

1. A fixed charge per SFE applied uniformly across all sewer districts.
2. A fixed charge per SFE to generate revenues to cover OM&R costs, and an AV charge based on property assessed value to pay for capital costs.
3. A water consumption-based charge.

The applicability, advantages, and disadvantages associated with each of these options are compared and summarized in Table 6-4.

[102] NYS' Office of General Services has an umbrella contract for this CMMS.

Table 6-4: Summary of Sewer User Charge Alternatives

Description	Applicability	Advantages	Drawbacks / Limitations
Fixed Charge by SFE Unit			
A charged assessed to each property within a County sewer district based on the property's SFE consumption units. Most residential properties assigned 1 SFE while each commercial property is assigned a multiple number of SFE units corresponding to their prior year's water consumption.	Properties that utilize significantly more water than a typical single-family household would be charged a higher fee in general proportion to their water usage.	) Equity. Both capital and operating costs recovered from sewer district customers in proportion to their usage of the system.) Affordability. Larger properties with more water usage would pay more than smaller properties.) Stability. Stable revenue from year to year.) Implementation. The County already charges sewer district customers using this method in several County sewer districts making this alternative relatively easy to implement.) Tax. More likely to be considered a user charge than a tax, and thus may not be covered under the County's tax cap limitation.	) Implementation. Requires greater use and potential purchase of SCWA and other water provider water billing records, which could add to the cost of implementing this option.) Implementation. Requires County legislature approval and/or a voter referendum depending upon whether the charge is deemed a fee or a tax.
Fixed Charge by SFE Unit (OM&R) Combined with an AV Assessment (capital)			
Combination of a fixed charge by SFE for recovery of OM&R costs, and an AV assessment for capital cost recovery.	Applicable to all County properties located within County sewer district boundaries.	) Equity. Operating costs are recovered from sewer district customers in proportion to their usage of the system.) Affordability. Larger properties with higher property values and more water usage would pay more than smaller properties.) Stability. Stable revenue from year to year.) Implementation. The County already charges sewer district customers using this method in several County sewer districts making this alternative relatively easy to implement.	) Implementation. Requires greater use and potential purchase of SCWA and other water provider water billing records, which could add to the cost of implementing this option.) Tax. The AV portion of the assessment would be included as part of the County's tax cap resulting in limitations on increasing rates to generate revenues to fund aging infrastructure replacement needs.) Implementation. Requires County legislature approval and/or a voter referendum depending upon whether the charge is deemed a fee or a tax.

Description	Applicability	Advantages	Drawbacks / Limitations
Water Consumption Charge			
Charge assessed to each property based on the amount of metered water consumption used by each property in each billing period. Properties that utilize more water would pay more in proportion to their water usage.	Applicable to all County properties located within County sewer district boundaries	) Equity. Both capital and operating costs recovered from sewer district customers in proportion to their usage of the system.) Affordability. Larger properties with more water usage would pay more than smaller properties.) Tax. Most likely to be considered a user charge than a tax, and thus likely not covered under the County's tax cap limitation.	) Stability. Revenues potentially volatile and subject to water consumption variability from year to year.) Implementation. Requires County to regularly obtain and purchase billing records from SCWA and other water providers, which could add to the cost of implementing this option. Likely requires proportionately more effort to administer a charge based on water consumption, particularly if SCWA is unwilling to help perform the billing function.) Implementation. Requires County legislature approval and/or a voter referendum depending upon whether the charge is deemed a fee or a tax.

6.3. Sewer Rate Equalization Recommendations

Based on the considerations and analysis described above, there is no perfect sewer rate structure alternative. However, an SFE approach appears to provide the best combination of several advantages and limited disadvantages given the information know as of the date of this report. An SFE charge has the advantage of equitability, i.e., distributing costs to sewer district customers generally based on the usage of water, revenue stability, i.e., the fixed charge would produce stable revenues for the County from year to year, implementation would be relatively easy since the County already uses a fixed charge by SFE as a fee structure for some of its existing sewer districts, and the fee structure would not likely be covered under the County's tax cap limitation. Nonetheless, each of the alternatives summarized in Table 6-4 could be implemented by the County to simplify and equalize the existing rate structures employed by the County sewer districts.

Due to the variability of the annual sewer rates and charges billed to sewer district customers, it is recommended that a phase-in period be considered for implementation of a unified sewer rate structure to avoid significant year-over-year bill impacts to customers. As such, the County should consider a five- to 10-year equalization phase-in period.

6.4. Sewer Equalization Rate and Customer Bill Projections

If the County were to implement an SFE-based sewer equalization rate, and phase-in the equalization rate over a five-year phase-in period, it would allow time for sewer rates in sewer districts with relatively low sewer rates and charges to adjust to the equalized rate. One way in which the equalized rate could be implemented would be to add an equalized SFE charge to each customer within each sewer district, increase the equalized SFE charge over the five-year period until it fully covers the combined sewer district rate revenue requirements, and correspondingly decrease the sewer rates and charges associated with each sewer district over the phase-in period until the individual sewer rates and charges are eliminated. For example, assuming a five-year phase-in, the existing sewer district rates and charges could be decreased by 20%, 40%, 60%, 80% and 100% in years one through five. A corresponding increase in the equalized SFE charge would also accompany these existing rate decreases such that revenues continue to cover the anticipated revenue requirements over time.

An illustration of how existing sewer district residential rates and charge would be phased-in, assuming a five-year equalized SFE charge phase-in period, is presented in Table 6-5. This table shows the phasing in of the equalized SFE charge (first row of the table) along with the phasing-out of individual sewer district charges. Customers located in each sewer district would pay the individual sewer district rates shown in this table and the equalized SFE charge until the individual sewer district rate structure is completely phased out. At that point, customers would only pay the equalized SFE charge.

The anticipated net customer bill impacts associated with such a phase-in plan is summarized in Table 6-6. Projected year-over-year percentage changes in customer bills are provided in Table 6-7. In this illustration, it was assumed that total annual sewer district revenue requirements would increase by 3% per year, the phase-in period would commence in FY 2024 and be fully implemented five years later in FY 2028. This illustration provides an indication of the user charges and customer bill impacts that may result from implementing an equalized sewer user charge phase-in approach. However, if the County desires to proceed with the phase-in of an equalized sewer district SFE charge, it is recommended that the County complete a more detailed sewer rate study to develop a detailed sewer rate equalization program.

Table 6-5: Sewer District In-District Residential Rates (5-Yr Rate Equalization Scenario)

Sewer District	Frequency	Basis	2019	2023	2024	2025	2026	2027	2028
EQ Charge	**Quarterly**	**SFE**	**$0.00**	**$0.00**	**$28.36**	**$56.50**	**$84.43**	**$112.16**	**$139.69**
SD#1 – Port Jefferson	Annual	1,000 AV	$64.16	$72.22	$57.77	$34.66	$13.87	$2.77	$0.00
SD#2 – Talmadge Woods	Quarterly	SFE	$169.75	$191.06	$152.84	$91.71	$36.68	$7.34	$0.00
SD#3 - Southwest	Quarterly	SFE	$41.75	$46.99	$37.59	$22.56	$9.02	$1.80	$0.00
	Annual	1,000 FEV	$0.67	$0.75	$0.60	$0.36	$0.14	$0.03	$0.00
	Annual	Flat Rate	$35.75	$40.24	$32.19	$19.31	$7.73	$1.55	$0.00
SD#4 – Smithtown Gal	Quarterly	SFE	$176.50	$198.65	$158.92	$95.35	$38.14	$7.63	$0.00
SD#5 – Strathmore (Huntington)	Annual	1,000 AV	$212.66	$239.35	$191.48	$114.89	$45.95	$9.19	$0.00
	Annual	1,000 AV	$158.14	$177.99	$142.39	$85.43	$34.17	$6.83	$0.00
SD#6 – Kings Park	Annual	1,000 AV	$11.94	$13.43	$10.75	$6.45	$2.58	$0.52	$0.00
SD#7 - Medford	Annual	1,000 AV	$238.99	$268.99	$215.19	$129.11	$51.65	$10.33	$0.00
SD#8 – Strathmore	Annual	1,000 AV	$858.59	$966.35	$773.08	$463.85	$185.54	$37.11	$0.00
SD#9 – College Park	Annual	1,000 AV	$193.26	$217.51	$174.01	$104.41	$41.76	$8.35	$0.00
SD#10 – Stony Brook	Annual	1,000 AV	$200.33	$225.48	$180.38	$108.23	$43.29	$8.66	$0.00
SD#11 - Selden	Annual	1,000 AV	$171.89	$193.46	$154.77	$92.86	$37.15	$7.43	$0.00
SD#12 – Birchwood / Hol	Annual	1,000 AV	$99.19	$111.64	$89.31	$53.59	$21.44	$4.29	$0.00
SD#13 – Wind Watch	Quarterly	SFE	$167.00	$187.96	$150.37	$90.22	$36.09	$7.22	$0.00
SD#14 - Parkland	Quarterly	SFE	$102.25	$115.08	$92.07	$55.24	$22.10	$4.42	$0.00
	Quarterly	SFE	$82.75	$93.14	$74.51	$44.71	$17.88	$3.58	$0.00
SD#15 – Nob Hill	Quarterly	SFE	$127.50	$143.50	$114.80	$68.88	$27.55	$5.51	$0.00
SD#19 – Haven Hills	Quarterly	SFE	$61.50	$69.22	$55.38	$33.23	$13.29	$2.66	$0.00
SD#20 – William Floyd	Quarterly	SFE	$91.00	$102.42	$81.94	$49.16	$19.66	$3.93	$0.00
SD#23 – Coventry Man	Quarterly	SFE	$141.25	$158.98	$127.18	$76.31	$30.52	$6.10	$0.00
SD#26 – Melville Hunt	Quarterly	SFE	$121.00	$136.19	$108.95	$65.37	$26.15	$5.23	$0.00
SD#28 – Fairfield St. J	Quarterly	SFE	$100.50	$113.11	$90.49	$54.29	$21.72	$4.34	$0.00

Table 6-6: Annual Residential Sewer Bill Projection (5-Yr Rate Equalization Scenario)

Sewer District	FY 2019	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
SD#1 - Port Jefferson	$166.47	$187.36	$263.31	$338.40	$412.66	$486.10	$558.77
SD #2 - Tallmadge Woods	$679.00	$764.22	$724.80	$684.52	$643.40	$601.47	$558.77
SD#3 - Southwest	$489.52	$550.96	$554.19	$556.56	$558.09	$558.82	$558.77
SD #4 - Galleria	$706.00	$794.61	$749.11	$702.75	$655.55	$607.55	$558.77
SD#5 - Strathmore (Huntington) Zone A	$1,188.88	$1,338.09	$1,183.90	$1,028.84	$872.95	$716.25	$558.77
SD#5 - Zone B	$955.06	$1,074.93	$973.37	$870.94	$767.68	$663.61	$558.77
SD#6 - Kings Park	$75.98	$85.52	$181.84	$277.29	$371.92	$465.73	$558.77
SD#7 - Medford	$584.69	$658.07	$639.88	$620.83	$600.94	$580.24	$558.77
SD#8 - Strathmore (Ridge)	$595.40	$670.13	$649.53	$628.06	$605.76	$582.65	$558.77
SD#9 - College Park (Farmingville)	$592.32	$666.66	$646.75	$625.98	$604.37	$581.96	$558.77
SD#10 - Stony Brook	$591.71	$665.97	$646.20	$625.57	$604.10	$581.82	$558.77
SD#11 - Selden	$454.14	$511.14	$522.33	$532.67	$542.17	$550.86	$558.77
SD#12 - Birchwood/Holbrook	$298.44	$335.90	$382.14	$427.52	$472.07	$515.81	$558.77
SD #13 – Wind Watch	$668.00	$751.84	$714.89	$677.09	$638.45	$599.00	$558.77
SD #14 - Parkland- Zone A	$409.00	$460.33	$481.69	$502.18	$521.84	$540.70	$558.77
SD #14 -Zone B (Condos)	$331.00	$372.54	$411.46	$449.51	$486.73	$523.14	$558.77
SD #15 - Nob Hill	$510.00	$574.01	$572.63	$570.39	$567.31	$563.43	$558.77
SD #19 - Haven Hills	$246.00	$276.88	$334.92	$392.11	$448.46	$504.00	$558.77
SD #20 - William Floyd	$364.00	$409.69	$441.17	$471.79	$501.58	$530.57	$558.77
SD #23 - Coventry Manor	$565.00	$635.91	$622.15	$607.53	$592.07	$575.81	$558.77
SD #26 - Melville Huntington	$484.00	$544.75	$549.22	$552.83	$555.61	$557.58	$558.77
SD #28 - Fairfield at St. James	$379.00	$426.57	$454.68	$481.92	$508.34	$533.94	$558.77

Table 6-7: Residential Year-Over-Year Sewer Bill Impact (5-Yr Rate Equalization Scenario)

Sewer District	FY 2019	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
SD#1 - Port Jefferson	3.0%	3.0%	40.5%	28.5%	21.9%	17.8%	14.9%
SD #2 - Tallmadge Woods	3.0%	3.0%	-5.2%	-5.6%	-6.0%	-6.5%	-7.1%
SD#3 - Southwest	3.0%	3.0%	0.6%	0.4%	0.3%	0.1%	0.0%
SD #4 - Galleria	3.0%	3.0%	-5.7%	-6.2%	-6.7%	-7.3%	-8.0%
SD#5 - Strathmore (Huntington) Zone A	3.0%	3.0%	-11.5%	-13.1%	-15.2%	-18.0%	-22.0%
SD#5 - Strathmore (Huntington) Zone B	3.0%	3.0%	-9.4%	-10.5%	-11.9%	-13.6%	-15.8%
SD#6 - Kings Park	3.0%	3.0%	112.6%	52.5%	34.1%	25.2%	20.0%
SD#7 - Medford	3.0%	3.0%	-2.8%	-3.0%	-3.2%	-3.4%	-3.7%
SD#8 - Strathmore (Ridge)	3.0%	3.0%	-3.1%	-3.3%	-3.6%	-3.8%	-4.1%
SD#9 - College Park (Farmingville)	3.0%	3.0%	-3.0%	-3.2%	-3.5%	-3.7%	-4.0%
SD#10 - Stony Brook	3.0%	3.0%	-3.0%	-3.2%	-3.4%	-3.7%	-4.0%
SD#11 - Selden	3.0%	3.0%	2.2%	2.0%	1.8%	1.6%	1.4%
SD#12 – Birchwood / Holbrook	3.0%	3.0%	13.8%	11.9%	10.4%	9.3%	8.3%
SD #13 – Wind Watch	3.0%	3.0%	-4.9%	-5.3%	-5.7%	-6.2%	-6.7%
SD #14 - Parkland-Zone A	3.0%	3.0%	4.6%	4.3%	3.9%	3.6%	3.3%
SD #14 - Parkland-Zone B	3.0%	3.0%	10.4%	9.2%	8.3%	7.5%	6.8%
SD #15 - Nob Hill	3.0%	3.0%	-0.2%	-0.4%	-0.5%	-0.7%	-0.8%
SD #19 - Haven Hills	3.0%	3.0%	21.0%	17.1%	14.4%	12.4%	10.9%
SD #20 - William Floyd	3.0%	3.0%	7.7%	6.9%	6.3%	5.8%	5.3%
SD #23 - Coventry Manor	3.0%	3.0%	-2.2%	-2.4%	-2.5%	-2.7%	-3.0%
SD #26 - Melville Huntington	3.0%	3.0%	0.8%	0.7%	0.5%	0.4%	0.2%
SD #28 - Fairfield at St. James	3.0%	3.0%	6.6%	6.0%	5.5%	5.0%	4.6%

7. Feasibility Conclusions and Recommendations

Based on the results of the research and analysis described in this report, the implementation of a CWMD and the development of a recurring revenue stream to support the CWMD are feasible with many viable alternatives and options available to the County. The following are the principal conclusions and recommendations of the study:

General

1. The magnitude of the County's challenge in dealing with a decline in the quality of its surface water due to excessive contaminants in the water bodies from nitrogen released from approximately 380,000 individual septic systems and cesspools far exceed the magnitude of this problem in other counties in New York State.
2. The County sewer districts are lacking in detailed information on its sewer infrastructure assets, such as asset level in-service dates, original cost, age, condition-based depreciation, asset criticality and risk information, and long-term asset repair/replacement funding needs. It is recommended that the County pursue completion of an asset management program and develop a long-term (10- to 20-year) capital facilities plan for its sewer infrastructure to better estimate its future sewer district funding needs.
3. The levels of nitrogen loading in ground and surface water is directly linked through the water cycle, and therefore, integrated management of the entire water cycle is needed to address contamination. The fragmented nature of water and wastewater management in the County impedes unified water cycle management. The County, SCWA, and other water and wastewater providers within the County should consider pathways to coordinate or consolidate water cycle management.

CWMD Governance and Organizational Structure

4. The County operates and maintains its 26 sewer districts with personnel that are staffed within DPW. This organizational structure allows for effective sharing of resources across sewer districts and is an efficient use of limited DPW resources.
5. The County's management of its existing I/A OWTS grant management program is largely handled by DHS personnel, but there are significant process inefficiencies due to current County rules and regulations that require multiple County department involvement in administrative processes associated with grant approvals and distribution of funds, as well as for construction permit approvals.
6. Based on input from the County and external stakeholders, the name County-Wide Wastewater Management District is recommended to describe the entity as the core function is to regulate nitrogen pollution and improve water quality.
7. It is recommended that the County advocate for state legislation that follows the model of a "watershed protection improvement district," as it would provide the powers and authorities that the County seeks and mirrors draft state legislation that has been considered by the state legislature in the past. Prospective legislation is presented in as Appendix D.

8. Complete a synthesis of previous attempts at CWMD-related legislation and summarize the key differences between those efforts and the draft presented as Appendix D.

9. An important benefit of creating a CWMD as early in the implementation process as possible is to provide the legal authority to manage the implementation and enforce maintenance of I/A OWTS comparable to the existing authority of the County for constructing and maintaining centralized sewer infrastructure. In addition, establishment of a CWMD will allow the County the flexibility to convert its I/A OWTS grant program to a program in which the County directly installs and absorbs the upfront capital cost for I/A OWTS installations, and then amortizes the obligation via a benefit assessment. A benefit assessment-type program may be advantageous, contingent on the status of an IRS ruling that County grants to homeowners are subject to personal taxation, even as contractors have been paying taxes upon receipt of the grants.

10. It is recommended that the County employ an incremental approach to creation of a CWMD organizational structure, i.e. the County should create a CWMD that is initially chartered to collect and administer revenue to fund the I/A OWTS program, while implementation and management activities could continue to be performed by DHS and other County departments, such as the DEDP. Once the CWMD is established, the County could then incorporate the sewer district function into the organization, leaving the integration of RME and management functions for a future phase of CWMD organization.

11. Based on the process established by the County to manage the I/A OWTS grant program, oversee construction of septic system upgrades, manage enforcement of I/A OWTS maintenance, plan, design, and implement sewer extension projects, and monitor nutrient levels throughout the County on a subwatershed basis, it is estimated that the County will need to employ approximately 115 FTE staff positions to handle the maximum volume of I/A OWTS-related management work that is projected in future years by the SWP, a significant increase from the current level of staffing of 17 FTEs. However, with more conservative estimates of annual I/A OWTS applications, staffing levels of approximately 80 FTEs may be sufficient.

Recurring Revenue Source for the CWMD

12. The annual revenue requirements needed to fund the County's planned I/A OWTS grant program and fund sewer extension projects (totaling approximately $257 million over the 20-year forecast period from 2024-2043) is estimated to range from an average of $51.1 million per year (under a slower pace scenario assuming the maximum rate of I/A OWTS installations is 2,500 per year) to $67.3 million per year (under a medium pace scenario assuming the maximum rate of I/A OWTS installations is 4,000 per year. If the County desires to increase the funding for sewer extension projects to $567 million over a 20-year forecast period from 2024-2043, the annual revenue requirement would need to increase to an average of approximately $125.5 million (under a faster pace scenario assuming the maximum rate of I/A OWTS installations is 7,000 per year). These revenue requirement estimates exclude any New York State, other external grant funding that may be secured to support the program or repurposing of ASRF revenues to support the program and assume amortization of sewer extension capital costs over 20-years. Based on the SWP, the higher funding level is required to meet the County's 50-year target timeframe for completion of identified sewer projects.

13. It is recommended that the County proceed with the implementation of either a water consumption-based charge or a fixed charge by SFE unit to generate a recurring revenue to fund

I/A OWTS construction grants, planned sewer extensions, and other nutrient reduction programs throughout the County. A water consumption-based charge has the advantages of equitability, simplicity, ease of understanding, and would not likely be covered under the County's tax cap limitation. A fixed charge by SFE has the advantage of equitability, revenue stability, ease of implementation, and would not likely be covered under the County's tax cap limitation.

14. The ultimate selection of a preferred recurring revenue alternative may depend upon the willingness of the SCWA to provide water consumption to the County on routine basis at a reasonable cost. SCWA currently charges the County $0.50 per water billing record. If a water consumption-based charge is used, the cost just to obtain the water billing records is estimated at $790,000 per year. The County legislature should direct the SCWA and the County to work together to implement a billing approach that is as cost effective as possible. However, as an alternative, an SFE approach could be used that would require the County to obtain water consumption records on a routine basis only from commercial customers, which comprise only 6% of the water consumption billing records. This would cut the County's cost to acquire water consumption records down to approximately $47,000 per year. For either alternative selected, the County legislature should compel the SCWA to provide usage data at no charge to the County to support the environmental goals of the CWMD.

15. As a policy decision, the County will need to decide whether a tiered charge that improves the equitability of the charge structure is worth the added complexity and greater administrative burden to maintain. However, it is recommended that the County consider establishing either a tiered water consumption charge or a tiered fixed charge by SFE to improve the equitability of the charge and help provide an incentive for I/A OWTS upgrades. Under a tiered structure, those property owners with a conventional, non-performing septic /cesspool system would pay the full CWMD charge because they are discharging the greatest amount of nutrients into the environment. Those properties within a County sewer district that are connected to a centralized wastewater treatment system would pay a nominal CWMD charge because these customers are paying directly for wastewater collection and treatment services. Those property owners that upgrade to an I/A OWTS system would also pay a nominal CWMD charge as an incentive for installing an advanced system, reflecting diminished nutrient loading and their added cost. The fee tier should be structured so that once properties are upgraded to I/A OWTS or are connected to sewers, there are sufficient funds collected on an annual basis to enforce and manage the ongoing I/A OWTS maintenance activities that are required.

16. Over the long-term, the County should consider a multi-faceted approach to funding its nutrient reduction program. This includes obtaining additional grant funding resources through New York State programs to supplement the County's revenue needs, considering the use of TIFs to help fund sewer extension projects where development is desirable and the use of TIFs is feasible. In addition, if the County seeks to improve upon the equitability of its sewer user charge structure, it may want to consider making changes to the use of ASRF funds that are currently used to subsidize sewer district costs. Since ASRF funds are derived from sales tax revenues from across the County, reallocating ASRF funds to nutrient reduction programs provide a more universally beneficial use of these funds, at the same time as bringing equity to sewer rates. The feasibility of this option depends upon changing State legislation to allow for the rededication of ASRF funds.

Sewer District Rate Equalization

17. Article 5-A of New York State County Law appears to provide the authority for the County to consolidate or extend sewer districts, but there is uncertainty in the law as to whether the definition of "benefits" allow the County to consolidate its sewer districts into a single district. Therefore, it is recommended that the County prepare and propose authorizing legislation that includes specific authorization for combining its sewer districts into a single CWMD.

18. There is no standard wastewater rate structure employed by other County wastewater service providers in New York State. Some utilize an AV property tax approach, whereas others use a consumption or SFE based charge, a flat charge per property, or a combination of approaches. Most incorporate two approaches in the rate structure, one for capital cost recovery and one for O&M cost recovery.

19. There is no perfect sewer rate structure alternative for an equalized sewer district rate structure. However, for the County, an SFE approach appears to provide the best combination of several advantages and limited disadvantages given the information know as of the date of this report. An SFE charge has the advantage of equitability, revenue stability, and ease of implementation. In addition, given the expected need for the County to raise sewer rates at a pace greater than inflation over the planning period to address aging infrastructure issues and regulatory requirements, a rate structure excluded from the County's tax cap limitation, such as an SFE based charge may provide the added advantage of providing more flexibility in raising rates.

20. The annual cost to residential customers of County sewer districts vary from approximately $166 to $1,189 per year. Due to this variability, it is recommended that the County phase-in sewer rate equalization over a five- to 10-year period to avoid significant year-over-year bill impacts to customers.

8. Implementation Plan

This section of the report provides the County with a timeline of next steps to be completed in order to establish the CWMD governance and organizational structure and the recurring revenue source by 2024. These next steps involve legal, legislative, administrative, and technical next steps to be accomplished to achieve the County's goal. A list of next steps, key milestones and action times, and suggested timeline is provided in Table 8-1. An example of prospective legislation is included as Appendix D. A summary of these steps is provided below.

8.1. Legal and Legislative Next Steps

The establishment of a countywide CWMD will require following the legal and legislative steps outlined in County Law Article 5-A. A description of the some of the main requirements are listed below:

1. **Prepare and Advocate for Specific State Legislation.** State legislation could provide additional support to the County by clarifying the beneficial nature of having a countywide district. If the CWMD boundaries were defined as the entire County, it is possible that the County could satisfy the requirement that properties within the County all receive a "benefit". However, the differential benefits of property owners in the County may require separate zones of assessment. Therefore, State authorizing legislation could help to clarify how the County could address the anticipated differential benefits between those properties connected to a centralized sewer system and those with a decentralized septic/cesspool system. Our recommendation is to draft legislation that follows the model of a "watershed protection improvement district" as it mirrors prior state legislative efforts under both municipal and county law. Proposed draft legislation in Appendix D draws upon definitions of a watershed protection improvement district and associated powers, inclusive of other district forms already found in Article 5A. The state legislative path would first require an act by the County Legislature, followed by passage of the State legislation, before proceeding through the following steps to establish the district, which we refer to in this report as the CWMD.

2. **Public Hearing.** Section 254 requires a public hearing process for the establishment on a district. Notice for such hearing shall be published "not less than ten or more than twenty days before the day set therein for the hearing. . . in the official newspapers of the county and in such other newspapers having a general circulation in the proposed district as the board may direct" (County Law § 254).

   Section 254 also describes the specific information to be included in the notice of hearing.

3. **Legislative Resolution.** After the hearing and upon deliberation, the legislature may adopt a resolution approving the establishment of a district if, in its deliberations, determines first that the proposed facilities are satisfactory and sufficient. Among the various factors the legislature must also consider and find by resolution:

   (1) whether all the property and property owners within the proposed district are benefited thereby,

   (2) whether all of the property and property owners benefited are included within the limits of the proposed district,

(3) whether establishment of the district is a public benefit, and

(4) if said maps and plans and report recommended the establishment of zones of assessment and the allocation of the costs of the facilities as between such zones of assessment, whether such zones of assessment and the allocation of the costs of the facilities thereto represent as nearly as may be the proportionate amount of benefit which the several lots and parcels of land situate in such zones will derive therefrom (County Law § 254)[103]

It should be noted that in Suffolk County "Such resolution shall be subject to permissive referendum as hereinafter provided, except in the case of a water quality treatment district and except in the county of Suffolk. In the county of Suffolk, if the owner or owners of all of the land within the proposed district consent in writing to the formation of the proposed district and the board of elections certify that on or after the date of the first publication of the notice of public hearing hereinabove referred to, there is no registered voter within the proposed district, then and in that case the resolution adopted by the legislature approving the establishment of a district shall not be subject to referendum, permissive, or otherwise" (County Law § 254).

4. **Application to NYS Comptroller.** Certain situations may require an application to the New York State Comptroller's Department of Audit and Control to "determine whether the public interest will be served by the establishment of the district and also whether the cost thereof will be an undue burden upon the property of the proposed district." (N.Y. County Law § 258) Additionally, application is required when the resolution would create "zones of assessment and the allocation of the costs of the facilities as between such zones of assessment . . . [to] determine whether the cost of the facilities allocated to each of said zones of assessment will be an undue burden upon the property of each proposed zone of assessment" (County Law § 258).

5. **Recording of the Order and Review**. Upon approval, an order shall be recorded in the office of the County Clerk and filed with the State Department of Audit and Control (County Law, §§ 258, 259). Section 260 provides for a review by an interested party "aggrieved by the final determination or order made by the board of supervisors." Such interested party must file an application pursuant to Article 78 of the CPLR within thirty days from the date of the recording of the order establishing the district. If no application is submitted within thirty days, then "the order establishing the district . . .shall be final and conclusive" (County Law, §260).

Although Article 5-A provides sufficient detail regarding establishment of a district, case law suggests courts will not impose such a strict standard that it would be at the expense of the electorate and public officials. In Crell v. O'Rourke, the Appellate Division of the Second Judicial Department (which has jurisdiction over cases in Suffolk County), stated that it would "not thwart the wishes of the voters and discourage the efforts of public officials by declaring some minor step omitted in the statutory procedure

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[103] See Chapter 685 of 2003 (creation of Nassau County sewer and stormwater finance authority) regarding an example of zones of assessment. In the case of Nassau, "Zones of Assessment" were established without regard to the prior existing districts, as defined as the separate and distinct zones located within the district for the apportionment and levy of applicable assessments of one or more of the following: (i) storm water resources services and (ii) sewerage collection services and sewerage disposal services or (iii) sewerage disposal but not sewerage collection services. The boundaries of such zones shall be established pursuant to the provisions of this section and modified in accordance therewith.

fatal, or by overstressing the importance of some technical defect" (Crell v. O'Rourke, 88 A.D. 2d 83, 86 (1982), affd 57 N.Y.2d 702 (1982)). Regardless, the requirements for establishing a countywide district should be carefully followed.

8.2. CWMD Funding Next Steps

The recommended next steps to implementing a recurring revenue source to fund the County's nitrogen reduction programs are summarized below and detailed on Table 8-1.

1. Given uncertainty around the IRS ruling as to whether or not I/A OWTS grants are taxable to the homeowner, develop a refined strategy to address the outcome of this decision. If the grants are not taxable to the homeowner, proceed with further development of a robust grant program to incentivize I/A OWTS installations. If grants are taxable, consider proceeding with plans to restructure the grant program as a benefit assessment such that it eliminates the tax consequences of a property owner receiving a grant from the County, comparable to how the obligation to sewer connections are assigned. Consult with a tax attorney or tax professional to ensure that the benefit assessment approach is legally viable and would assess the property owner's tax burden in the same manner as sewer connections.
2. Finalize the policy around grant funding and formalize the processes associated with grant management so that estimates of annual revenue requirements needed to fund the County's planned I/A OWTS grant program and fund sewer extension projects for the first 10-year period (from 2024 to 2033) can be finalized and confirmed based on operational needs.
3. Finalize sewer extension project prioritization and then finalize the level of CWMD funding that would be deemed acceptable considering the trade-offs between funding levels and the ability to achieve the County's nitrogen reduction goals within the County's targeted 50-year timeline.
4. Have stakeholder exchanges with the SCWA to determine whether the SCWA will cooperate in the establishment and administration of a CWMD charge based on water consumption. This will require SCWA to provide water consumption records to the County on a regular basis at a reasonable or no cost and cooperation in the CWMD billing function. If no agreement is forthcoming, then proceed with an SFE-Based CWMD approach.
5. Finalize the policy as to whether to adopt a tiered charge that improves the equitability of the charge structure given the added complexity and greater administrative burden that a tiered charge would require to maintain. Ensure that the CWMD fee tier structure, combined with the sewer district equalization rate plan and I/A OWTS grant program encourages I/A OWTS upgrades and provides no disincentives to property owners to installing sewers where feasible.
6. Continue efforts to educate and inform property owners and other stakeholders about benefits of the planned CWMD charge and the County's overall nitrogen reduction program.
7. Continue to advocate for additional grant funding resources through New York State programs to supplement the County's revenue needs.
8. Explore areas within the County where the use of TIFs could help fund sewer extension projects where development is desirable and the use of TIFs is feasible.

8.3. CWMD Implementation Process Next Steps

8.3.1. Administrative Process Optimization

Next steps are associated with optimizing the administrative processes associated with I/A OWTS grant applications, installation, and contractor payment steps currently creating challenges.

Grant Processing

1. Undertake an audit of the grant application fields should be undertaken to ensure property owners are not asked for the same information or documents twice for County and State grant applications.
2. Align the submittal process for County and State grant applications so that any duplicated fields are automatically populated on the backend by County systems. Much of the IT work that will enable this has already begun and is expected for 2020.
3. Suffolk County IT staff will create a grant application that collects all the necessary information for both the Suffolk County and New York State septic replacement grant programs.
4. Change County policies to allow for electronic grant contract signatures. Consider engaging a technology such as DocuSign to support this effort.
5. Complete planned 2020 IT process automation and digitization opportunities seeking to eliminate grant application submittal errors before they occur, automate quality and completion checks, and route documents, forms, signature procedures, and contracts between program participants and the County, as well as within the County departments.
6. Work with County Law to alter policies that currently require grant agreement contracts to be produced as five, notarized, hand signed copies.
7. Offer owners of properties held as trust, LLCs, or corporations, less burdensome mechanisms for validating their residency and completing the grant contracting process to reduce paperwork requirements.
8. Remove requirement for Certificate of Occupancy or Zoning Compliance forms to reduce paperwork burden.
9. Contingent on the IRS ruling relative to grant funds for tax purposes, the County should either (1) proceed with further development of a robust grant program to incentivize I/A OWTS installations, if a favorable IRS opinion is received, or (2) Restructure the County's planned grant program to a benefit assessment approach, akin to the manner in which sewer connections are assigned to the property tax.

Design, Construction, and Contractor Payment Processing

10. Lobby for amendments to State Legislation to eliminate the licensed design engineer requirements for I/A OWTS installations in the County for properties where standard designs are sufficient. In parallel, the County should ensure applicable training for general contractors and installers is available.

11. Complete an end-to-end process audit of the County invoice review and payment procedures to identify ways to improve grant fund distributions through process simplification, technology optimization, elimination of layered approval steps, and staff training as needed.

12. Amend the private decentralized "clustered" STP approval process where feasible, such as reducing setback requirements, increasing in the maximum flow from 15,000 to 30,000 gpd, lowering permitting fees, and simplifying of the sewer agency agreement process for systems serving multiple property owners. Without a suite of these amendments, clustered STP policy in the County will effectively limit the tools available to the CWMD, even where these innovative solutions may be the most sensible technical choice. For example, an increase in the maximum permitted flow of these systems may facilitate their management by DHS and could reduce inter-departmental complexity. Further, the need for sewer agency agreements adds burdensome complexity both for the property owner and the County.

Post-Installation Monitoring, and Enforcement of I/A OWTS Maintenance

13. Evaluate the current Article 19 model[104] for monitoring and enforcement of I/A OWTS maintenance activities to ensure it is as lean and impactful as possible prior to the expiration of the first tranche of 3-year warranties for systems installed in 2019.

14. Survey the landscape of national I/A OWTS maintenance service providers to determine if any large organizations exist that might be able to service large portions of the County through a single or a few zoned maintenance contracts.

15. The County should evaluate zoned I/A OWTS maintenance service models and implement a maintenance procurement approach that is most feasible and offers the greatest benefits to the County and property owners in terms of administrative efficiency and cost effectiveness. Consider a franchise or "garbage" model, in which the County would contract with I/A OWTS maintenance contractors to complete a cycle of required maintenance for a given service area within a certain amount of time. The advantage would be that the maintenance contractors would compete on price to win zones and the County would not only have more certainty that the work was being done but could also possibly reduce costs for customers by aggregating the maintenance responsibilities.

16. Develop enforcement policies, procedures, and rules regarding I/A OWTS maintenance, including required frequency of property owner maintenance requirements, reporting, and possible fines and penalties for non-compliance.

Billing

17. The County should engage SCWA in discussions if a consumption-based fee structure is chosen to work to determine more specifically how data will be made available, and if they are prepared to complete billing activities. It would be inefficient to create redundant billing procedures within the County if a parallel structure is pursued. Alternatively, seek legislative remedy if SCWA declines to cooperate. SCWA is a New York State authority constituted to serve the interests of the County, and as such, should be engaged in the entire water cycle.

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[104] https://www.suffolkcountyny.gov/Portals/0/FormsDocs/health/EnvironmentalQuality/SCSanCodeArt19.pdf

Short of collecting a water usage fee, SCWA should be obliged to provide water usage data at a reasonable cost to enable the collection of a fee by other means.

18. If billing the CWMD charge on the property tax bill is pursued, the County should ensure County Real Property Tax Services (RPTSs) and Town/Village billing systems are prepared to handle the new line items.

8.3.2. Code Changes

To achieve the policy changes detailed in Section 3.8.3, it is recommended that the County adopt the Article 6 Work Group recommendations as described in the SWP, as follows:

- New Construction – All new construction on vacant land and building additions that require upgrade of an existing sanitary system would be required to upgrade to I/A OWTS.
- Property Transfer – All property transfers occurring within priority areas would be required to upgrade to I/A OWTS unless the property has already installed an I/A OWTS or will access advanced wastewater treatment through connection to an existing STP or a proposed STP or clustered system which has been approved by the RME.
- System Failure – All sanitary systems located within priority areas and meeting the definition of failure as defined in §760 603(17) of Article 6 of the Suffolk County Sanitary Code effective January 1, 2019 would be required to upgrade to I/A OWTS, unless the property has already installed an I/A OWTS or will access advanced wastewater treatment through connection to an existing STP or a proposed STP or clustered system which has been approved by the RME. The recommendation for a mandatory upgrade at failure as of January 1, 2019 has not yet been implemented but should be considered prior to 2024 if identified failures are thought to be within the capacity of support for currently available grant funds.

The County is also looking to streamline the permit approval process by permitting electronic signatures for the Department of Audit and Control for example. It is recommended that this change be made to increase the program pace and reduce manual paperwork delays.

Further, County representatives believe engineers or other I/A OWTS certifiers will also need to be paid more in order to attract more qualified certifiers. The State requires that installations must be completed under the guidance of a design professional (engineer or architect – easier for architect to get degree so DHS is reaching out to both). Technically, the County could stamp I/A OWTS designs because they have engineers, but they would then have to take on the liability so they will not. Another potential path to eliminating the I/A OWTS certifier requirements may be to include such a clause as part of State legislation that would permit an alternative process in the County.

8.4. Sewer District Rate Equalization Next Steps

1. Completion of an asset management program and development of a long-term (10- to 20-year) capital facilities plan for its sewer infrastructure to better estimate its future sewer district funding needs and inform a detailed sewer rate study to establish a detailed plan for rate equalization.
2. Prepare and propose authorizing State legislation that includes specific authorization for the County to combine sewer districts and sewer district user charges into a single CWMD. Sewer district consolidation may already be permitted in the existing State legislation, however,

amended legislation focused specifically on sewer district consolidation may be desired to explicitly authorize the County to combine sewer districts into a single CWMD.

3. When circumstances dictate, complete a detailed sewer rate study to refine the sewer rate revenue requirements, confirm the sewer rate equalization structure, and the sewer rate equalization phase-in plan.

8.5. Public Outreach and Communications Next Steps

As a next step to the public outreach initiatives detailed in Section 3.7.3, the County should proceed with implementation of the communications plan developed as part of this project, including announcement of the findings of this CWMD report:

1. **Messaging and Q&A**

   Messaging and Q&A will remain consistent throughout any communication efforts, including public meetings, handouts and mailers, constituent conversations, materials for the news media, social media, and a dedicated website. The messaging and Q&A will educate and inform residents, business owners, civic leaders, local organizations, elected officials, and others about the benefits and impacts of the CWMD.

   The messaging and Q&A will highlight the environmental need and benefits, describe the funding, and detail the requirements for property owners. Materials will also address topics of concern, including costs for new construction, property transfers in priority areas, and system failures.

2. **Media Outreach**

   The County should reach out to traditional media proactively as a vehicle to inform residents, as well as to encourage positive editorials. Media releases should be written and distributed that are timed around milestones:

   a. Intention to establish the CWMD
   b. Legislative action (whether a vote to approve or a vote to establish a public referendum)
   c. Community meetings
   d. Outcome of the public referendum (if held)
   e. Reinforcement communication, such as next steps for property owners and/or early successes

3. **Letters and Mailers**

   Letters and mailers will ensure residents and business owners have the information they need about the CWMD, its benefits, how it affects their property, and a website link for additional information. If CWMD is put to a public referendum, letters and mailers will help voters cast an informed vote.

4. **Social Media**

An active social media campaign can be coordinated to tell a story and share information with supporters, address misconceptions and help sway the undecided toward support of the CWMD. The campaign will:

a. Identify and link to the social media presence of community groups or supportive organizations to help inform their followers and the public.
b. Utilize powerful imagery to highlight the environmental need for the CWMD and promote its benefits.
c. Include concise messaging with a link to the County's website for more information.

5. Website

The existing website should be updated consistently with messaging, Q&A, timelines and schedule of community meetings. The website should have ongoing updates to share new information, such as press releases and media coverage. All external messaging efforts should direct concerned residents to the website for information.

6. Community Meetings

Facilitate a community meeting initiative to further disseminate information, answer questions and engage the public. Following each community meeting, messaging and Q&A should be reviewed and updated to reflect questions, concerns or misunderstandings about the CWMD.

The immediate next step to reach the outreach and communications goals is to plan for the CWMD Report findings communications, and develop key messaging and Q&A, which will serve as a basis for all printed, online, and face-to-face communication. Other immediate efforts include preparing:

- News Release announcing the report and its recommendations.
- OpEd column citing the need for action now and supporting the CWMD.
- Q&A format fact sheet (for County Legislators and other officials, as well as for distribution to supporting groups, use on website, etc.).
- Informational graphic brochure about the need for the CWMD, benefits to residents and the environment, and how the district would work.

Table 8-1: CWMD Implementation Plan Action Items

Focus Area	Priority	Owners	Collaborators	Key Milestones and Actions	Schedule	Funding Status
1. Establishment of SCCWMD Governance and Organizational Structure	1	CEO, DEDP, DPW	DHS, LIRPC, LINAP	a. Conduct outreach and education.	2020	DEDP, DHS Budgets
				b. County Legislature resolution indicating desire to amend state law to grant powers needed to establish district, County Executive advocacy to legislators, and State legislation.	2020	TBD
				c. Hold referendum.	2021	TBD
				d. Establish administrative framework and staffing to collect and manage funds, hold public hearing, and establishing district through an act of the County Legislature.	2022-2024	TBD
2. Establish Stable and Recurring Revenue Source	1	CEO, DEDP	DHS, DPW, LIRPC, LINAP	a. Finalize County policy regarding grant funding eligibility to finalize estimates of annual revenue requirement needs to support I/A OWTS grant funding over the at least the first 10 years of the implementation plan (2024-2033).	2020	DEDP, DHS Budgets
	2	CEO, DPW	DEDP, DHS, LIRPC, LINAP	b. Confirm the sewer extension project prioritization and finalize the level of funding deemed acceptable considering trade-offs between funding levels and timeline to achieve County nitrogen reduction goals. Based on the updated sewer evaluation, identify locations where sewering is a preferred option and consider identifying these parcels as I/A OWTS exempt areas.	2022-2024	DEDP, DHS Budgets
	1	CEO, Leg.	DEDP, DHS, DPW, LIRPC, LINAP	c. Facilitate discussions with SCWA to determine whether County will receive support in the establishment and administration of a CWMD charge based on water consumption. Draft and sign a memorandum of understanding with SCWA for supporting a water consumption-based charge. If SCWA is not willing to support the County, proceed with an SFE based charge approach.	2022-2024	CEO and DEDP Budgets
	2	CEO, DEDP	DHS, DPW, LIRPC, LINAP	d. Finalize policy decision as to whether to adopt a tiered charge that improves the equitability of the charge structure given the added complexity and greater administrative burden that a tiered charge would require to maintain.	2020	DEDP, DHS Budgets
	2	CEO, DEDP	DHS, DPW, LIRPC, LINAP	e. Continue to advocate for additional grant funding resources through New York State programs to supplement the County's revenue needs.	Continuous	DEDP, DHS Budgets
	2	CEO, DEDP	DHS, DPW, LIRPC, LINAP	f. Research and pursue opportunities to secure funding from private sources, such as environmentally focused foundations.	Continuous	DEDP, DHS Budgets
	2	CEO, DEDP	DHS, DPW, LIRPC, LINAP	g. Continue efforts to educate and inform property owners and other stakeholders about the planned CWMD charge and the County's overall nitrogen reduction program.	Continuous	DEDP, DHS Budgets
	3	CEO, DEDP	DHS, DPW, LIRPC, LINAP	h. Explore areas within the County where the use of TIFs could help fund sewer extension projects, where development is desirable and the use of TIFs is feasible.	2020	DEDP, DHS Budgets
	2	CEO, DEDP	DHS, DPW, LIRPC, LINAP	i. Develop a strategy to address the potential outcome of the IRS response about whether or not I/A OWTS grants are taxable to the property owner. If such grants are taxable, consider restructuring the planned grant program as a benefit assessment or include a provision in the draft State legislation that would allow for State tax credits to homeowners for installing I/A OWTS systems.	2020	DEDP, DHS Budgets
3. Optimize I/A OWTS Grant Funding, Permitting, and Construction Process	1	DHS	N/A	a. An audit of the grant application fields should be undertaken to ensure property owners are not asked for the same information or documents twice for County and State grant applications	2020	DEDP, DHS Budgets

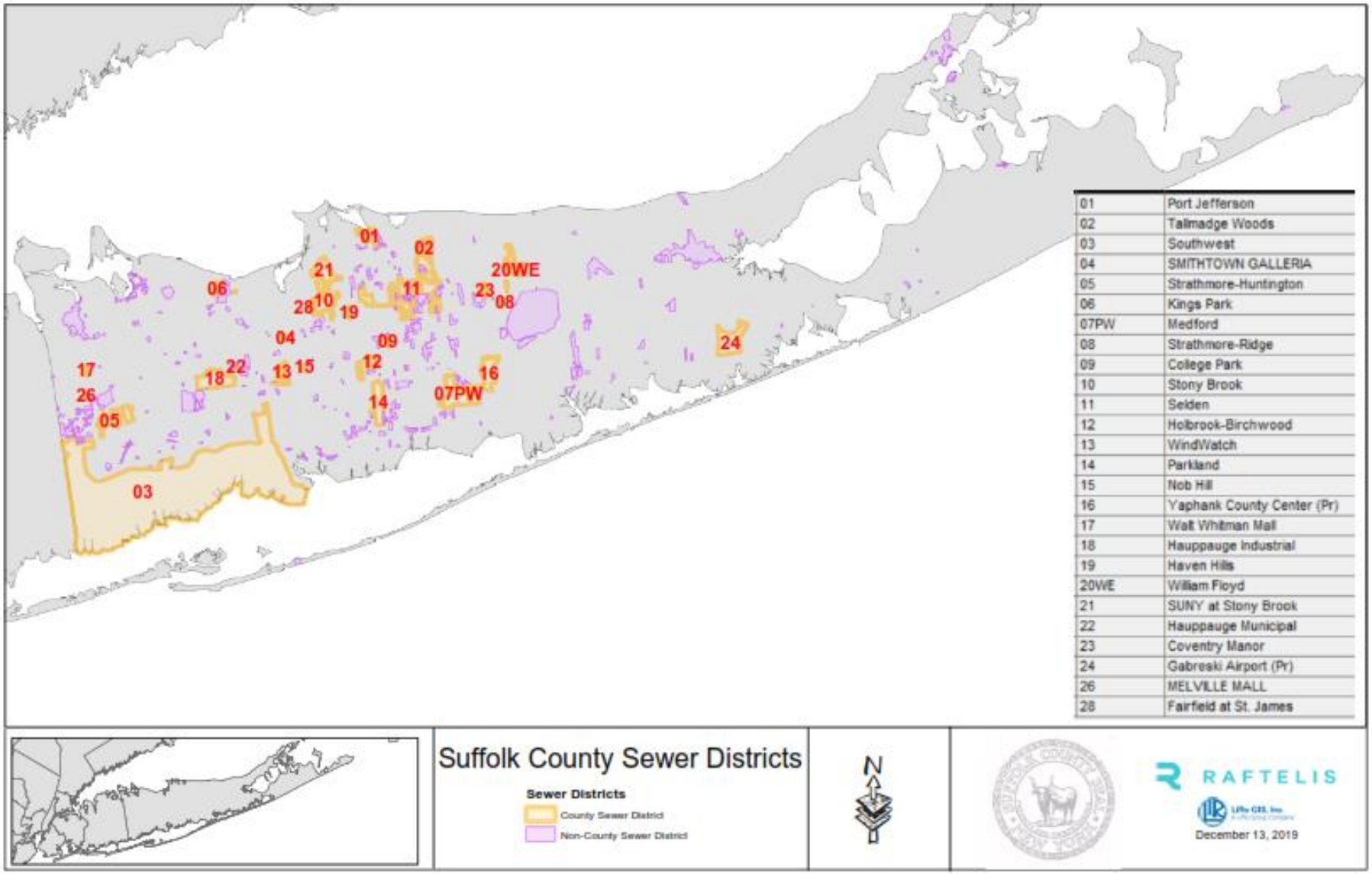
Focus Area	Priority	Owners	Collaborators	Key Milestones and Actions	Schedule	Funding Status
	1	DHS, DOIT	N/A	b. The submittal process for County and State grant applications should be aligned so that any duplicated fields are automatically populated on the back-end by County systems. It is our understanding that much of the IT work that will enable this has already begun and is expected for 2020.	2020	DHS, DOIT Budgets
	1	CEO, DHS	DEDP	c. Request that the state revise their grant application to exclude system failure-related fields from and incorporate the revised state grant application into an automated process design through which property owners would apply for both County and State grants as a single submission. If the State does not revise their form, automatically populate the relevant fields with “N/A in Suffolk County” or an entry as agreed to by the state.	2020	DEDP, DHS Budgets
	1	CEO, DOL	DEDP, DHS	d. The County should change its policy to allow for electronic grant contract signatures. Consider engaging a technology such as DocuSign to support this effort.	2020	DHS, DOL and DOIT Budgets
	1	DHS, DOIT	CEO, DEDP, DOIT, RPTS	e. Complete planned 2020 IT process automation and digitization opportunities seeking to eliminate grant application submittal errors before they occur, automate quality and completion checks, and route documents, forms, signature procedures, and contracts between program participants and the County, as well as within the County departments.	2020	DHS and DOIT Budgets
	1	CEO, DOL	DEDP, DHS	f. Work with County Law to agree on a change to policies that currently require grant agreement contracts to be produced as five, notarized, hand signed copies.	2020	DEDP, DHS Budgets
	1	CEO, DOL	DEDP, DHS	g. Seek to offer property owners of properties held as trust, LLCs, corporations, other mechanisms for validating their residency and completing the grant contracting process.	2020	DEDP, DHS Budgets
	2	CEO, DOL, RPTS, Comptroller	DEDP, DHS	h. Upon receipt of the IRS opinion regarding the handling of grant funds for tax purposes the County should either (1) proceed with further development of a robust grant program to incentivize I/A OWTS installations, if a favorable IRS opinion is received, or (2) consider restructuring the County’s planned grant program to a benefit assessment approach, such that it eliminates property owner personal income tax consequences of receiving a grant from the County, if an unfavorable IRS opinion is received.	2020	DOL, DEDP, DHS Budgets
	2	CEO, DOL	DEDP, DHS	i. The County should consider proposing amendments to State Legislation to eliminate the licensed design engineer requirements for I/A OWTS installations in the County. In parallel, the County should ensure an available training program for general contractors and installers is conceived.	2021	DEDP, DHS Budgets
	2	CEO, DHS	DEDP	j. The County should complete an end-to-end process audit of their invoice review and payment procedures to identify ways to improve grant fund distributions through process simplification, technology optimization, elimination of layered approval steps, and staff training as needed.	2020	DEDP, DHS Budgets
	3	CEO, DHS, DPW	DEDP	k. A private decentralized “clustered” STP approval process requires amendment, such as reduced setback requirements, an increase in the maximum flow from 15,000 to 30,000 gpd, a reduction in permitting fees, and simplification of the sewer agency agreement process for systems serving multiple property owners. Without a suite of these amendments, clustered STP policy in the County will effectively limit the tools available to the CWMD, even where these innovative solutions may be the most sensible technical choice. For example, an increase in the maximum permitted flow of these systems may facilitate their management by DHS and ultimately the CWMD and could reduce inter-departmental complexity now. However, the need for sewer agency agreements must involve DPW and adds burdensome complexity both for the property owner and the County.	2021	DEDP, DHS Budgets
4. Optimize Management of I/A OWTS Maintenance, Monitoring, and Enforcement Process.	2	DHS, DOL	CEO, DEDP	a. The current Article 19 model for monitoring and enforcement of I/A OWTS maintenance activities should be evaluated to ensure it is as lean and impactful as possible prior to the expiration of the first tranche of 3-year warranties for systems installed in 2019.	2021	CEO and DOL Budgets

Focus Area	Priority	Owners	Collaborators	Key Milestones and Actions	Schedule	Funding Status
	3	DHS	CEO, DEDP	b. The County should survey the landscape of national OWTS maintenance service providers to determine if any large organizations exist that might be able to service large portions of the County through a single or a few zoned maintenance contracts.	2022-2023	DHS Budget
	3	DHS	CEO, DEDP	c. The County should evaluate zoned I/A OWTS maintenance service models and implement a maintenance procurement approach that is most feasible and offers the greatest benefits to the County and property owners in terms of administrative efficiency and cost effectiveness. Consider a franchise or "garbage" model, in which the County would contract with I/A OWTS maintenance contractors to complete a cycle of required maintenance for a given service area within a certain amount of time. The advantage would be that the maintenance contractors would compete on price to win zones and the County would not only have more certainty that the work was being done but could also possibly reduce costs for customers by aggregating the maintenance responsibilities.	2022-2023	DHS and DEDP Budgets
	1	CEO, DEDP	Leg.	d. The County should engage SCWA in discussions if a consumption-based fee structure is chosen to work to determine more specifically how data will be made available, and if they would be willing to complete billing activities. It would be inefficient to create redundant billing procedures within the County if a parallel structure is pursued.	2020	CEO and DEDP Budgets
	2	CEO, DEDP	Leg.	e. The County should engage SCWA or possibly DPW if an SFE-based fee structure is chosen as DPW currently bills on an SFE basis.	2020-2021	CEO and DEDP Budgets
	3	CEO, DEDP	Leg.	f. If an AV tax structure is pursued the County should complete necessary procedural design to ensure County Real Property Tax Services and Town/Village billing systems are prepared to handle the new line items.	2021	CEO and DEDP Budgets
5. Equalization of Sewer District Rates	2	DPW	DEDP, DOIT	a. Complete sewer infrastructure asset management plan to identify risk and criticality of infrastructure assets.	2021-2024	Sewer rates
			CEO, DEDP	b. Develop a long-term capital facilities replacement and improvement plan to refine long-term capital replacement funding needs.	2023-2024	Sewer rates
			CEO, DEDP, DHS	c. Complete a detailed sewer rate study to refine annual sewer revenue requirements, confirm rate equalization structure, and develop detailed rate equalization phase-in plan.	2023-2024	Sewer rates
6. Public Outreach and Communications	2	DEDP	CEO, DHS, DPW	a. Development of messaging that will remain consistent throughout any communication efforts	Continuous	DEDP, DHS Budgets
				b. Design of letters and mailers for distribution to the public		
				c. Use of social media with a coordinated campaign that can tell the story to a targeted audience		
				d. Provide additional educational and informative information for the County's web site.		
				e. Facilitate an ongoing community meeting initiative to further disseminate information from the SWP and this Feasibility Study project. It is recommended that the County holding community meetings on a quarterly basis that will serve as forums to continue to disseminate information.		
				f. Prepare periodic media releases regarding the plans to establish the CWMD, implement a recurring revenue source, and equalize sewer district rates into a unified rate structure.		

APPENDIX A:

Supporting Sewer Maps and Figures

Exhibit A-1: County Sewer District Map



01	Port Jefferson
02	Tallmadge Woods
03	Southwest
04	SMITHTOWN GALLERIA
05	Strathmore-Huntington
06	Kings Park
07PW	Medford
08	Strathmore-Ridge
09	College Park
10	Stony Brook
11	Selden
12	Holbrook-Birchwood
13	WindWatch
14	Parkland
15	Nob Hill
16	Yaphank County Center (Pr)
17	Walt Whitman Mall
18	Hauppauge Industrial
19	Haven Hills
20WE	William Floyd
21	SUNY at Stony Brook
22	Hauppauge Municipal
23	Coventry Manor
24	Gabreski Airport (Pr)
26	MELVILLE MALL
28	Fairfield at St. James

APPENDIX B:

Supporting Governance and Organization Figures

Exhibit B-1: CWMD Roles & Responsibilities Matrix

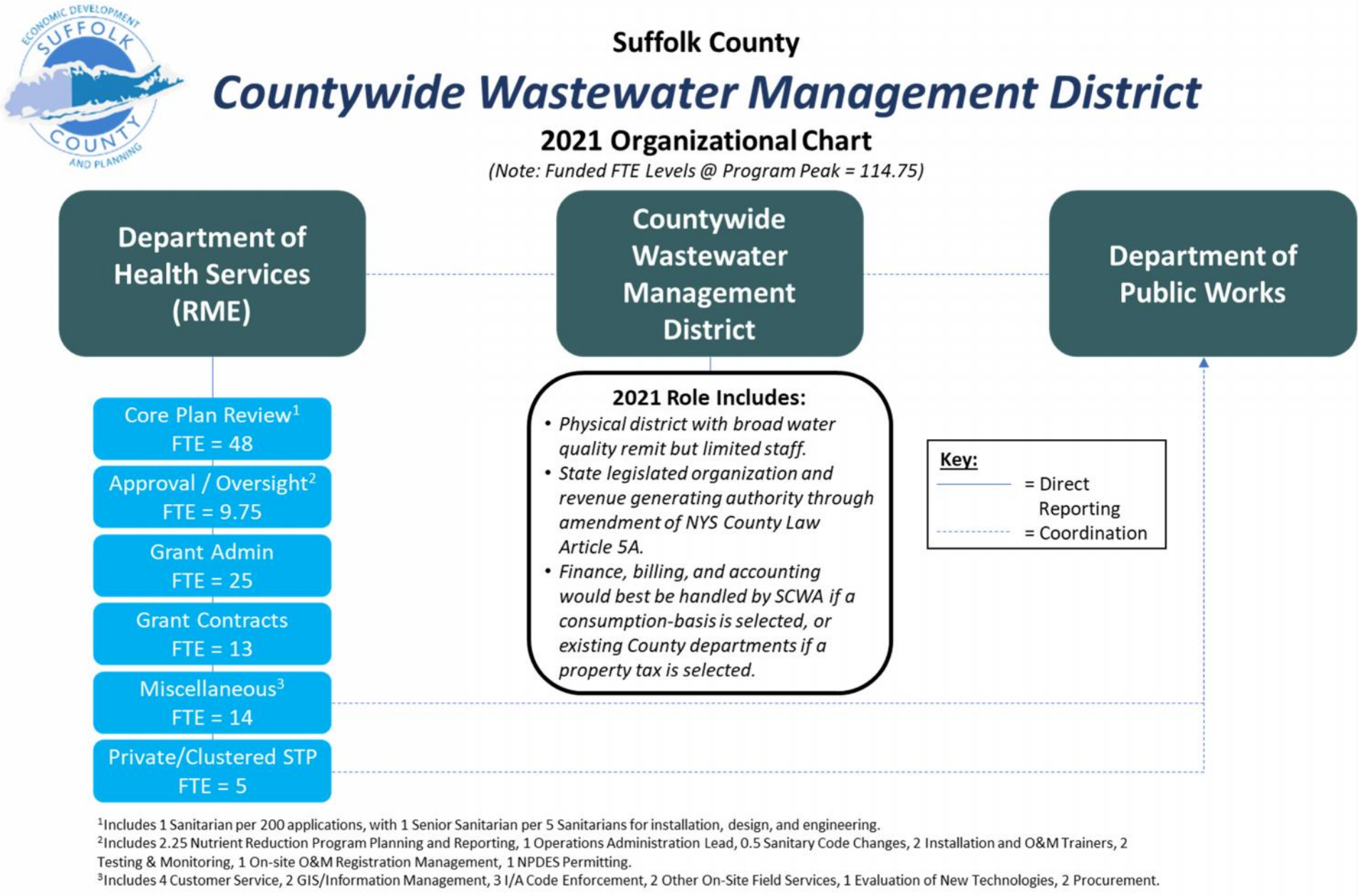
Suffolk County Countywide Wastewater Management District Feasibility Study

Involved Departments - Roles & Responsibilities

Note: Lead dept or agency is identified with an "L" and involved with an "x".

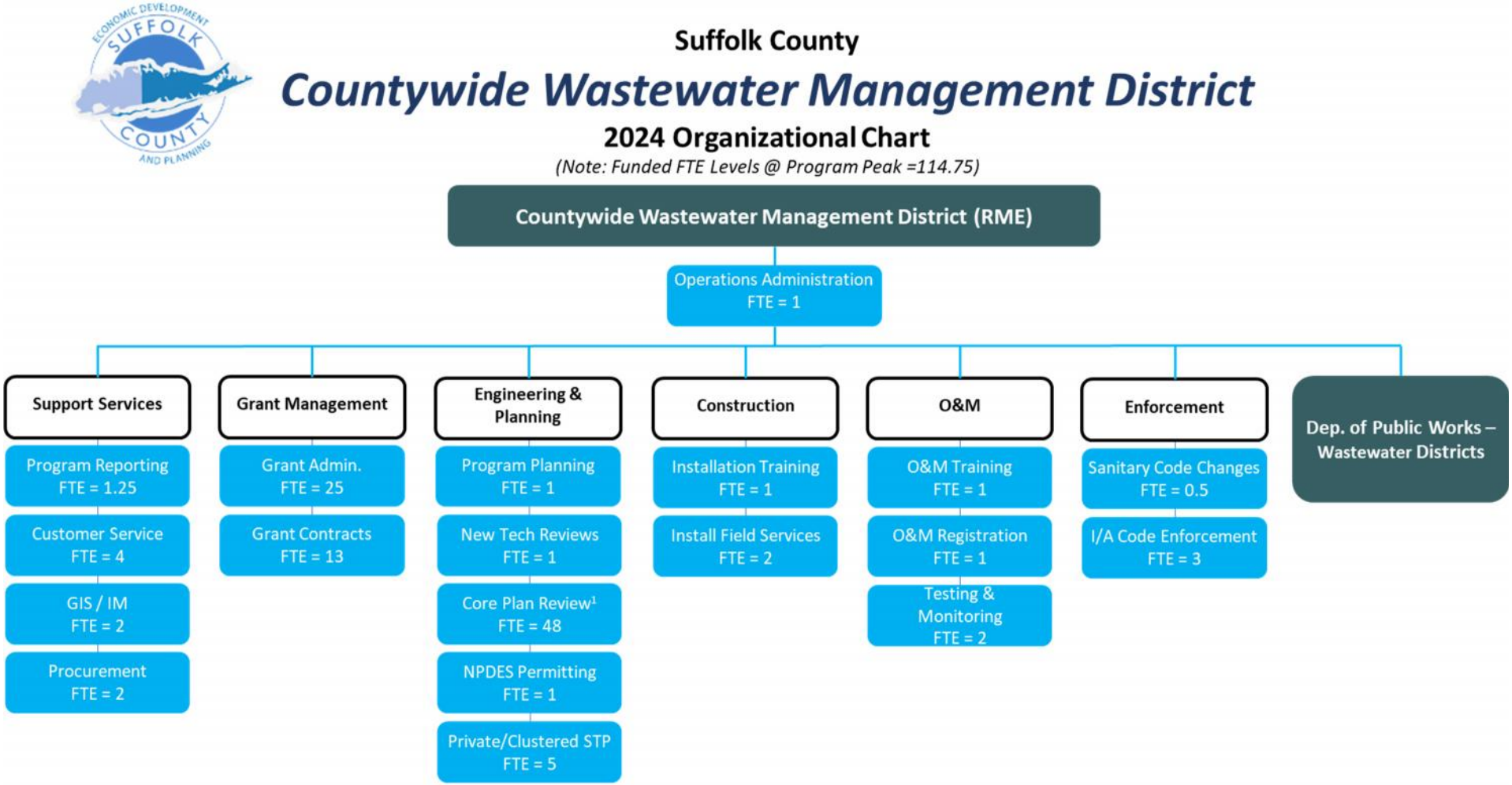
	Function	Suffolk County Government															Outside Agencies							
		CWMD	Dept. of Public Works	Dept. of Health Services	Board of Health	Dept. of Economic Development & Planning	County Legislature	County Executive	Real Property Tax Services	Information Technology	Soil and Water Conservation District	Audit and Control (Comptroller)	Clerk	Labor, Licensing, and Consumer Affairs	Law	Parks, Recreation, & Conservation	Civil Service	SCWA	Municipalities	Private Contractors	NYSDEC	NYSDOH	NYSED	USDA / NRCS	U.S. Environmental Protection Agency
Administration	Establishment of CWMD governance structure and organization						x	L							x										
	Organization finances and budgeting						x	L							x										
	Tax billing and collections (if applicable)								L										x						
	Consumption-based rate billing (if applicable)																	L							
	Customer service			x=4																					
	Information management systems (non-GIS)			x=1						L			x												
	Geographical Information Systems (GIS)			x=1						L			x												
	Employee benefits			x													L								
	Payroll			L																					
	"One Water" integrated planning					L												x							
	Performance management							L																	
	Procurement			L=2																					
	Legal services					x		x							L										
	Risk management			x											L										
	Nutrient reduction program planning and reporting			L=2		x	x	x																	
	Other operational administration			L=1																					
On-Site	Sanitary code changes for individual onsite systems			L=0.5	x		x	x							x								x		
	I/A code enforcement			L=3																					
	I/A grants administration			L=25																					
	I/A loan administration					L																			
	I/A contracts administration			L=13																					
	I/A installation certifications processing			x										L									x		
	Licensing of I/A installer and maintainers			x										L									L		
	Training of I/A installer and maintainers			L=2										x											
	I/A installation design and engineering			L=48																					
	I/A testing & monitoring			L=2																x					
	I/A O&M registration/management			L=1																					
	Other on-site field services (abandonment , enforcement, etc.)			L=2																x					
	Evaluation of new technologies for approval			L=1																					
	I/A OWTS annual reporting			L=0.25																					
	Private STP and clustered systems oversight			L=5																					
Public Sewer	Public wastewater system plant and pump operations and maintenance		L																		x				x
	Sewer infrastructure field services		L																						
	Sewer system expansions		L	x														x	x		x				
	NPDES permitting		L	x=1																	L				x
	Laboratory and sampling		L																	x					
	Customer outreach on sewers		L																x		x				x
	Town and village sewer districts liaison		L																						
	Sewer code enforcement		L																						x
	Industrial Pretreatment Program		L																						
	Multi-property system review and enforcement (Sewer Agency)		L																						
	Monitoring / enforcing nutrient levels at outfalls/discharges		L																		L				x
Other	Fertilizer and pesticide application (agricultural)					L					x													x	x
	Fertilizer and pesticide application (non-agricultural)			x		L					x								x		x				
	Environmental monitoring (non-wasewater = ground, surface, and storm water)		x	x							x					x					x	L			x
	Stormwater management and planning		L			x		x			x							x	x		x				
	Total FTE	0	0	114.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit B-2: 2021 CWMD Organizational Chart



[1]Includes 1 Sanitarian per 200 applications, with 1 Senior Sanitarian per 5 Sanitarians for installation, design, and engineering.
[2]Includes 2.25 Nutrient Reduction Program Planning and Reporting, 1 Operations Administration Lead, 0.5 Sanitary Code Changes, 2 Installation and O&M Trainers, 2 Testing & Monitoring, 1 On-site O&M Registration Management, 1 NPDES Permitting.
[3]Includes 4 Customer Service, 2 GIS/Information Management, 3 I/A Code Enforcement, 2 Other On-Site Field Services, 1 Evaluation of New Technologies, 2 Procurement.

Exhibit B-3: 2024 CWMD Organizational Chart



[1]Includes 1 Sanitarian per 200 applications, with 1 Senior Sanitarian per 5 Sanitarians for installation, design, and engineering.

Exhibit B-4: SIP Current Grant Process

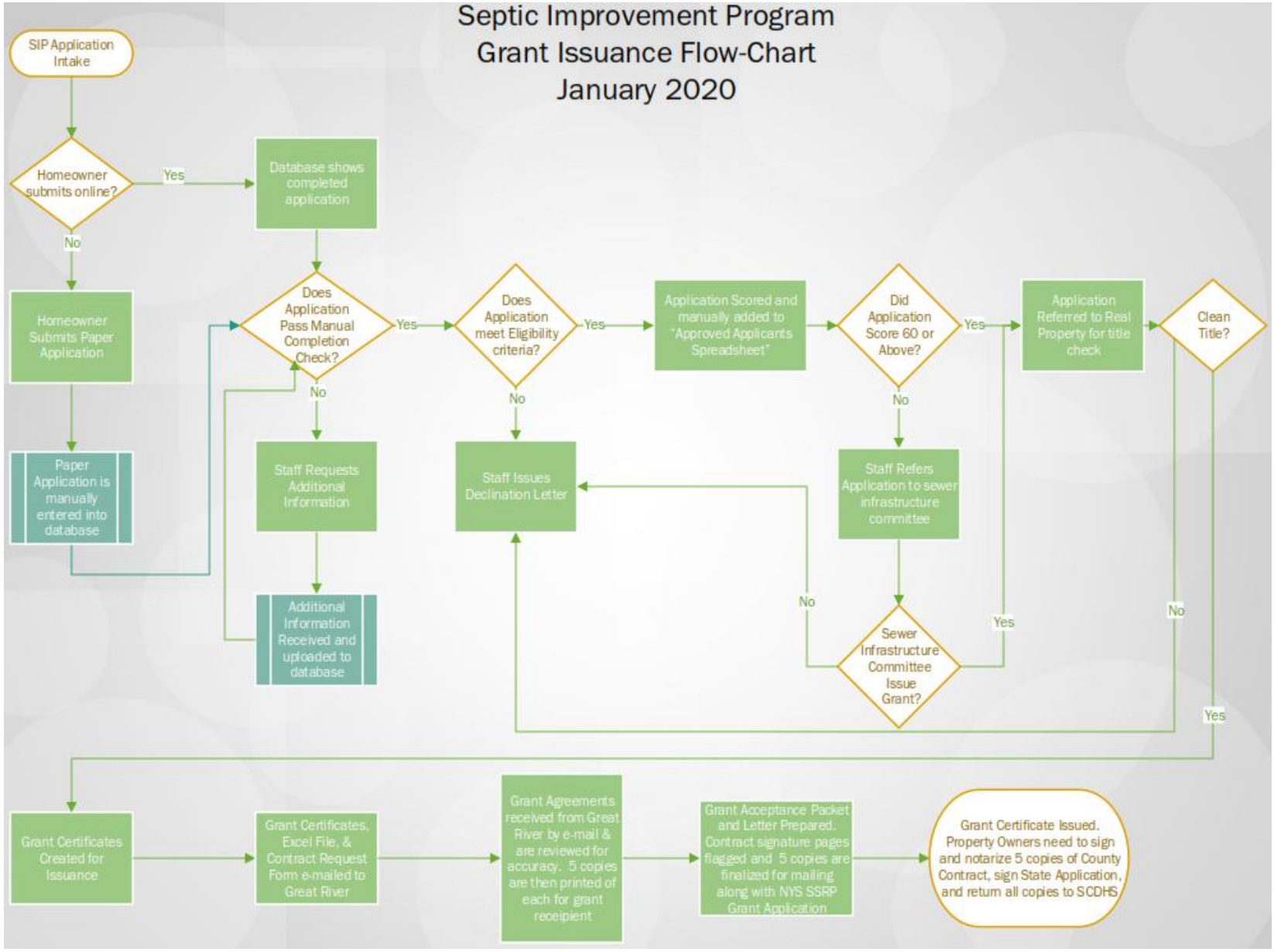


Exhibit B-5: SSRP Current Grant Process

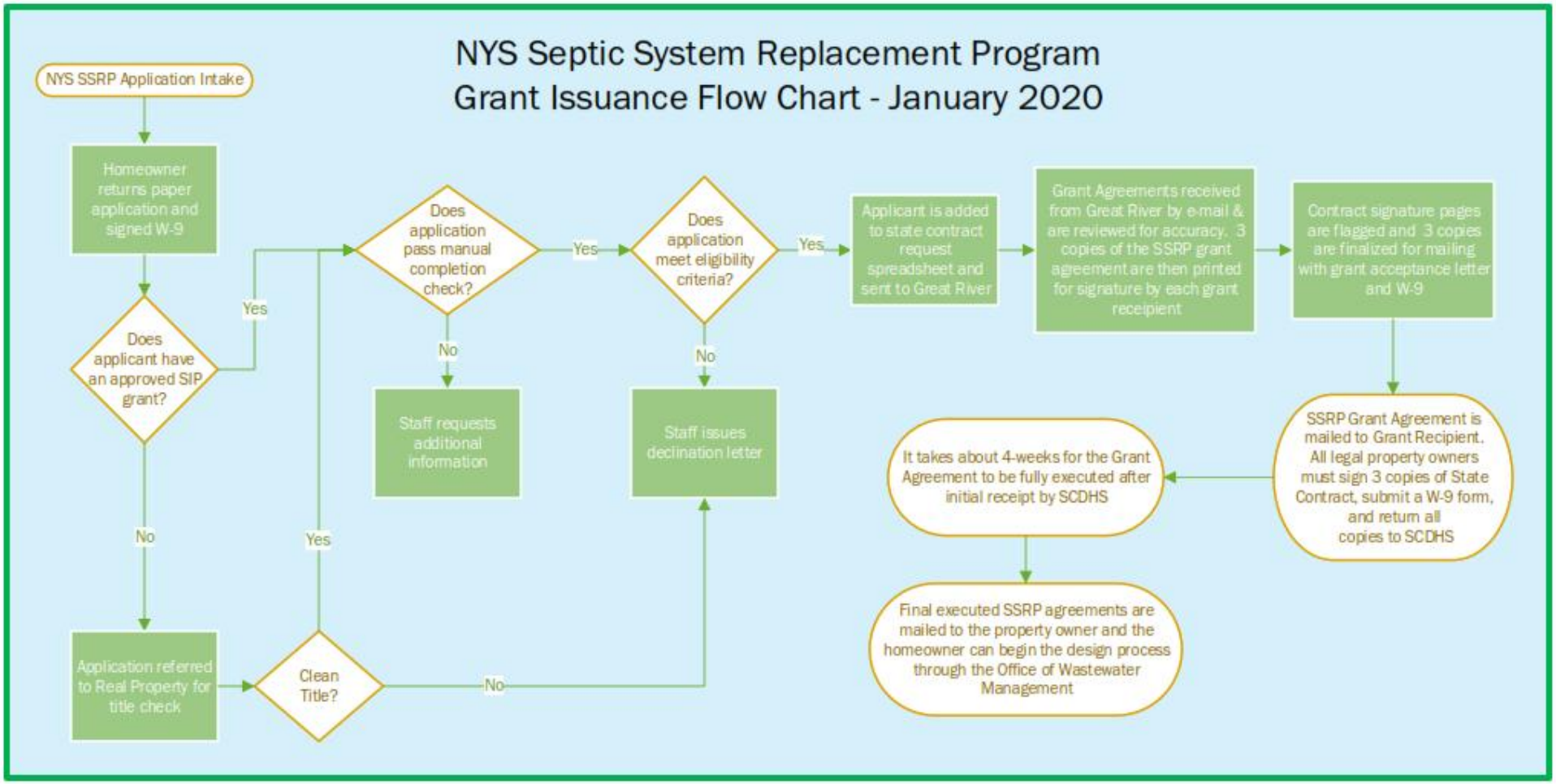


Exhibit B-6: SIP & SSRP Pre-Installation, Construction/Installation Process

Septic Improvement Program and State Septic System Replacement Program Construction Process Document—January 2020

1. Ecology receives approvable plans from the Office of Wastewater Management (OWM). Current backlog of 1—2 weeks.

2. Staff scans in Approvable Plans with permit conditions and stamps them as an unofficial copy for price quote only.

3. Plans are then e-mailed to the property owner with a list of SCDHS approved Vendors for that specific technology.

4. Property Owners then contact Vendors for a price quote for the installation, select a Vendor, and send price quote to SCDHS.

5. Project Manager reviews price quote and either approves or sends back to Vendor with Comments.

6. Staff then prepares necessary forms for owner to sign: Assignment of Payment (AOP) forms, and State Reimbursement Request.

7. Staff scans and e-mails property owner(s) documents for original signature(s).

8. When documents are received with original signatures, plans are officially approved and released to the agent on record.

9. Installation can then be scheduled. SCDHS staff must be notified as to date of scheduled installation.

10. Vendor must confirm installation date with SCDHS. Original post installation documentation needs to be submitted to OWM and copies to Ecology

11. After post-installation documents are received, staff completes the final eligibility memo, inspector certification letter, and submits the file for payment.

Forms Required Before Installation

Assignment of Payment (SIP)
Assignment of Payment (SSRP)
IRS W-9 Form
Request for Reimbursement Form (SSRP)

Forms Required to Process Payment

- Contractor Certification – WWM-078
- Abandonment Certification – WWM-080
- Property Owner Registration – WWM-304
- O&M Agreement
- Final Invoice
- Payment Voucher signed by Vendor

Exhibit B-7: SIP & SSRP Pre-Installation, Construction/Installation Process

Septic Improvement Program and State Septic System Replacement Program
Payment Process Document—January 2020

Septic Improvement Program
Payment Process Document—January 2020

1. Staff receives completed post installation file from Ecology and checks for completeness.

2. Staff completes County payment voucher and submits to Project Manager for review and signature. Completed by Friday of every week.

3. The following Monday, staff takes the payment vouchers to Great River for further review and signature.

4. Staff returns to Yaphank and enters the vouchers and W-9's in IFMS (County accounting software) the same day.

5. Staff scans supporting documentation and files both electronic and hard copies. W-9's are not included in Ecology files.

6. Staff then enters vouchers into tracking ledger and grants management system (GMS) worksheet. W-9's are not included.

7. Hard copy files are reviewed and updated as necessary.

8. Staff checks in IFMS if vouchers are in "final" phase and if not staff contacts Health Administration.

State Septic System Replacement Program
Payment Process Document—January 2020

1. SCDHS has worked with EFC to develop a 2-week cycle for drawdown of State SSRP funds.

2. Staff receives completed post installation file from Ecology and checks for completeness.

3. Staff completes County payment voucher and submits to Project Manager for review and signature.

3. The Monday of the week the funds will be requested from EFC, staff will take payment vouchers to Great River for further review and signature.

4. Staff must submit the vouchers and w-9's in IFMS by noon on Wednesday of week funds will be requested from EFC.

5. Staff scans supporting documentation and files both electronic and hard copies. W-9's are not included in Ecology files.

6. Staff then enters vouchers into tracking ledger and grants management system (GMS) worksheet. W-9's are not included.

7. Vouchers are then put aside for the next EFC drawdown request.

8. In the meantime Audit & Control pre-audits vouchers so that Ecology can request funds from EFC on Friday.

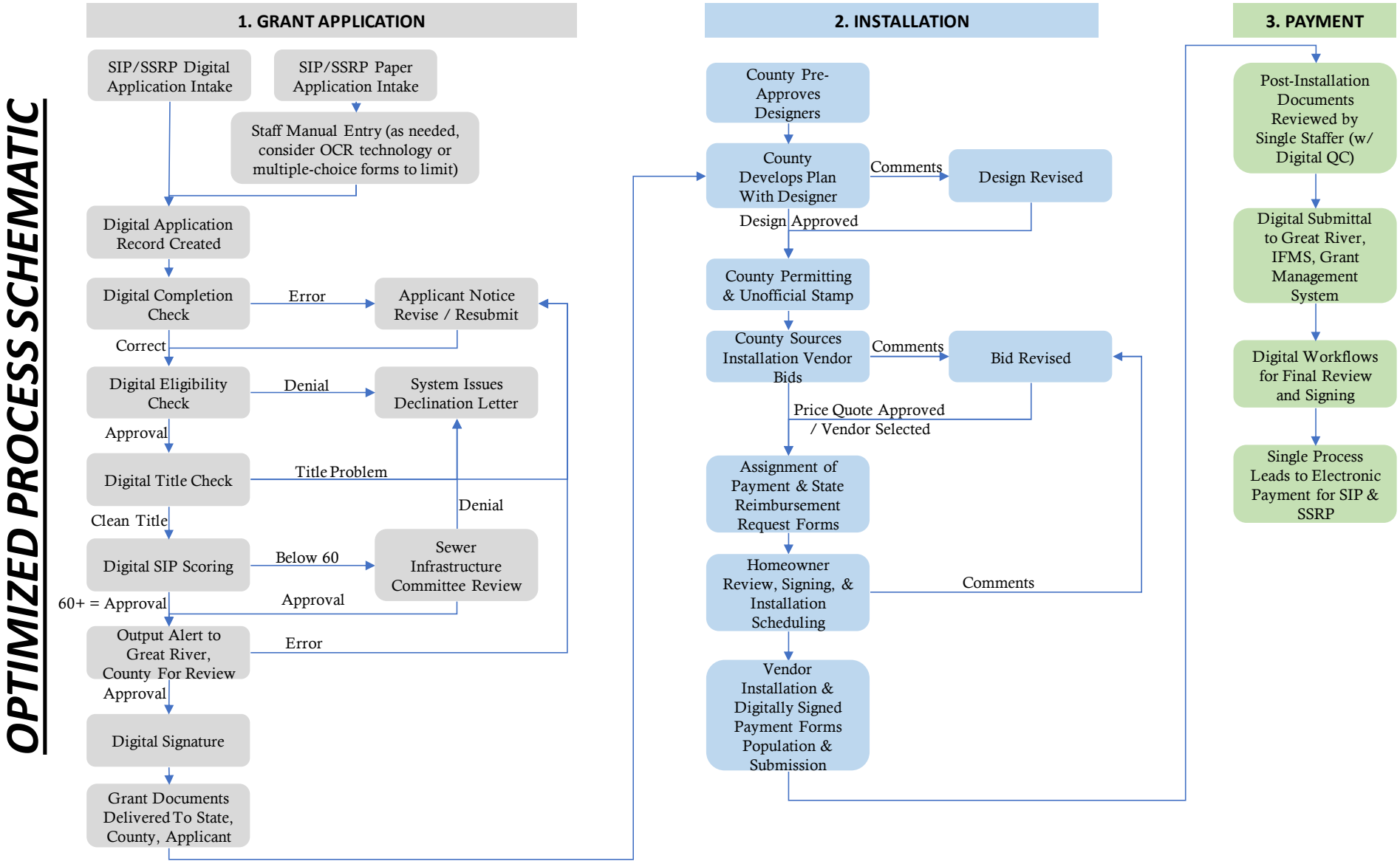
9. The following Thursday EFC notifies the County that they will be wiring the funds. Confirmation is usually received on Friday

10. Staff advises Audit and Control once funds are received from EFC so they can finalize the vouchers and prepare for payment on Friday.

Optimized Process Schematic Notes

- For the schematic that follows the following are assumed to be true:
  - Property owners, designers, installation vendors, Great River, EFC, State and County officials would be sent alerts upon an action item reaching their queue or upon the automatic generation of outputs for them by the digital system.
  - Documents would be routed stepwise through workflows through this same system whenever multiple layers of review are required, for signing as needed, or to divide work among available staff based on their backlog so as to ensure rapid assignment and processing of reviews and approvals.
  - Outputs would be populated after field entry through a guided interface, and would be quality checked, title checked, reconciled across sources, and generated by the system, including any needed comment or iteration steps for missing fields, signatures or supporting documents.
  - All signatures would be digital and all comments would be tracked electronically. Paper would only be used if the initial application submittal was via paper form before it was scanned into the digital environment.
  - Outputs from this single system would include any and all required SIP and SSRP document components such as:
    - Grant Agreement/Contract
    - Grant Certificate
    - Assignment of Payment
    - W-9
    - Request for Reimbursement
    - Contractor Certification – WWM-078
    - Abandonment Certification – WWM-080
    - Property Owner Registration – WWM-304
    - O&M Agreement
    - Final Invoice
    - Payment Voucher Signed by Vendor

Exhibit B-9: Optimized Process Schematic



APPENDIX C:

Supporting Financial Plan for the CWMD

Exhibit C-1: Cash Flow Forecast – CWMD (I/A OWTS Grant Management and Enforcement) – Slower Pace Scenario 1

Line No.	Description	Fiscal Year Ending December 31st FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
	Revenues:										
1	Interim Funding - Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Water Quality Improvement Fee	39,279,963	39,410,154	40,288,011	40,473,282	40,664,149	40,860,783	41,063,358	41,272,054	41,487,056	41,708,555
3	Interest Revenue	-	-	0	0	0	0	0	0	0	0
4	Total Revenues	$ 39,279,963	$ 39,410,154	$ 40,288,011	$ 40,473,282	$ 40,664,149	$ 40,860,783	$ 41,063,358	$ 41,272,054	$ 41,487,056	$ 41,708,555
5	Program Administrative Expenses										
6	Salaries	$ 2,456,403	$ 2,530,095	$ 3,494,245	$ 3,599,073	$ 3,707,045	$ 3,818,256	$ 3,932,804	$ 4,050,788	$ 4,172,312	$ 4,297,481
7	Employee Benefits	1,489,607	1,534,945	2,120,775	2,185,339	2,251,878	2,320,453	2,391,125	2,463,960	2,539,023	2,616,385
8	Materials & Supplies	245,640	253,010	349,425	359,907	370,704	381,826	393,280	405,079	417,231	429,748
9	General Fund Indirect	125,750	129,541	178,933	184,330	189,889	195,616	201,516	207,595	213,857	220,308
10	Total Program Administrative Expenses	$ 4,317,400	$ 4,447,591	$ 6,143,378	$ 6,328,649	$ 6,519,517	$ 6,716,151	$ 6,918,726	$ 7,127,421	$ 7,342,423	$ 7,563,923
11	Debt Service										
12	For Sewer Extensions	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813
13	For I/A Installation Grants	-	-	-	-	-	-	-	-	-	-
14	Total Debt Service	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813
15	Cash Expense to Fund I/A Grant Program	22,072,750	22,072,750	21,254,820	21,254,820	21,254,820	21,254,820	21,254,820	21,254,820	21,254,820	21,254,820
16	Total Revenue Requirements	$ 39,279,963	$ 39,410,154	$ 40,288,011	$ 40,473,282	$ 40,664,149	$ 40,860,783	$ 41,063,358	$ 41,272,054	$ 41,487,056	$ 41,708,555

Line No.	Description	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042	FY 2043
	Revenues:										
1	Interim Funding - Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Water Quality Improvement Fee	56,651,954	57,431,699	58,232,166	60,409,517	61,280,519	62,250,152	63,177,818	64,130,149	65,107,805	66,111,467
3	Interest Revenue	0	0	0	0	0	0	0	0	0	0
4	Total Revenues	$ 56,651,954	$ 57,431,699	$ 58,232,166	$ 60,409,517	$ 61,280,519	$ 62,250,152	$ 63,177,818	$ 64,130,149	$ 65,107,805	$ 66,111,467
5	Program Administrative Expenses										
6	Salaries	$ 4,426,406	$ 4,559,198	$ 4,695,974	$ 4,125,815	$ 4,249,590	$ 5,288,761	$ 5,447,424	$ 5,610,846	$ 5,779,172	$ 5,952,547
7	Employee Benefits	2,696,115	2,778,286	2,862,975	2,516,557	2,593,289	3,228,991	3,327,476	3,428,980	3,533,596	3,641,421
8	Materials & Supplies	442,641	455,920	469,597	412,582	424,959	528,876	544,742	561,085	577,917	595,255
9	General Fund Indirect	226,955	233,802	240,856	211,649	218,035	271,399	279,589	288,027	296,721	305,677
10	Total Program Administrative Expenses	$ 7,792,116	$ 8,027,206	$ 8,269,402	$ 7,266,602	$ 7,485,873	$ 9,318,027	$ 9,599,231	$ 9,888,938	$ 10,187,406	$ 10,494,899
11	Debt Service										
12	For Sewer Extensions	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648
13	For I/A Installation Grants	-	-	-	-	-	-	-	-	-	-
14	Total Debt Service	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648
15	Cash Expense to Fund I/A Grant Program	21,786,190	22,330,845	22,889,116	26,069,266	26,720,998	25,858,477	26,504,939	27,167,562	27,846,751	28,542,920
16	Total Revenue Requirements	$ 56,651,954	$ 57,431,699	$ 58,232,166	$ 60,409,517	$ 61,280,519	$ 62,250,152	$ 63,177,818	$ 64,130,149	$ 65,107,805	$ 66,111,467

Exhibit C-2: Cash Flow Forecast – CWMD (I/A OWTS Grant Management and Enforcement) – Medium Pace Scenario 2

Line No.	Description	Fiscal Year Ending December 31st FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
	Revenues:										
1	Interim Funding - Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Water Quality Improvement Fee	53,346,252	53,501,249	54,850,903	55,090,759	55,337,861	55,592,429	55,854,688	56,124,871	56,403,218	56,689,977
3	Interest Revenue	-	-	-	0	0	0	0	0	0	0
4	Total Revenues	$ 53,346,252	$ 53,501,249	$ 54,850,903	$ 55,090,759	$ 55,337,861	$ 55,592,429	$ 55,854,688	$ 56,124,871	$ 56,403,218	$ 56,689,977
5	Program Administrative Expenses										
6	Salaries	$ 2,924,447	$ 3,012,180	$ 4,523,742	$ 4,659,454	$ 4,799,237	$ 4,943,215	$ 5,091,511	$ 5,244,256	$ 5,401,584	$ 5,563,632
7	Employee Benefits	1,773,438	1,827,413	2,745,611	2,829,198	2,915,341	3,004,119	3,095,613	3,189,907	3,287,086	3,387,240
8	Materials & Supplies	292,445	301,218	452,374	465,945	479,924	494,321	509,151	524,426	540,158	556,363
9	General Fund Indirect	149,710	154,224	231,652	238,638	245,835	253,250	260,888	268,758	276,865	285,217
10	Total Program Administrative Expenses	$ 5,140,039	$ 5,295,036	$ 7,953,378	$ 8,193,235	$ 8,440,337	$ 8,694,904	$ 8,957,163	$ 9,227,346	$ 9,505,693	$ 9,792,452
11	Debt Service										
12	For Sewer Extensions	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813
13	For I/A Installation Grants	-	-	-	-	-	-	-	-	-	-
14	Total Debt Service	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813	$ 12,889,813
15	Cash Expense to Fund I/A Grant Program	35,316,400	35,316,400	34,007,711	34,007,711	34,007,711	34,007,711	34,007,711	34,007,711	34,007,711	34,007,711
16	Total Revenue Requirements	$ 53,346,252	$ 53,501,249	$ 54,850,903	$ 55,090,759	$ 55,337,861	$ 55,592,429	$ 55,854,688	$ 56,124,871	$ 56,403,218	$ 56,689,977

Line No.	Description	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042	FY 2043
	Revenues:										
1	Interim Funding - Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Water Quality Improvement Fee	72,019,429	73,195,231	74,402,018	77,809,583	79,124,688	80,595,227	81,996,176	83,434,067	84,909,885	86,424,638
3	Interest Revenue	0	0	0	0	0	0	0	0	0	0
4	Total Revenues	$ 72,019,429	$ 73,195,231	$ 74,402,018	$ 77,809,583	$ 79,124,688	$ 80,595,227	$ 81,996,176	$ 83,434,067	$ 84,909,885	$ 86,424,638
5	Program Administrative Expenses										
6	Salaries	$ 5,730,540	$ 5,902,457	$ 6,079,530	$ 5,124,256	$ 5,277,984	$ 6,895,017	$ 7,101,867	$ 7,314,923	$ 7,534,371	$ 7,760,402
7	Employee Benefits	3,490,461	3,596,842	3,706,482	3,125,559	3,220,861	4,209,672	4,338,067	4,470,399	4,606,789	4,747,361
8	Materials & Supplies	573,054	590,246	607,953	512,426	527,798	689,502	710,187	731,492	753,437	776,040
9	General Fund Indirect	293,822	302,686	311,819	262,867	270,799	353,826	364,504	375,504	386,838	398,514
10	Total Program Administrative Expenses	$ 10,087,877	$ 10,392,231	$ 10,705,784	$ 9,025,108	$ 9,297,443	$ 12,148,016	$ 12,514,625	$ 12,892,319	$ 13,281,435	$ 13,682,317
11	Debt Service										
12	For Sewer Extensions	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648
13	For I/A Installation Grants	-	-	-	-	-	-	-	-	-	-
14	Total Debt Service	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648	$ 27,073,648
15	Cash Expense to Fund I/A Grant Program	34,857,904	35,729,352	36,622,586	41,710,826	42,753,597	41,373,563	42,407,902	43,468,100	44,554,802	45,668,672
16	Total Revenue Requirements	$ 72,019,429	$ 73,195,231	$ 74,402,018	$ 77,809,583	$ 79,124,688	$ 80,595,227	$ 81,996,176	$ 83,434,067	$ 84,909,885	$ 86,424,638

Exhibit C-3: Cash Flow Forecast – CWMD (I/A OWTS Grant Management and Enforcement) – Higher Pace Scenario 3

Line No.	Description	Fiscal Year Ending December 31st FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
	Revenues:										
1	Interim Funding - Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Water Quality Improvement Fee	95,489,638	95,671,975	100,457,488	100,858,713	101,272,060	101,697,894	102,136,594	102,588,549	103,054,162	103,533,845
3	Interest Revenue	0	0	0	0	0	0	0	0	0	0
4	Total Revenues	$ 95,489,638	$ 95,671,975	$ 100,457,488	$ 100,858,713	$ 101,272,060	$ 101,697,894	$ 102,136,594	$ 102,588,549	$ 103,054,162	$ 103,533,845
5	Program Administrative Expenses										
6	Salaries	$ 3,440,306	$ 3,543,516	$ 7,567,203	$ 7,794,219	$ 8,028,045	$ 8,268,887	$ 8,516,953	$ 8,772,462	$ 9,035,636	$ 9,306,705
7	Employee Benefits	2,086,264	2,149,761	4,592,790	4,732,612	4,876,710	5,025,215	5,178,264	5,335,997	5,498,556	5,666,092
8	Materials & Supplies	344,031	354,352	756,720	779,422	802,805	826,889	851,695	877,246	903,564	930,670
9	General Fund Indirect	176,118	181,429	387,501	399,188	411,227	423,630	436,407	449,571	463,133	477,104
10	Total Program Administrative Expenses	$ 6,046,719	$ 6,229,057	$ 13,304,214	$ 13,705,440	$ 14,118,786	$ 14,544,620	$ 14,983,320	$ 15,435,276	$ 15,900,888	$ 16,380,571
11	Debt Service										
12	For Sewer Extensions	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338
13	For I/A Installation Grants	-	-	-	-	-	-	-	-	-	-
14	Total Debt Service	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338	$ 27,654,338
15	Cash Expense to Fund I/A Grant Program	61,788,580	61,788,580	59,498,935	59,498,935	59,498,935	59,498,935	59,498,935	59,498,935	59,498,935	59,498,935
16	Total Revenue Requirements	$ 95,489,638	$ 95,671,975	$ 100,457,488	$ 100,858,713	$ 101,272,060	$ 101,697,894	$ 102,136,594	$ 102,588,549	$ 103,054,162	$ 103,533,845

Line No.	Description	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038	FY 2039	FY 2040	FY 2041	FY 2042	FY 2043
	Revenues:										
1	Interim Funding - Grant Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Water Quality Improvement Fee	137,775,365	139,809,141	141,896,421	145,816,009	148,030,447	153,101,765	155,539,175	158,040,808	160,608,370	163,243,613
3	Interest Revenue	0	0	0	0	0	0	0	0	0	0
4	Total Revenues	$ 137,775,365	$ 139,809,141	$ 141,896,421	$ 145,816,009	$ 148,030,447	$ 153,101,765	$ 155,539,175	$ 158,040,808	$ 160,608,370	$ 163,243,613
5	Program Administrative Expenses										
6	Salaries	$ 9,585,906	$ 9,873,483	$ 10,169,688	$ 7,338,934	$ 7,559,102	$ 11,806,615	$ 12,160,814	$ 12,525,638	$ 12,901,407	$ 13,288,449
7	Employee Benefits	5,838,757	6,016,709	6,200,111	4,476,411	4,612,901	7,208,390	7,428,248	7,654,845	7,888,390	8,129,097
8	Materials & Supplies	958,591	987,348	1,016,969	733,893	755,910	1,180,662	1,216,081	1,252,564	1,290,141	1,328,845
9	General Fund Indirect	491,498	506,326	521,603	376,477	387,837	605,870	624,154	642,991	662,398	682,392
10	Total Program Administrative Expenses	$ 16,874,751	$ 17,383,866	$ 17,908,370	$ 12,925,715	$ 13,315,751	$ 20,801,537	$ 21,429,297	$ 22,076,038	$ 22,742,336	$ 23,428,783
11	Debt Service										
12	For Sewer Extensions	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206
13	For I/A Installation Grants	-	-	-	-	-	-	-	-	-	-
14	Total Debt Service	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206	$ 59,914,206
15	Cash Expense to Fund I/A Grant Program	60,986,409	62,511,069	64,073,845	72,976,088	74,800,491	72,386,022	74,195,673	76,050,565	77,951,829	79,900,624
16	Total Revenue Requirements	$ 137,775,365	$ 139,809,141	$ 141,896,421	$ 145,816,009	$ 148,030,447	$ 153,101,765	$ 155,539,175	$ 158,040,808	$ 160,608,370	$ 163,243,613

Exhibit C-4: Household Income by U.S Census Blocks within Suffolk County

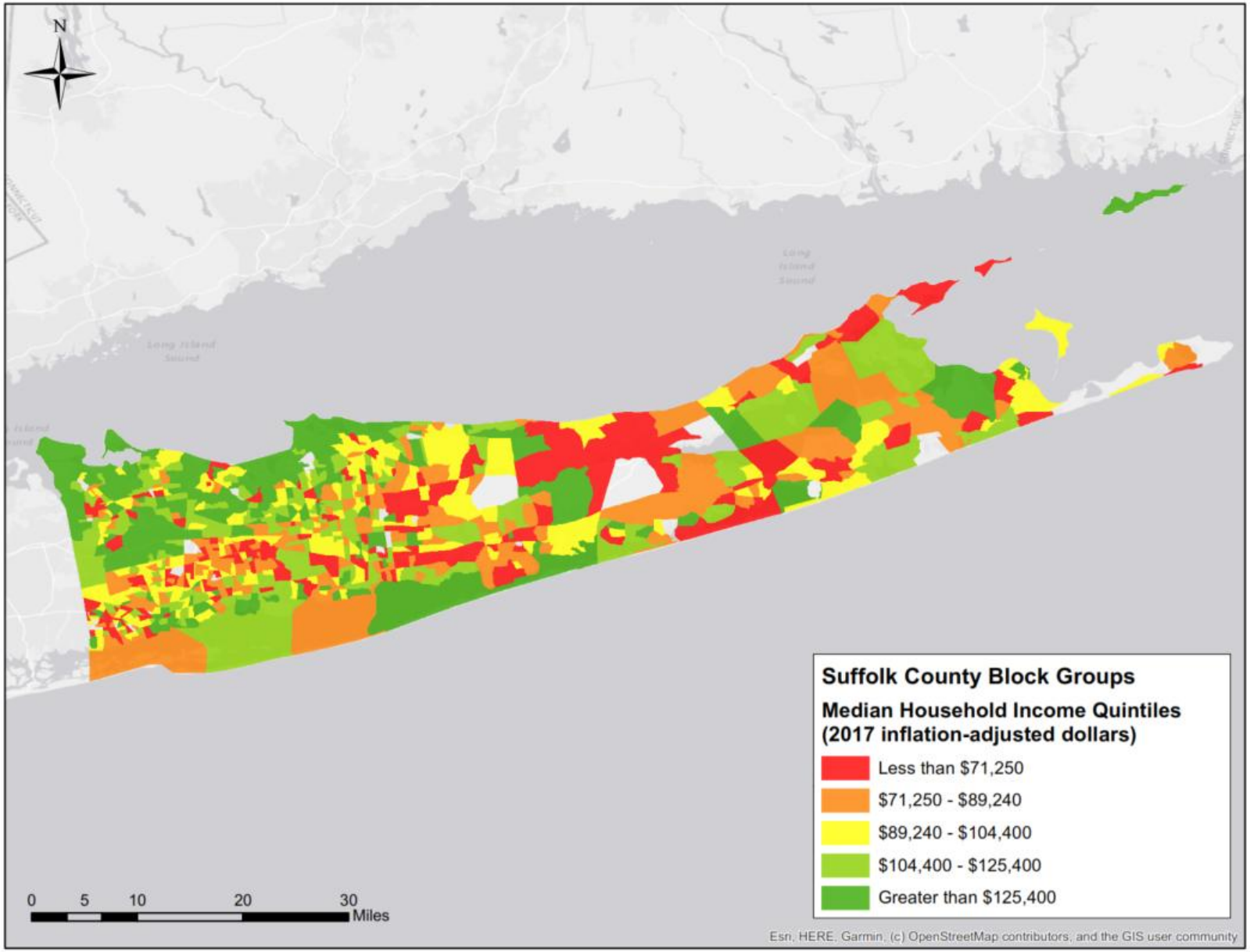
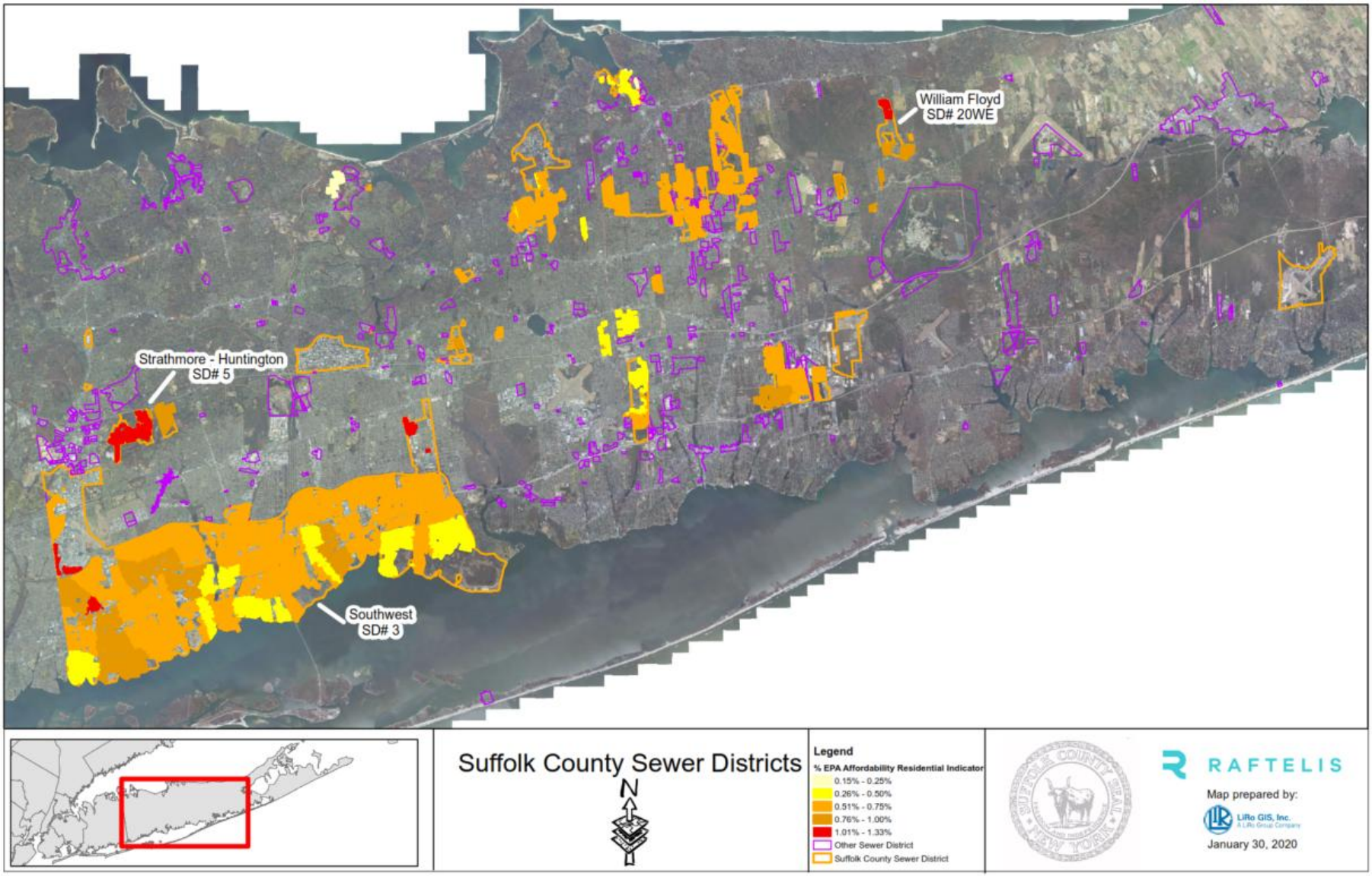


Exhibit C-5: Typical Annual Residential Wastewater Cost as % of Median Census Block Income



APPENDIX D:

Draft State Enabling Legislation for CWMD

Exhibit D-1: Draft State Enabling Legislation for CWMD

AN ACT to amend the county law, authorizing the county of Suffolk to establish a countywide wastewater management district as well as provision for a water quality management fund to finance enhanced wastewater treatment throughout the county

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

§ 1. Legislative intent. Suffolk County ("County"), with a population of 1.5 million persons, has in excess of 365,000 existing residential on-site systems, comprised mostly of cesspools and leaching pools, with 209,000 of these onsite systems in especially environmentally sensitive areas which could benefit from nitrogen-reducing technologies. The County, which is federally recognized as having a sole source aquifer system for its drinking water supply, is acutely aware of the need to preserve this valuable resource by reducing the amount of nitrogen discharged into the groundwater by traditional on-site residential sanitary systems.

The Suffolk County Comprehensive Water Resources Management Plan (2015) has documented the devastating effects of high levels of nitrogen pollution, not only on our drinking water quality, but also on coastal ecosystems, dissolved oxygen, water clarity, eelgrass, wetlands, shellfish, coastal resilience and in triggering harmful algal blooms. The Suffolk County Subwatersheds Wastewater Plan (2020) has delineated the source and concentration of nitrogen loading in 191 subwatersheds around the county.

It is widely recognized that for many areas of the county, connecting to or installing sewers is not a practical or cost-effective solution. For that reason, the county and stakeholder agencies have focused on a hybrid approach that relies on sewering, where feasible, as well as the replacement of cesspools and septic systems with innovative/alternative onsite wastewater treatment systems [I/A-OWTS]. The consolidation of the twenty-six county sewer districts into a countywide water quality management district will be a benefit to the residents of the county by allowing for the implementation of an integrated long-term wastewater treatment program for the county.

§ 2. Section 250 of the county law, as amended by chapter 388 of the laws of 1980, the opening paragraph as amended by chapter 620 of the laws of 1996, subdivision 1-a as amended by section 73 of part A of chapter 58 of the laws of 2010, subdivision 4-a as added by chapter 761 of the laws of 1981, subdivision 6 as amended by chapter 622 of the laws of 1984, and subdivision 8 as amended by chapter 184 of the laws of 1981, is amended to read as follows:

Exhibit D-1: Draft State Enabling Legislation for CWMD

§250. Purpose. The board of supervisors of each county may establish, consolidate, or extend county water, water quality treatment, sewer, wastewater disposal, drainage, wastewater management, or refuse districts (hereinafter referred to in this article as the "district") in the manner hereinafter provided:

1. For the purpose of developing or acquiring a supply of water for (a) wholesale distribution to other municipalities, districts or persons, corporate or otherwise, within the county water district, (b) retail distribution, except as hereinafter provided, or (c) both such wholesale and retail distribution;

1-a. For the purpose of (a) procuring by purchase, lease or other means and installing wastewater treatment units or devices, if required; providing periodic testing and monitoring of raw and finished water from private wells in the district; monitoring, modifying, repairing, replacing, operation and maintenance, regenerating wastewater treatment units and devices and the administering of the treatment and disposal of residuals generated in the operation of the district pursuant to rules and regulations adopted by the public health and health planning council under section two hundred twenty-five of the public health law; (b) assisting local, state and federal agencies and officials in efforts to establish causes of, and implement remedial measures to reduce water contamination and protect future water resources within the district; (c) conduct public meetings and issue an annual public report to members of the district on the operation, financial position and water quality condition of said district; provided, however, that with respect to any town in the county the board of supervisors shall first determine that such district or service will not be established or provided by such town.

2. For the purpose of (a) the conveyance from other municipalities and districts within the county of sewage, and treatment and disposal thereof, (b) collection, except as hereinafter provided, or (c) both such conveyance and such collection;

3. For the purpose of administration and planning (including educational programs), design, installation, construction, rehabilitation, replacement, operation and maintenance (including pumping and inspections), monitoring, residual treatment and disposal and regulation of private on-site wastewater disposal systems of such district;

4. For the purpose of drainage of storm water and other waters, either surface or subsurface, within the county;

4-a. For the purpose of effecting lake protection and rehabilitation, and any activities necessarily related thereto.

5. For the purpose of the collection and disposition of garbage, ashes, rubbish and other waste matter within the county.

5-a. For the purpose of the protection and restoration of groundwater, surface waters and drinking water quality as it may be deemed to be necessary or desirable, including but not limited to stormwater treatment projects, wetland construction, and installation of wastewater systems.

6. A county district established hereunder may consist of two or more noncontiguous areas in which the water, sewer, wastewater disposal, drainage, wastewater management or refuse system (hereinafter referred to in this article as the "system") will be interrelated and interdependent, however, in Suffolk county the term "interrelated and interdependent" shall be deemed to mean that the noncontiguous areas must be within the county and have the same administrative head. However, a wastewater treatment district established hereunder may consist of noncontiguous or contiguous benefited parcels of property and shall be created by a resolution of the county board of supervisors, upon petition after a public hearing.

7. Except in the county of Suffolk, no county district shall be established hereunder which shall consist wholly of territory within one city, within one village or within that portion of one town outside of a village.

8. Notwithstanding any other provision of law a sewer district may also exercise all the powers of a wastewater disposal district or wastewater management district if the map and plan prepared pursuant to section two hundred fifty-three of this [~~chapter~~] article, or amended pursuant to section two hundred fifty-three-b of this [~~chapter~~] article, includes on-site wastewater disposal systems.

§ 3. Section 251 of the county law, as amended by chapter 622 of the laws of 1984, is amended to read as follows:

§ 251. County agency. The board of supervisors may appoint or establish an officer, board or body, or may designate an existing officer, board or body, or public authority which possesses the express power to act as such an agency, to act as a county water, water quality treatment, sewer, wastewater disposal, drainage, wastewater management, refuse or public inland lake protection and rehabilitation agency (hereinafter referred to in this article as the "agency") having the powers hereinafter prescribed in sections two hundred fifty-two, two hundred fifty-three and two hundred fifty-four, and such other powers and duties as the board of supervisors may determine necessary to carry into effect the provisions of this article. Except in the case of a public authority, the agency may also be designated as the administrative head or body of any county district which may be established pursuant to the provisions of this article. All matters relating to the membership of such agency, including, but not limited to, numbers, method of selection, tenure, qualifications and compensation, shall be determined by the board of supervisors.

§ 4. Article 5-A of the county law is amended by adding a new section 256-b to read as follows:

Section 256-b. Suffolk county wastewater management district. 1. Purpose. The county legislature of Suffolk county is hereby authorized to establish a countywide wastewater management district in order to exercise the powers of, and implement the purposes as set forth in section 250 of this article and, in accordance with the procedure contained in this section.

2. Power. In addition to all of the powers authorized pursuant to this article, a wastewater management district may as authorized by the governing board of a county: (a) adopt comprehensive water resources management plans and wastewater management plans from which recommendations can be made to the governing board action to be taken to implement such plan; (b) let contracts for facilities for: (i) the removal of pollutants to groundwater, surface water, and drinking water; (ii) water quality improvement; (iii) sanitary sewage collection, disposal, and treatment; (iv) storm water or surface water drainage collection, treatment and disposal, and installation, improvements, maintenance and operation of (i) collection and conveyance municipal sewer infrastructure; (ii) municipal sewage treatment plants; (iii) uniformity of sewer rates; and (iv) for the installation of residential and commercial innovative/advanced on-site wastewater treatment systems [I/A OWTS] to standards set by the Suffolk County Department of Health Services; (c) establish a program to enhance affordability of advanced systems for the residents of the county of Suffolk by means of grants and low-interest loans to incentivize replacement of cesspools and septic systems with I/A OWTS; (d) monitor on-site sewage disposal systems or community sewage disposal systems for compliance with applicable standards and rules; (e) monitor the quality and quantity of groundwater, surface water, and drinking water and assure compliance with related standards and rules; (f) engage in public outreach/education programs relating to protecting, preserving, and enhancing groundwater, surface water, and drinking water; and to carry out such other powers conferred upon it by the governing board of a county.

3. Resolution. The county legislature of Suffolk County may adopt a resolution calling a public hearing upon the establishment of a countywide wastewater management district.

4. Notice. The clerk of the county legislature shall give notice of the hearing described in subdivision three of this section in such newspapers and within such time period as set forth in section two hundred fifty-four of this article. Such notice shall specify the time when and the place where such hearing will be held and, in general terms, describe the proposed countywide wastewater management district and the proposed basis of the future assessment of all costs of operation, maintenance and improvements of such district.

5. Hearing. The county legislature shall meet at the time and place specified in such notice and hear all persons interested in the subject matter thereof concerning the same. If the county legislature shall determine that it is in the public interest to establish a countywide wastewater management district as specified in said notice, the Suffolk county legislature may adopt a resolution, subject to a permissive referendum, so establishing such district.

6. Notice of adoption of resolution. Within ten days after the adoption by the Suffolk county legislature of the resolution described in subdivision five of this section, the Suffolk county legislature shall give notice thereof, at the expense of the county, by the publication of a notice in such newspapers and within such time period as set forth in section one hundred one of this article. Such notice shall set forth the date of adoption of the resolution and contain an abstract of such resolution, describing, in general terms, the proposed countywide wastewater management district and the basis for the future assessment of all costs of operation, maintenance and improvements and that such resolution was adopted subject to a permissive referendum.

7. Petition. The resolution of the Suffolk county legislature described in subdivision four of this section shall not take effect until forty-five days after its adoption and shall be subject to permissive referendum in each sewer district proposed to be consolidated in accordance with the provisions of section two hundred fifty-seven of this article.

8. Upon such establishment of a wastewater management district, all the property of the twenty-six such districts within the county shall become the property of the wastewater management district and the wastewater management district shall assume and pay the indebtedness of each of such original sewer districts as if such indebtedness had been incurred subsequent to the consolidation.

9. Where financing of I/A OWTS is assumed by the district, the obligation of the property owner will be assigned as a benefit assessment, amortized over a twenty-year period.

§ 5. Wastewater treatment fund. (a) Notwithstanding any provision of law to the contrary, the county of Suffolk is authorized to establish by local law, subject to mandatory referendum pursuant to section 23 of the municipal home rule law, a wastewater treatment fund to be financed by a water protection fee.

(b) In the case of properties that are served by the Suffolk County Water Authority or a water district established pursuant to state law, the fee shall be based on actual water usage or estimated water usage by customer type for such properties as calculated by the countywide wastewater district and/or the Suffolk County Water Authority.

(c) In all other cases, the county, by local law, shall establish a schedule of annual water usage for each category of land use in the county, including but not limited to residential, commercial, industrial and institutional uses. The local law may provide for subcategories for each land use.

(d) The fee imposed by the county under this section shall be a usage fee. Said fee shall be collected in the same manner as charges and revenues for water, water quality treatment, sewage, wastewater disposal and refuse collection pursuant to section 266 of the county law. The county, by local law, may provide for a discounted fee for low income households and may charge property owners at discounted rates based on whether the property is connected to a centralized wastewater disposal system, or I/A OWTS.

§ 6. Purposes of the fund. (a) Definition. "Wastewater treatment project" means the planning, design, construction, acquisition, enlargement, extension, or alteration of a wastewater treatment facility, including individual hookups, specifically I/A-OWTS to treat, neutralize, stabilize, eliminate or partially eliminate sewage or reduce pollutants, including permanent or pilot demonstration wastewater treatment projects, or equipment or furnishings thereof.

§7. Amendment by mandatory referendum only. Where the provisions of this act have been adopted by local law subject to mandatory referendum, said local law may only be amended, modified, repealed, or altered by enactment of another local law subject to mandatory referendum under the municipal home rule law.

§8. Severability. If any provision of this act or the application thereof shall for any reason be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not impair or invalidate the remainder of this act, but shall be confined in its operation to the provision thereof directly involved in the controversy in which the judgment shall have been rendered.

§9. This act shall take effect immediately.

APPENDIX E:

CoreLogic Report on I/A OWTS and Sewer Connection Impact on House Prices

CoreLogic®

Impact of Advanced Septic Installation and Sewer Connection on House Prices

Report prepared for Suffolk County, NY

Updated March 2020

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Summary

This report summarizes analyses of the impact on residential house prices of either the installation of advanced septic systems or the connection to a sewer system in a select set of communities in the Northeastern Atlantic seaboard. Specifically, the sale price of homes within a geographic area having an advanced septic system were compared to sale prices of homes in the same geographic region having a basic septic system. Similarly, sale prices of homes in a geographic area connected to a sewer system were compared to sales prices of homes in the same area that are not connected to the sewer system. In both cases the analyses attempted to control for other identifiable property characteristics to quantify the impact of advanced septic or connection to a sewer system on housing sale price.

Hedonic price models were used to estimate the impact of sewer connection or septic installation on house prices, using property sales from 2011 to 2019 and controlling for property characteristics including number of bedrooms, number of bathrooms, year built, property lot size, distance to waterfront and school district.

It is critical to note the limitations inherent in explanatory regression analysis, where correlations among model explanatory factors and factors that are omitted from the equation can have an impact on the estimated effect of interest (e.g. advanced septic installation or sewer connection). This is explained in greater detail below.

Because local factors have a significant effect on home prices, analyses were performed separately for each geographic region[1]. The following table summarizes the regions examined, whether the data quality in the region allowed for analysis, and the impact of advanced septic installation or sewer connection on house prices.

[1] As a robustness check, linear regression was performed pooling data from Charlestown, RI and Jamestown, RI. Results from the pooled regression were very similar to estimating separate equations for the 2 regions.

Region and system type	Data quality and quantity sufficient data for analysis	Estimated effect of advanced septic (or sewer connection) on house prices
Suffolk county, NY sewer	yes	Sewer connection correlated with higher house prices, statistically significant
Suffolk county, NY septic	no	Only 8 records of advanced septic systems (not enough for analysis)
Barnstable, MA septic	yes	Advanced septic correlated with higher house prices, statistically significant
Charlestown, RI septic	yes	Advanced septic correlated with higher house prices, statistically significant
Jamestown, RI septic	yes	Effect on house price not statistically significant
Anne Arundel county, MD septic	yes	Advanced septic correlated with higher house prices, statistically significant

The impact of sewer connection on house prices in the Suffolk county, NY Southwest Sewer district was examined. Controlling for other factors, the analysis indicated that sales of homes in the district that were connected to the sewer system exhibited a 5% premium over sales of homes in the district that were not connected to the sewer system.

Using data from Charlestown, RI, Barnstable, MA, and Anne Arundel county, MD, analysis of property sale price by septic system type (conventional, advanced) revealed that sales of homes with advanced septic systems sold at a premium relative to homes with standard septic systems, ranging from 13% to 19%.

The next section describes the statistical method used to estimate the house price impacts. Limitations in interpreting the results are also explained. The following sections also describe the data used, summarize the analysis results, and provide conclusions and recommendations for future analysis.

Statistical Approach and Limitations

Hedonic price models specify price as a function of characteristics affecting price[2]. In the current study, house price is estimated as a function of characteristics affecting house price, such as number of bedrooms or existence of an advanced septic system. The estimated coefficients in a hedonic regression can be interpreted as the impact of that characteristic on price. A hedonic regression can be estimated

[2] Sopranzetti B.J. (2015) Hedonic Regression Models. In: Lee CF., Lee J. (eds) Handbook of Financial Econometrics and Statistics. Springer, New York, NY

using linear regression, where the price is a linear function of the various characteristics specified in the regression.

Hypothesis tests of statistical significance associated with the linear regression often assume a normal distribution (bell shaped). House prices, however, are not normally distributed: prices do not fall below $0, and there often is a tail of the price distribution for higher prices. As is common with house price analysis, the natural log of house prices was used in the regression rather than house prices directly. This has the effect of specifying the impact of characteristics on house prices in terms of percentages, rather than in terms of dollar amount. For example, a coefficient of 0.05 associated with connection to sewer when regressed against log price would indicate that properties connected to the sewer have a 5% price premium relative to those not connected.

The linear regression approach estimates the impact of explanatory characteristics on house price at the mean values. It may not be valid to extrapolate regression coefficient to values far beyond the mean. Using the example in the preceding paragraph, if connection to sewer has a 5% price premium at the mean value of house prices in the dataset, that does not imply that the same 5% premium holds for house prices that are 2x or 3x above the mean. Theoretically, one could segment the data into different house price bands and estimate separate regressions to test how coefficients vary across the price bands. However, the small number of properties with advanced septic (or properties connected to sewer) prevented segmenting the data into price bands.

Mean sale price by region:

Region	Mean sale price
Suffolk county, NY	$400,000
Barnstable, MA	$497,000
Charlestown, RI	$730,000
Jamestown, RI	$570,000
Anne Arundel county, MD	$552,000

TABLE 1: MEAN SALES PRICE BY REGION

Predictive regression analysis seeks to identify factors affecting an outcome with the goal of predicting the outcome. For example, the hedonic regression results could be used to predict house prices for properties not included in the regression dataset, given input values for number of bedrooms, bathrooms etc.

Explanatory regression analysis focuses on the direction and size of the impact of an input factor on the outcome, instead of seeking to predict the outcome. The current study is an example of explanatory regression analysis, seeking to quantify the impact of connection to sewer or installation of advanced septic system on house price.

When performing explanatory regression analysis, several factors can impact the size and statistical significance of the estimated effect of the input factor on the outcome.

Multicollinearity refers to the existence of correlation among explanatory factors used to estimate an outcome.[3] The existence of correlation among explanatory factors can affect the level of statistical significance of the estimated coefficients. For example, if larger homes were located closer to the coast and both home size and distance to coast are included in a regression explaining house price, the value and statistical significance of the house size and distance to coast coefficients may be affected by multicollinearity.

Omitted variables can also affect the estimated coefficient of the input variable[4]. If the input variable of interest is correlated with both the outcome as well as an omitted variable that also affects the outcome, the estimated coefficient of the variable of interest may not represent only the effect of the variable of interest. For example, if installation of advanced septic is done as part of a broader project to refurbish the property, the increase in house price would be due to the other factors done to improve the property as well as the installation of the advanced septic system. If information about property improvement is not included in the regression, the coefficient for the advanced septic system would represent both the effect of the advanced septic system installation as well as the effect of the other improvements (overstating the impact of advanced septic installation on house price).

Using the Suffolk county sewer connection data as an example, it may be the case that homes connected to the sewer are closer to the water than those not connected to the sewer system. If proximity to water is associated with higher house prices, excluding distance to water in the regression would increase the coefficient on the sewer connection, because it would be capturing the sewer connection effect as well as some degree of the effect of proximity to water. This is empirically observed through regression analysis. When the proximity to water information is removed from the regression, the coefficient associated with sewer connection increase from 4.9 % to 6.1%.

It is also important to note that the coefficients calculated in one regression dataset are not affected by data in other datasets not used to calculate the coefficients. Specifically, the sewer connection analysis using Suffolk county data is independent of any of the advanced septic regressions. As a result, there is no link between the sewer connection coefficient in the Suffolk county sewer connection regression relative to the advanced septic coefficients in the various advanced septic regressions. Within the regions containing advanced septic systems, regression tests were performed by pooling the data across regions. The estimated effect of advanced septic for each region in the pooled regression was similar to the estimated effect when separate regressions were used. It is not valid to pool the sewer dataset and septic datasets. Sewer districts are correlated with higher population density (urban vs. rural) and the amenities associated with that. Grouping the sewer and septic data into one regression would confound population density effects with sewer vs septic effects.

Data

This section provides a description of the data used to perform the house price analysis for each of the regions studied. Suffolk County provided data related to septic tank installation and sewer system connection for several geographic regions. This information was merged with CoreLogic house price data for the corresponding region. The quality of the data was evaluated separately for each geographic

[3] Yoo W, Mayberry R, Bae S, Singh K, Peter He Q, Lillard JW Jr. A Study of Effects of MultiCollinearity in the Multivariable Analysis. *Int J Appl Sci Technol*. 2014;4(5):9–19.
[4] Clarke, K. A. (2005). The Phantom Menace: Omitted Variable Bias in Econometric Research. *Conflict Management and Peace Science*, *22*(4), 341–352.

region. In the cases where the data was sufficient for analysis, additional information potentially affecting house price was appended. These data elements are discussed in further detail below.

Sewer and septic data

Information about properties having advanced septic vs standard septic, or connected vs not connected to sewer is critical to the analysis. Several geographic regions were candidates for analysis. This section summarizes the data examined for each area.

SUFFOLK COUNTY SEPTIC

Data related to advanced septic systems in Suffolk county was merged with property sales data. There were only 8 records where a property having an advanced septic system was sold after the advanced septic system installation date. Given the insufficient volume of properties sold with an advanced septic system, regression analysis was not performed.

SUFFOLK COUNTY SEWER SYSTEM

The Suffolk county sewer data contained information for approximately 68,000 records connected to the sewer system, and 1,500 addresses not connected to the sewer system. Merging addresses of properties connected to the sewer system with property sale data resulted in about 13,000 sales transactions occurring after the sewer connection date. Similarly, 1,500 addresses not connected to the sewer system mapped to about 300 sales transactions for these properties. These records were used to estimate the impact of sewer connection on house prices.

CHARLESTOWN, RI SEPTIC

The Charlestown, RI septic data contained information for about 5,000 properties. Septic systems were classified as substandard, conventional or advanced septic. When mapped to property sale information, about 1,000 sales records were available for further analysis of the impact of septic type on house prices.

JAMESTOWN, RI SEPTIC

The Jamestown, RI septic data contained information for about 1,800 properties. Septic systems were classified as conventional or advanced septic. When mapped to property sale information, about 400 records were available for regression analysis.

BARNSTABLE, MA SEPTIC

Information for properties with advanced septic systems were available for Barnstable, MA. Corresponding information for standard properties with standard septic systems was not provided.

There were about 2500 properties with advanced septic systems in the initial dataset. This corresponded to about 300 sales records for properties having an advanced septic system.

Given the fact that addresses for properties with standard septic systems was not provided, properties were assumed to have standard septic systems if 1) they were located outside of the sewer system (identified through shapefiles) and 2) they were not included in the list of advanced septic systems. To further improve the match, the list of properties satisfying both conditions above was further reduced to properties in the same zip codes as zip codes containing advanced septic systems. This approach resulted in about 28,000 property sales identified as standard septic. The standard and advanced septic sales records were used with regression analysis.

ANNE ARUNDEL COUNTY, MD SEPTIC

Septic information corresponding to Anne Arundel county, merged with property sale information, resulted in a regression dataset of about 9,000 standard septic sales and 500 advanced septic sales.

House price and house characteristics

Multiple Listing Service (MLS) data for sales transactions were used to identify sold properties. Properties sold between 2011 and 2019 were used for the analysis.

When examining the relationship between septic (or sewer) and house price, it is necessary to control for other factors affecting price. The MLS listing data contains property characteristic information that was used in the regression analysis. Specifically, year built, lot square feet, number of bedrooms and number of bathrooms were used.

House Price Index

Given the fact that home sales between 2011 and 2019 were used in the analysis, it is necessary to control for general house price movements over time. The county level CoreLogic House Price Index (HPI) was used to adjust house prices from the time of sale to September 2019. This removes the time effect due to homes being sold at different points in time.

Distance to Coast

Distance to coastline has been found to have an impact on house prices, with homes closer to the coast selling at a premium to those inland. As a result, distance to the coast was included as a control factor when estimating the impact of advanced septic installation or sewer connection on house prices.

The distance to coast for each property was calculated using ESRI's ArcGIS Pro software.[5]

School district

School quality is another factor that can affect house prices. In order to better isolate the impact of advanced septic or sewer connection on house prices, school district information was included when possible.

The School District Boundary Layer, a component of CoreLogic's geospatial suite of data, was used to identify school districts when there were multiple school districts within the area of analysis.

The School District Boundary Layer consists of contiguous polygonal school district boundaries that have been collected from federal, state, and local sources and attributed with school district name, type, and identification codes. The boundaries have been aligned with our county and municipal boundaries where applicable and are updated quarterly.

Analysis

Suffolk county sewer system

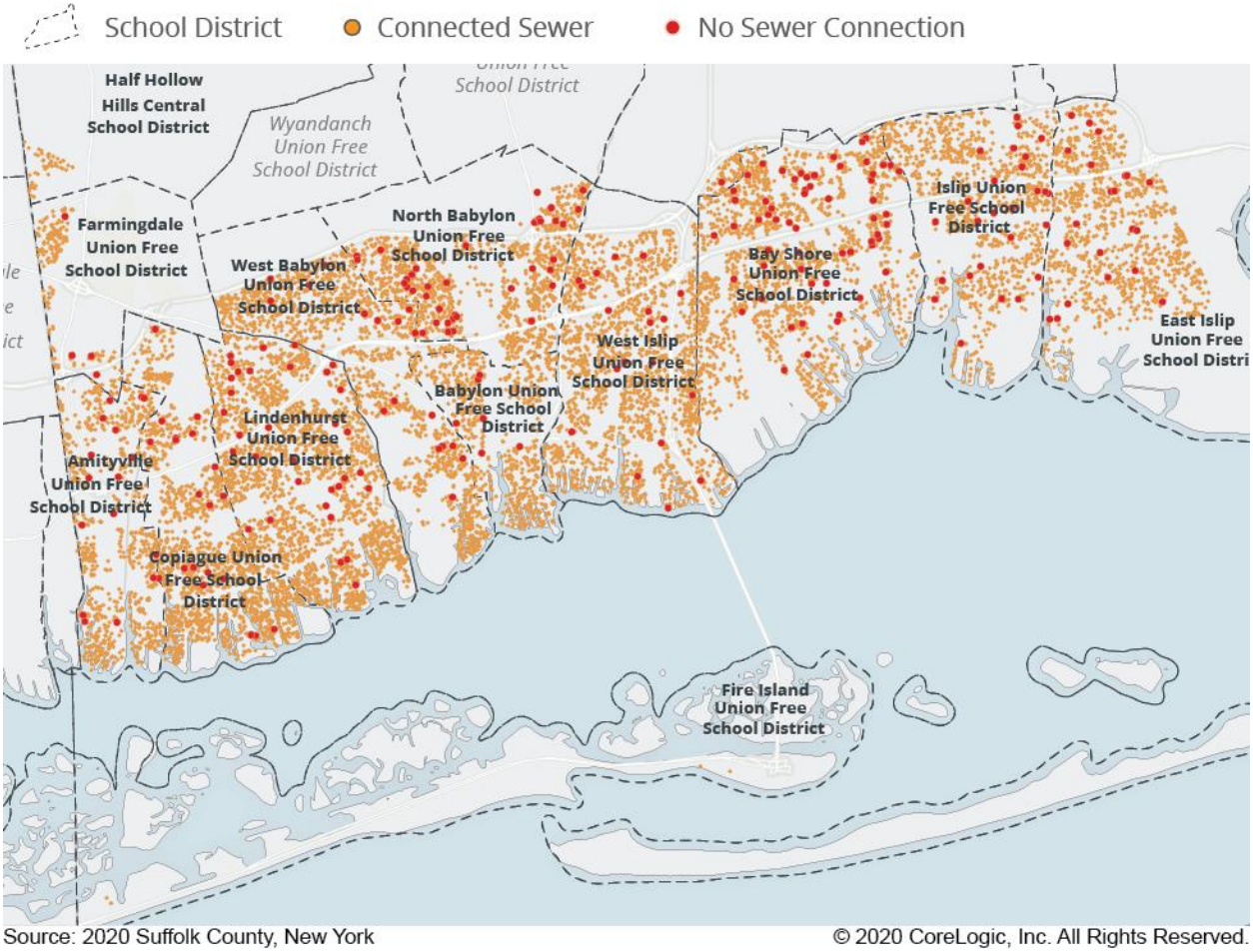
As described in the data section above, there were approximately 14,000 property sales within the Suffolk county Southwest Sewer district, corresponding to approximately 13,700 properties connected to the sewer system and 300 properties within the district but not connected to the sewer system.

Figure 1 illustrates the property sale locations using a map of Suffolk county. Even though most of the sales correspond to properties connected to the sewer system, the sale of homes not connected to the

[5] https://www.esri.com/en-us/arcgis/products/arcgis-pro/overview

system are fairly evenly distributed across the map. This decreases the risk that the prices of homes not connected to the sewer system are correlated with a geographic factor not accounted for in the analysis.

Fig. 1 2011- 2019 Home Sales by Sewer Connection, Suffolk County, New York



Source: 2020 Suffolk County, New York

Linear regression was used to examine the correlation among house prices, property characteristics and connection to the sewer system. Sales prices between 2011-2019 were adjusted to September 2019 values using the CoreLogic House Price Index.

Table 2 contains definitions of the property characteristics used in the regression analysis.

Variable	Meaning
Lot1	Lot size < 6,000 sq ft
Lot2	6,000<= lot size < 8,500 sq ft
YB0	Missing year built

YB1	Year built < 1950
YB2	1950 <= year built <1965
YB3	1965 <= year built < 1998
Bath1	Number of bathrooms <=1
Bath2	1 < number of bathrooms <2
Bath3	number of bathrooms =2
Bath4	2 < number of bathrooms < 3
Bath5	number of bathrooms =3
Bed1	Number of bedrooms =1
Bed2	Number of bedrooms =2
Bed3	Number of bedrooms =3
Bed4	Number of bedrooms =4
Dist1	Distance to shoreline < 0.2 km
Dist2	0.2 <= distance to shoreline < 0.5 km
Dist3	0.5 <= distance to shoreline < 1 km
AUF	AMITYVILLE UNION FREE SCHOOL DISTRICT
BSS	BAY SHORE SCHOOLS
CUF	COPIAGUE UNION FREE SCHOOL DISTRICT
EIU	EAST ISLIP UNION FREE SCHOOL DISTRICT
IUF	ISLIP UNION FREE SCHOOL DISTRICT
LUF	LINDENHURST UNION FREE SCHOOL DISTRICT
NBUF	NORTH BABYLON UNION FREE SCHOOL DISTRICT
WBUF	WEST BABYLON UNION FREE SCHOOL DISTRICT
WIUF	WEST ISLIP UNION FREE SCHOOL DISTRICT
Noconnection	Property is NOT connected to sewer system

TABLE 2: SUFFOLK COUNTY REGRESSION VARIABLE DEFINITIONS

Table 3 contains the results of regressing the variables listed in table 2 against the log of house price. When multiple categorical variables were created from a single raw variable based on groupings of the variable values, one set of grouping was omitted and serves as the reference category. For example, the

lot size variables LOT1, and LOT2 correspond to lot size values up to 8,500 sq. ft. Lots larger than 8,500 sq. ft serve as the baseline group, and the coefficients in the regression for variables LOT1 and LOT2 are relative to lot size > 8,500 sq. feet. The coefficient for LOT1 (-0.13) indicates that properties with a lot size less than 6,000 sq. ft on average have a 13% lower sales price than properties with a lot size greater than 8,500 sq. ft.

The reference categories for the remaining variables are: more than 3 bathrooms; more than 4 bedrooms; distance to shoreline >= 1 km; school districts not listed in the individual school district variable list; connected to sewer system.

Asterisks are used to indicate statistical significance of the coefficients. Values below 0.05 are generally accepted to be statistically significant. Using this criterion, BED4 and WIUF are the only variables that are not statistically significant. This indicates that that 4-bedroom homes do not have a significantly different price than 5+ bedroom homes, and that the WEST ISLIP UNION FREE SCHOOL DISTRICT does not have an average price difference than the reference school districts.

The remaining variables are all statistically significant at the 0.01 level. Additionally, the coefficient sign and value are as expected. Higher home prices are associated with larger lot size, newer year built, higher number of bedrooms, higher number of bathrooms and proximity to shoreline.

Of interest to this analysis, the coefficient for “noconnection” indicates that homes connected to the sewer system have a 4.9% price premium, after controlling for the other factors represented in the regression.

variable	Coefficient
Lot1	-0.13227**
Lot2	-0.07738**
YB0	-0.19068**
YB1	-0.17089**
YB2	-0.15542**
YB3	-0.14879**
Bath1	-0.56316**
Bath2	-0.41561**
Bath3	-0.39994**
Bath4	-0.19730**
Bath5	-0.28063**
Bed1	-0.44119**
Bed2	-0.18086**
Bed3	-0.03283**

Bed4	-0.00443
Dist1	0.27391**
Dist2	0.18679**
Dist3	0.12675**
AUF	-0.21959**
BSS	-0.14588**
CUF	-0.25099**
EIU	-0.03118**
IUF	-0.07386**
LUF	-0.13160**
NBUF	-0.07441**
WBUF	-0.07920**
WIUF	0.03038
Noconnection	-0.04927**

TABLE 3: SUFFOLK COUNTY REGRESSION RESULTS. ** = SIGNIFICANT AT 0.01 LEVEL; * = SIGNIFICANT AT 0.05 LEVEL.

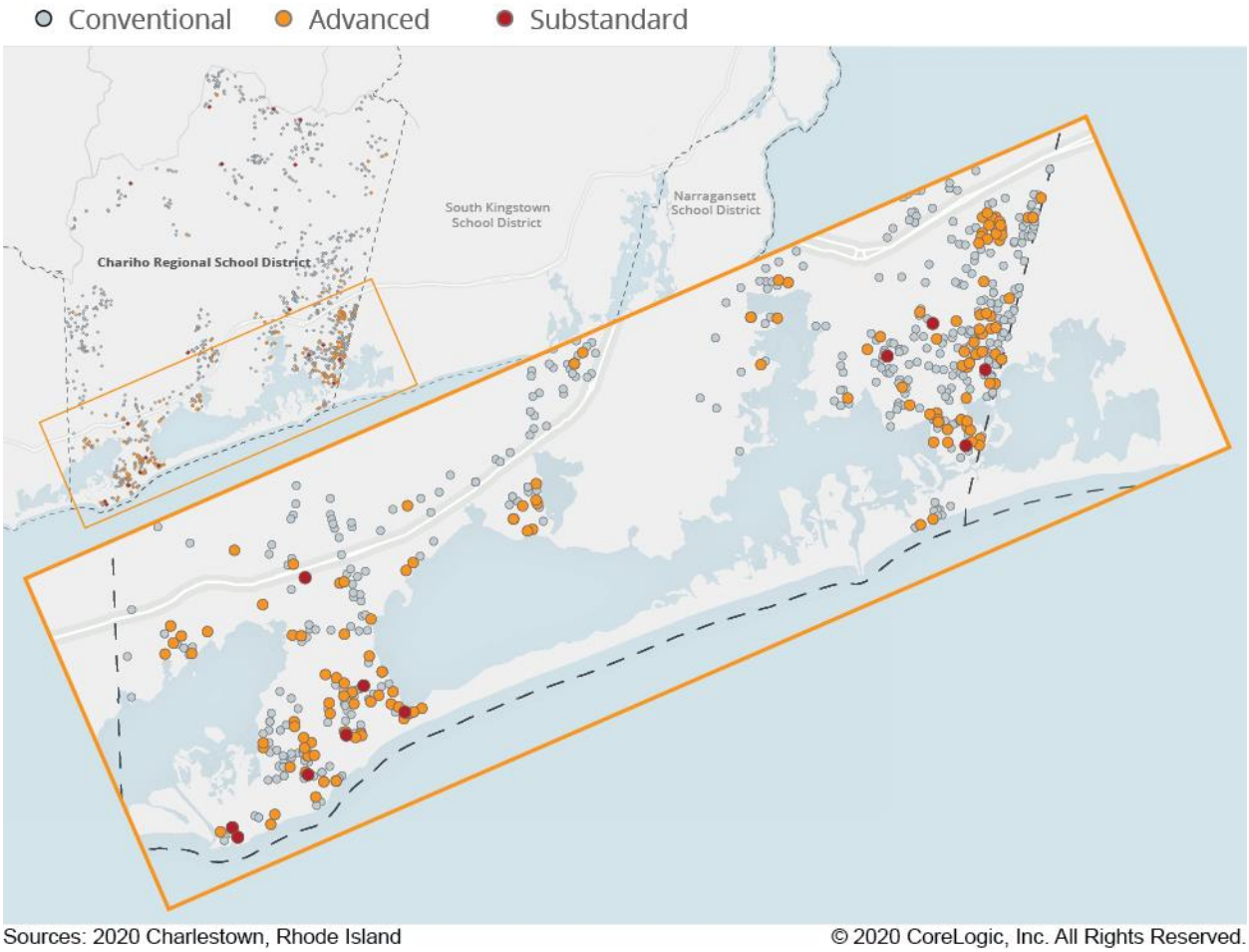
Charlestown, RI septic

Figure 2 maps the distribution of 1,100 home sales in Charlestown, RI from 2011-2019. The sales are identified by the septic system type: substandard, conventional and advanced. Unlike the case of Suffolk, NY, there is a clear geographic pattern for properties having an advanced septic system. Specifically, they are more likely to be located closer to the coast than properties with a conventional system.

Even though distance to coast is included as a control factor in the analysis, there is a risk that other factors affecting house price that are correlated with proximity to coast might be omitted from the analysis. Regression analysis using the full dataset, compared to regression analysis using a subset of the data close to the coast, resulted in a substantially higher price premium for homes with advanced septic when the entire dataset was used. This supports the hypothesis that there is a risk that standard septic properties located inland have other factors lowering price that is not fully captured by the regression variables.

In order to lessen the risk of omitted information affecting the regression analysis, the analysis limited the properties to those near the coast (indicated by the circled region in figure 2). This reduced the number of observations in the regression analysis from 1,100 to 570.

Fig. 2 2011- 2019 Home Sales by Septic System Type, Charlestown, Rhode Island



Sources: 2020 Charlestown, Rhode Island

Within the coastal region, only 12 properties had a substandard system. As a result, substandard was removed from the analysis, with the analysis comparing conventional vs advanced septic.

All records within this region are within the Chariho school district. Due to the lack of variation in school district value for this dataset, school district was not used as a control factor in the regression.

The regression analysis was structured the same way as the Suffolk county sewer analysis. The log of house prices (adjusted to September 2019) was regressed against house characteristics, distance to coast and septic system type.

Table 4 contains the variable definitions for the variables used in the regression analysis.

Variable	Meaning
Lot1	Lot size < 10,000 sq ft
Lot2	10,000<= lot size < 20,000 sq ft

YB1	1980 < Year built <= 1990
YB2	1990 < year built <= 2000
YB3	2000 < year built <= 2010
YB4	Year built > 2010
Bath2	1 < number of bathrooms <=2
Bath3	2 < number of bathrooms <=3
Bath4	number of bathrooms > 3
Bed3	Number of bedrooms =3
Bed4	Number of bedrooms > 3
Dist1	Distance to shoreline < 0.4 miles
Dist2	0.4 <= distance to shoreline < 1 miles
Conventional	Conventional septic system

TABLE 4: CHARLESTOWN, RI REGRESSION VARIABLE DEFINITIONS

Table 5 contains the results of regressing the variables listed in table 4 against the log of house price. Properties with advanced septic systems were more likely to be recently built. As a result, 2 regressions were performed in order to examine the robustness of the results. One regression used information for all sales within the coastal region, while a second regression limited the analysis to sales in the coastal region built prior to 2000. The results for each of these regressions are contained in columns 2 and 3 in table 5.

As above, asterisks are used to indicate the level of statistical significance. All variables in these regressions are not statistically significant. The year-built variables are not significant in either of the regressions, indicating that year built does not affect house price using this dataset and controlling for the other factors. When estimating the impact of house characteristics on home price, house age is generally found to be a factor affecting price. The fact that year built is not statistically significant in this regression raises a flag that the small volume of data may be affecting the results.

The regression results indicate that sales price is increasing with lot size, number of bathrooms, number of bedrooms, and proximity to coastline.

The coefficient for septic system type ('conventional') is statistically significant. The results of this regression indicate that properties with an advanced septic system sell for a 14-16% premium relative to standard septic.

Caution must be used in interpreting the results. The result is based on relatively few records overall, with less than 100 advanced septic records.

The small dataset limits the possibility of a regression equation that is specified in greater detail. Inspection of realtor comments for this dataset indicate that several of the higher priced properties with advanced septic have been renovated, with other desirable characteristics included in the renovation

but not explicitly specified in the regression. As a result, the septic type variable captures the other omitted renovations as well as advanced septic.

Similarly, some of the conventional, lower priced properties include comments such as “gutted and ready for completion”, “older cottage in need of major work”, and “needs rehab”. The fact that these other factors are not included in the regression affect the septic type variable.

A larger dataset with more records of advanced septic property sales would be required to more fully incorporate information from the text comments into the regression analysis.

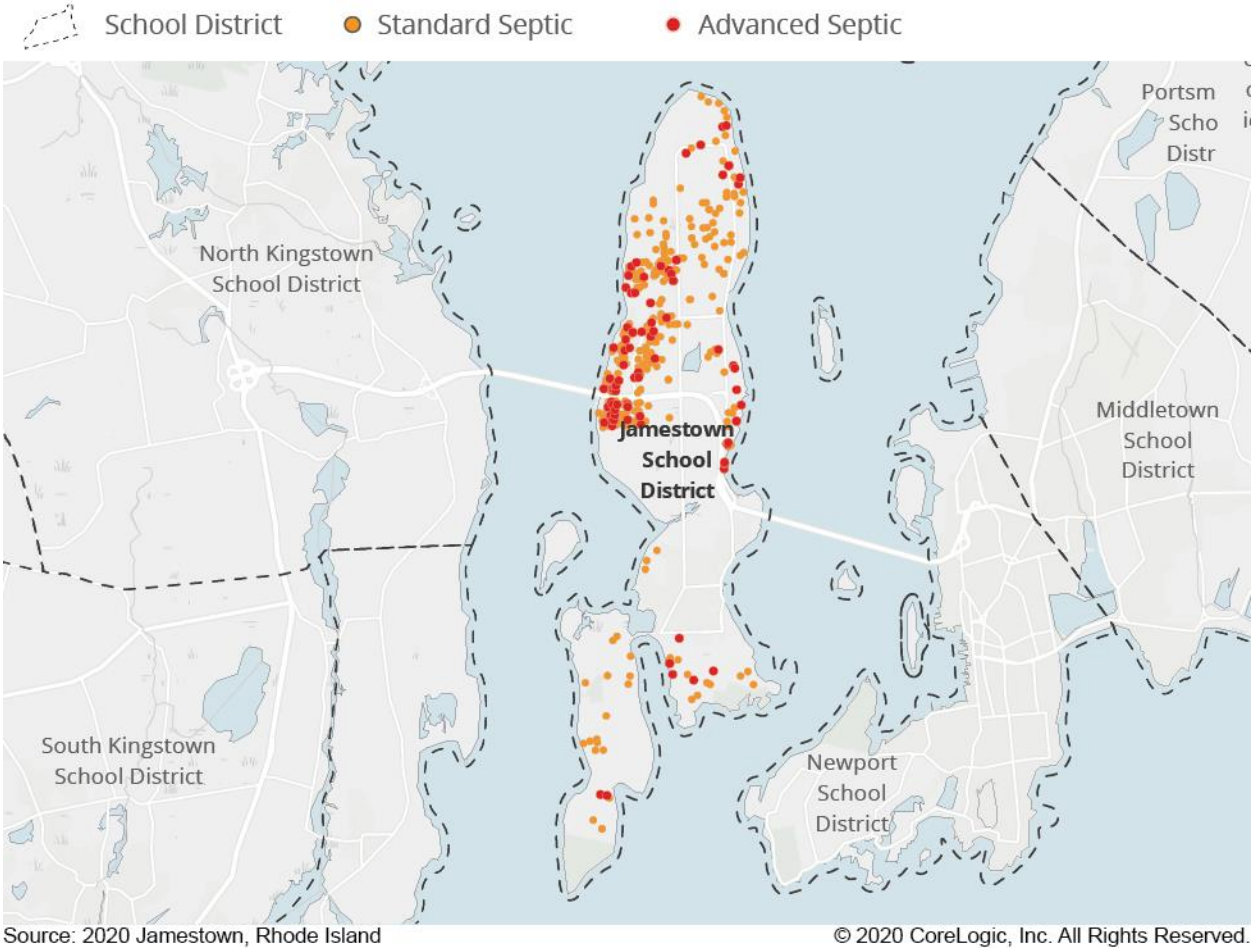
variable	All properties near coast	Properties near coast built prior to 2000
Number of records	548	441
Lot1	-0.20361**	-0.15219**
Lot2	-0.08053*	-0.07197
YB1	0.01008	-0.00246
YB2	0.05615	0.02953
YB3	-0.01443	NA
YB4	0.02037	NA
Bath2	0.19291**	0.18434**
Bath3	0.49116**	0.53404**
Bath4	0.93734**	1.02029**
Bed3	0.07859	0.07988
Bed4	0.27299**	0.24703**
Dist1	0.87922**	0.87146**
Dist2	0.39315**	0.37258**
conventional	-0.21931**	-0.15588**

TABLE 5: CHARLESTOWN, RI REGRESSION RESULTS. ** = SIGNIFICANT AT 0.01 LEVEL; * = SIGNIFICANT AT 0.05 LEVEL.

Jamestown, RI septic

Figure 3 maps the distribution of 355 sales in Jamestown, RI used in the regression. The sales correspond to 81 transactions of properties with advanced septic systems installed and 274 properties with standard septic systems.

Fig. 3 2011- 2019 Home Sales by Septic System Type, Jamestown, Rhode Island



Source: 2020 Jamestown, Rhode Island

Table 6 contains the variable definitions for the variables used in the regression analysis.

Variable	Meaning
Lot1	Lot size < 10,000 sq ft
Lot2	10,000<= lot size < 20,000 sq ft
YB1	1970 < Year built <= 1980
YB2	1980 < year built <= 1990
YB3	year built > 1990
Bath	number of bathrooms <2
Bath2	2 <= number of bathrooms <3
Bed1	Number of bedrooms =1
Bed2	Number of bedrooms = 2
Bed3	Number of bedrooms = 3
Dist1	Distance to shoreline < 100
Dist2	100 <= distance to shoreline < 300
Conventional	Conventional septic system

TABLE 6: JAMESTOWN, RI REGRESSION VARIABLE DEFINITIONS

Table 7 contains the regression results from the regression analysis. The lack of statistical significance of the 'conventional' variable indicates that there is no statistical difference in prices between homes with standard septic relative to those with advanced septic. This does not imply that advanced septic systems have no value relative to house price. Given this dataset, it was not possible to determine a statistically significant effect.

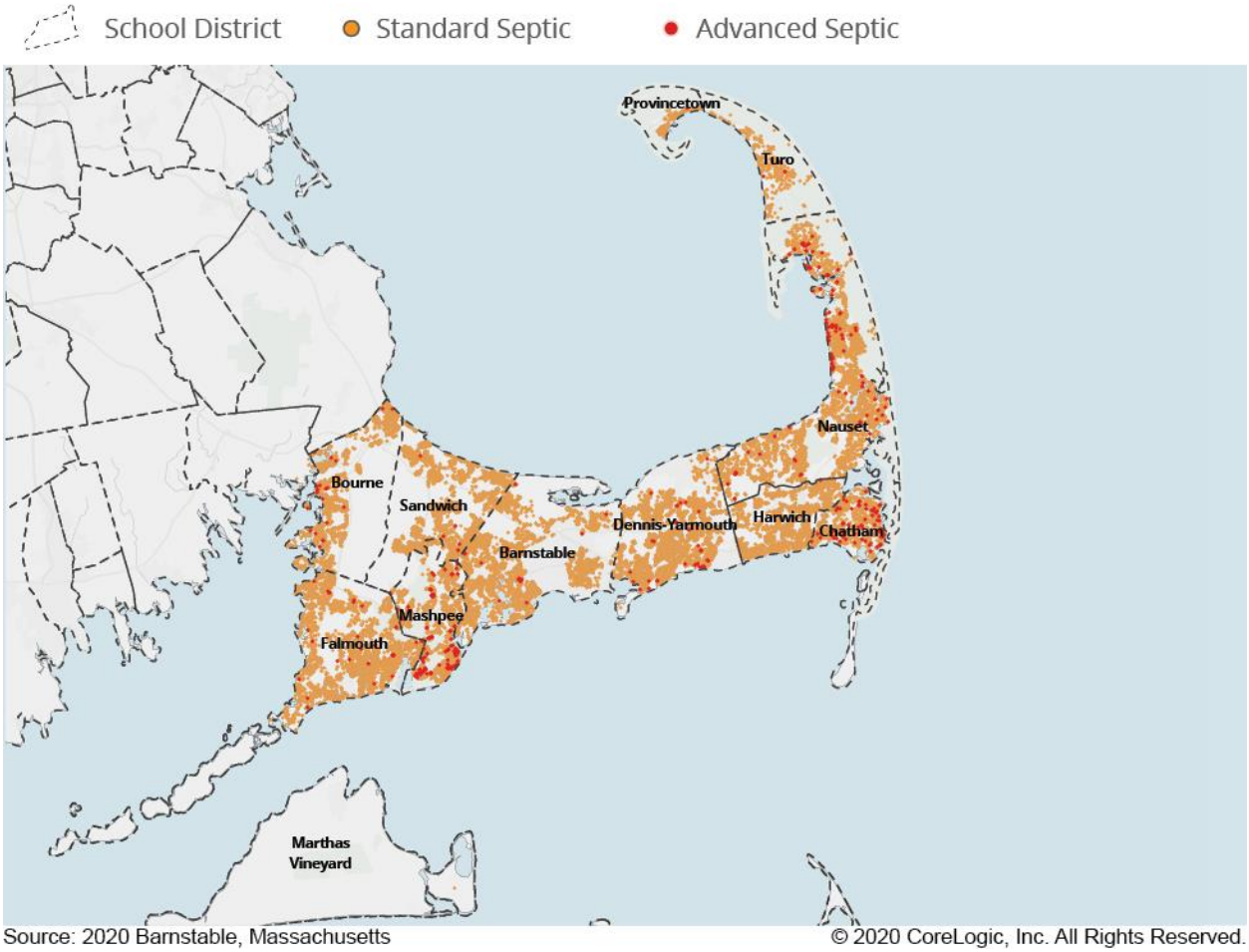
Variable	coefficient
Number of records used in regression	355
Lot1	-0.31205**
Lot2	-0.21211**
YB1	-0.00058446
YB2	0.11546**
YB3	0.18237**
Bath	-0.44987**
Bath2	-0.16348**
Bed1	-0.22581**
Bed2	-0.19612**
Bed3	-0.10366*
Dist1	0.65220**
Dist2	0.18232**
Conventional	-0.04305

TABLE 7: JAMESTOWN, RI REGRESSION RESULTS. ** = SIGNIFICANT AT 0.01 LEVEL; * = SIGNIFICANT AT 0.05 LEVEL.

Barnstable, MA septic

Figure 4 maps the distribution of 27,345 sales in Barnstable, MA used in the regression, corresponding to 244 advanced septic properties and 27,101 standard septic properties. Note that data for the other regions provided property level lists by septic type (or sewer connection). The Barnstable data was different in that only advanced septic property addresses were provided, and the standard septic addresses were determined by assumptions.

Fig. 4 2011- 2019 Home Sales by Septic System Type, Barnstable, Massachusetts



Source: 2020 Barnstable, Massachusetts

Table 8 contains the variables used in the regression for Barnstable, MA.

Variable	Meaning
Lot1	Lot size < 10,000 sq ft
Lot2	10,000<= lot size < 20,000 sq ft
YB1	1970 < Year built <= 1980
YB2	1980 < year built <= 2000
YB3	year built > 2000
Bath	number of bathrooms <2
Bath2	2 <= number of bathrooms <3
Bed1	Number of bedrooms =1

Bed2	Number of bedrooms = 2
Bed3	Number of bedrooms = 3
Dist1	Distance to shoreline < 100
Dist2	100 <= distance to shoreline < 300
BPS	BARNSTABLE PUBLIC SCHOOLS
BOPS	BOURNE PUBLIC SCHOOLS
DY	DENNIS-YARMOUTH
FPS	FALMOUTH PUBLIC SCHOOLS
MPS	MASHPEE PUBLIC SCHOOLS
NS	NAUSET
SPS	SANDWICH PUBLIC SCHOOLS
Conventional	Conventional septic system

TABLE 8: BARNSTABLE, MA REGRESSION VARIABLE DEFINITIONS

Table 9 summarizes the regression results for Barnstable, MA. Similar to the results for Charlestown, RI, properties in Barnstable, MA having an advanced septic system sell at a 13% premium to those having a standard septic system.

Variable	Coefficient
Lot1	-0.12951**
Lot2	-0.11258**
YB1	-0.03007**
YB2	0.08264**
YB3	0.30711**
Bath	-0.41446**
Bath2	-0.25299**
Bed1	-0.64042**
Bed2	-0.33580**
Bed3	-0.17100**

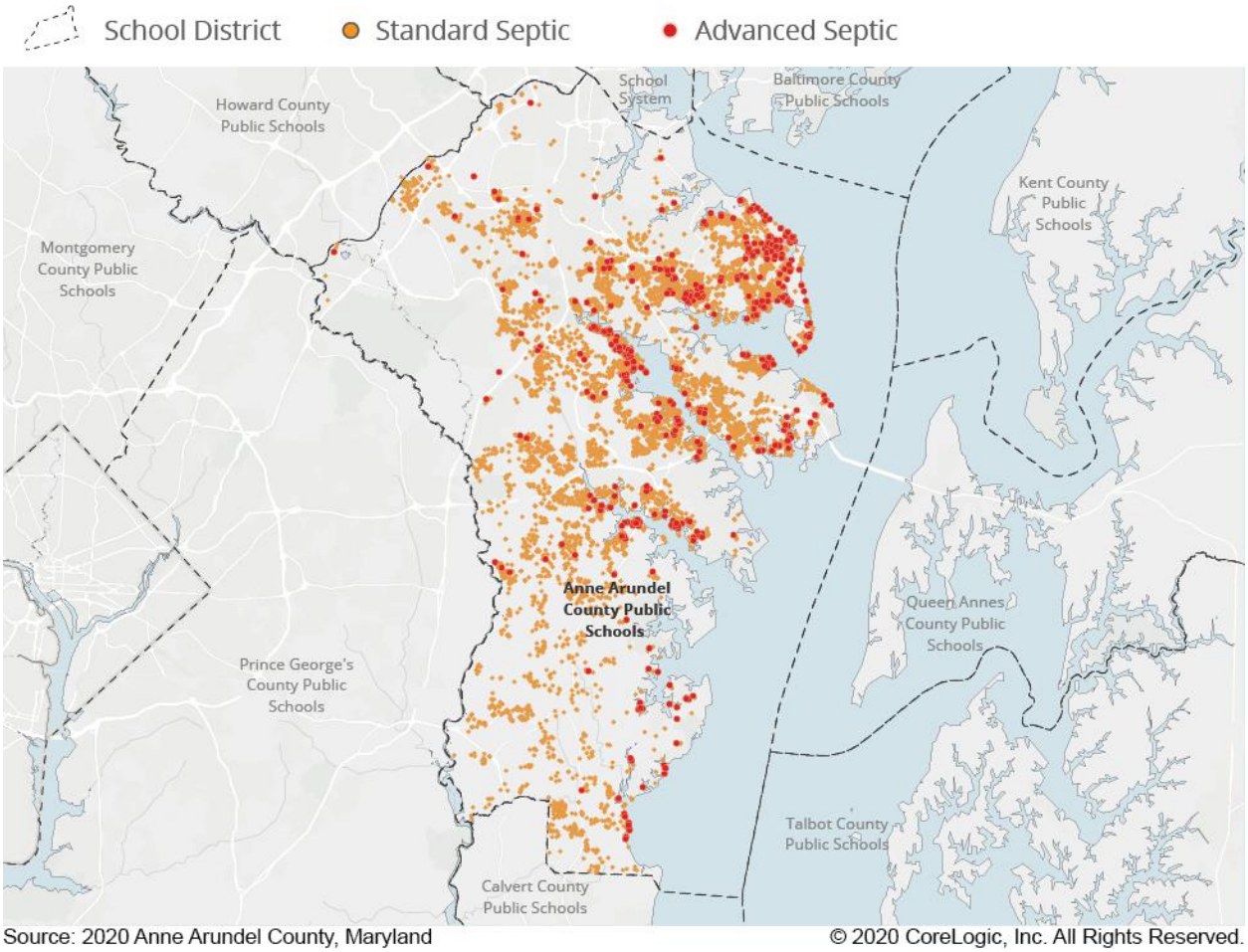
Dist1	0.52768**
Dist2	0.32249**
BPS	-0.19233**
BOPS	-0.33332**
DY	-0.18995**
FPS	-0.15142**
MPS	-0.18054**
NS	-0.00276**
SPS	-0.25078**
Conventional	-0.13305**

TABLE 9: BARNSTABLE, MA REGRESSION RESULTS. ** = SIGNIFICANT AT 0.01 LEVEL; * = SIGNIFICANT AT 0.05 LEVEL.

Anne Arundel county, MD septic

Figure 5 maps the distribution of 9791 sales in Anne Arundel county, MD used in the regression. This corresponds to 556 advanced septic properties and 9235 standard septic properties.

Fig. 5 2011- 2019 Home Sales by Septic System Type, Anne Arundel County, Maryland



Source: 2020 Anne Arundel County, Maryland

Table 10 contains the variable definitions for the variables used in the regression analysis.

Variable	Meaning
Lot1	Lot size < 15,000 sq ft
Lot2	15,000<= lot size < 50,000 sq ft
YB1	1970 < Year built <= 1980
YB2	1980 < year built <= 2015
YB3	year built > 2015
Bath	number of bathrooms <2
Bath2	2 <= number of bathrooms <3
Bed1	Number of bedrooms =1
Bed2	Number of bedrooms = 2

Bed3	Number of bedrooms = 3
Dist1	Distance to shoreline < 200
Dist2	200 <= distance to shoreline < 300
Conventional	Conventional septic system

TABLE 10: ANNE ARUNDEL COUNTY, MD REGRESSION VARIABLE DEFINITIONS

Table 11 contains the variable definitions for the variables used in the regression analysis. Once again, properties having an advanced septic system sell at a 19% premium to those with standard septic.

Variable	Coefficient
Lot1	-0.33866**
Lot2	-0.19172**
YB1	-0.04618**
YB2	0.14359**
YB3	0.18116**
Bath	-0.64875**
Bath2	-0.31200**
Bed1	-0.32560**
Bed2	-0.17924**
Bed3	-0.13116**
Dist1	0.24641**
Dist2	0.09974**
Conventional	-0.19448**

TABLE 11: ANNE ARUNDEL COUNTY REGRESSION RESULTS. ** = SIGNIFICANT AT 0.01 LEVEL; * = SIGNIFICANT AT 0.05 LEVEL.

Conclusion

A literature review did not identify any prior analysis examining the impact of sewer connection or advanced septic systems on house price. As such, this report serves as an initial examination of the topic.

Data for the southwest sewer district in Suffolk county, NY was used to estimate the impact of sewer connection on house price. Controlling for other factors, homes connected to the sewer system sold at a 5% premium relative to those not connected.

An analysis of home prices in Charlestown, RI, Barnstable, MA and Anne Arundel county, MD indicated a price premium for homes with an advanced septic system relative to those with standard septic systems, ranging from 13%-19%.

It is important to note that factors such as variables omitted from the regression analysis can impact the statistical significance and magnitude of the estimated effect of advanced septic (or sewer connection) on house prices. The regression equation estimates the impact of an input factor (e.g. advanced septic systems) on the outcome (e.g. house prices) controlling for other factors included in the regression. Factors not included in the regression that are correlated both with the outcome measure and input factors can affect the estimated effects of the factors.

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