2009

Middle Peninsula Planning District Commission Inventory of Non Traditional Onsite Sewage Disposal Systems and Impacts on Land Use Patterns

This project was funded by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant **FY2008 NA08NOS4190466 Task 97.01 of** the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

Middle Peninsula Planning District Commission

NOAA

Virginia Coastal Zone MANAGEMENT PROGRAM

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Executive Summary

A change in Virginia Department of Health (VDH) Sewage Handling and Disposal Regulations in 2000 has dramatically changed land development patterns within many Virginia localities. The regulations allowed new engineered onsite sewage disposal system (OSDS) technologies to be installed on "marginal land," or land that does not perk and would not normally support a traditional gravity fed septic system. Consequently these regulations reinforced the role of VDH to issue permits for OSDS systems and did not address land use development decision making, which is a responsibility of local governments. Also, over the past year the general assembly passed House Bill 1788, while the VDH promulgated regulations (12VAC5-610-20) that directly pertain to OSDS which add to the policy and management conundrum of engineered OSDS.

To inform local elected officials and planning staff of the proliferation of engineered OSDS and encourage the need for additional or amended public policy this project inventoried and mapped OSDS across the Middle Peninsula. Middle Peninsula Planning District Commission (MPPDC) staff worked closely with VDH to collect spatial data of engineered OSDS permitted from 2004-2008. This project was a continuation of a previous Virginia Coastal Zone Management (CZM) Program grant (NA17OZ2335 Task 84), where engineered OSDS from 2000-2004 were inventoried and mapped. Therefore, data from the previous project was combined with data collected in this year's project in order to generate county and town maps of OSDS proliferation from 2000-2008 within the Middle Peninsula.

The inventory revealed that within the Middle Peninsula [from 2000-2008] there were 1,208 installed engineered OSDS and 2,006 permitted OSDS awaiting installation; this infrastructure equates to approximately $57,852,000.00 of total private sector investments in sewage. The generated maps supplemented discussions with the MPPDC with regard to engineered OSDS and the implications of land use development issues and policies.

Introduction

Since GMP #146 was passed in 2000, engineered onsite sewage disposal systems (OSDS) have proliferated throughout the Middle Peninsula. This policy allowed Virginia Department of Health (VDH) to approve all onsite systems designed by a certified engineer. Then with the passing of House Bill (HB) 2551, OSDS designs submitted by a certified engineer must produce effluent that meets or exceeds the state's water quality standards. Therefore new engineered OSDS technologies have been installed on "marginal lands," or on lands that could not otherwise support a traditional gravity fed septic system. To add to the policy and management conundrum of engineered OSDS, in April 2009 the general assembly passed HB 1788 to prohibit localities from prohibiting the use of non conventional sewage disposal systems within their jurisdiction, while in October 2009, VDH promulgated regulations (12VAC5-610-20) that directly pertain to the maintenance of OSDS. Consequently these regulations have impacted land use development patterns and will continue to direct growth within the region, unless local government begins to utilize available land use planning and management tools.

Project Summary

To develop a comprehensive understanding of how engineered OSDS have impacted land use develop, MPPDC staff worked with VDH to collect data needed to inventory and illustrate the proliferation of these systems in the region. This project was a continuation of a previous Coastal Zone Management (CZM) Program grant (NA17OZ2335 Task 84) which inventoried and mapped install and permitted engineered OSDS from 2000-2004. The previous project identified well over 1,000 installed or permitted systems, but to continue monitoring the growth of these systems in the Middle Peninsula, this project focused on inventorying OSDS from 2004-2008.

Once engineered OSDS were mapped, MPPDC staff worked closely with local elected officials to improve their understanding of the spatial distribution and land use implications of OSDS within the region. MPPDC staff also encouraged discussions about the need for additional or amended public policy to appropriately mange the proliferation of engineered OSDS within their jurisdiction.

Comprehensive Inventory of Engineered OSDS

MPPDC staff collaborated with VDH to obtain the spatial data needed to map and quantify engineered OSDS within the Middle Peninsula.

Maps depicted the distribution and proliferation of these systems from 2000-2008 within member counties and towns, as well as on a regional scale (Appendix 1). MPPDC staff also generated maps that juxtaposed the 2000-2004 inventory and the 2004-2008 inventory to show the increase of OSDS within four years.

The inventory revealed that within the Middle Peninsula there is a total of 3,214 systems. Respectfully 1,208 are installed systems, while the remaining 2,006 OSDS are potential systems, including systems with certification letters, current permits, or expired permits. Table 1 lists the number of OSDS by county. The number of systems reflect quantities inventoried from the previous inventory (2000-2004), this project (2004-2008), as well as the total number of systems quantified within the Middle Peninsula from 2000-2008. Also Table 1 includes the percent increase of OSDS from the previous inventory and this inventory, which demonstrates how these systems have proliferated through the region over a four year time span.

Table 1: The number of engineered OSDS within the Middle Peninsula and percent increase of OSDS.

County	Number of systems			Percent increase
	2000-2004	2004-2008	2000-2008	(2000- 2004) to (2004-2008)
Gloucester	540	552	1,092	2.2%
Mathews	352	702	1,054	49.9%
Middlesex	117	252	369	53.6%
Essex	107	213	320	49.8%
King William	70	207	277	66.2%
King and Queen	33	69	102	52.2%
TOTAL	1,219	1,995	**3,214**	38.9%

As a whole the Middle Peninsula has experienced a 38.9% increase of OSDS. More specifically each county within the Middle Peninsula has experienced an approximate doubling of engineered OSDS from the 2000-2004 inventory to the 2004-2008 inventory, expect for Gloucester County. Although the number of OSDS in Gloucester County has remained relatively constant over the

years, the County still accounts for 40% of the total number of OSDS within the Middle Peninsula – the highest percentage among MPPDC member localities.

Engineered OSDS Public Policy Discussion

The Middle Peninsula Planning District Commission was first introduced to engineered OSDS and land use development implications during the previous CZM grant project, but public policy discussions were limited and brief. However that was not the case during this project year.

When the commission was asked to respond to OSDS maps, they were taken aback by the visuals and the private investment in sewage to date. Initially the Commission expressed dismay of the current permitting process VDH has for OSDS, but once MPPDC staff refocused the group, the Commission entertained the following questions:

1. Should our community continue to develop like the illustrations?
2. Is development occurring in the correct areas and what are the current future social and economic costs to local government and the larger community?
3. What are the future implications for the provision of public sewer if OSDS expands?
4. What are the land use considerations of public sewer versus OSDS?
5. Should new public policy be developed to counter act the proliferation of these systems?
6. What are the public policy management options?

Although these questions were not answered sequentially, the Commission answered all of these questions inadvertently through their discussion.

With 3,214 OSDS in the region worth approximately $57,852,000.00 in total private sector sewage investments, the Commission realized the significant impact OSDS is having on land use development patterns in the region. Therefore the Commission began to brainstorm and share ideas to improve the proliferation and management of these systems within the Middle Peninsula.

First, the MPPDC could collaborate with Hampton Roads Sanitation District (HRDS) to research septic/sanitation management options. This would include a brief description of the option as well as a cost estimate of implementing that option. In particular the Commission was fond of exploring the idea of establishing a sanitation district within the region to focus on the maintenance and oversight of OSDS. Also the Commission was interested in having research conducted in regards to land use policy options and tools that local government could implement to appropriately manage OSDS. The Commission referenced that some communities by

ordinance require subdivisions to connect to the central water and sewer lines, and that this is an example of a management tool that needs to be further investigated. Furthermore, the Commission mentioned that the proliferation of engineered OSDS could impose on the construction of pubic sewer lines in the future. Since private home owners would be investing approximately $18,000 for the installation of an engineered OSDS, they would be unlikely to willing invest to hook up to the public sewer line. Overall the commission acknowledged that there is not a "silver bullet" to fix the concerns of OSDS proliferation in the Middle Peninsula, but as local government there needs to be a better understanding of the available management options.

At the November 2009 meeting of the Middle Peninsula Planning District Commission, the Board passed a motion to have MPPDC staff draft a resolution to support the development of enforceable policy options to address maintenance, replacement and land use issues related to distributed wastewater systems. Such an action, demonstrates that the Board is transitioning away from the mentality that they cannot do anything about the proliferation of OSDS, into a paradigm where the Board wants to understand specific tools and options available to better manage these systems within their jurisdiction.

Conclusions

After years of reiterating land use development concerns with engineered OSDS, the Middle Peninsula Planning District Commission has made progress in discussing public policy options to address the proliferation of OSDS within the region. MPPDC staff will continue to work closely with the Commission to explore pubic policy options (eg. Land use development tools) and OSDS management options available through the HRSD.

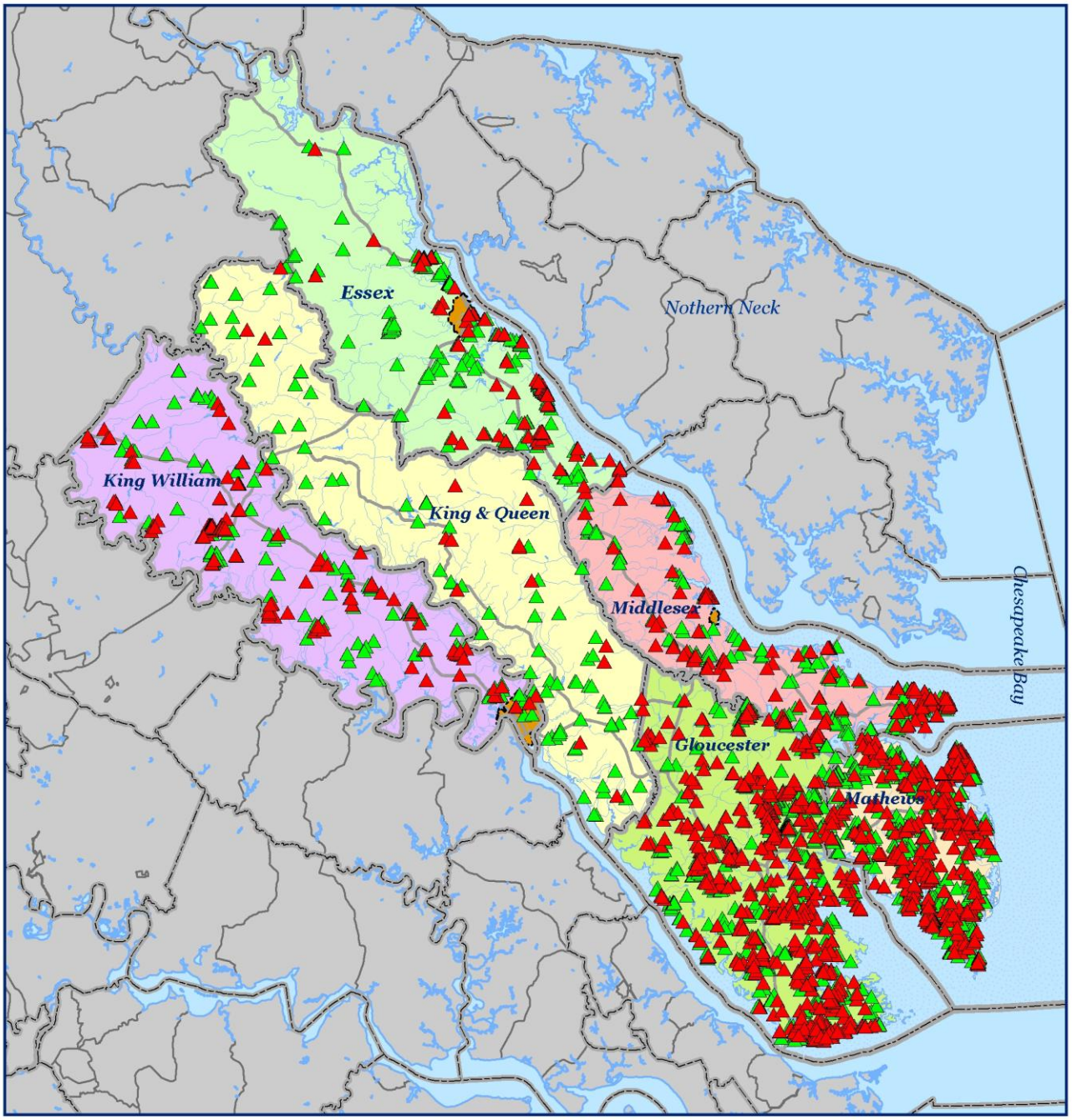
Project Outcomes:

- Regional, county and town maps depicting the spatial distribution of engineered OSDS in the Middle Peninsula.
- Estimated the total private sector investment in sewer to be $57,852,000.000 from 2000-2008.
- Productive public policy discussion with the Middle Peninsula Planning District Commission in regards to the proliferation and management of engineered OSDS.
- Draft resolution "Supporting the Development of Enforceable Policy Options to Address Maintenance, Replacement and Land Use Issues Related to Distributed Wastewater Systems."

APPENDIX 1

Regional, County and Town Maps of OSDS Inventory

Middle Peninsula Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 1,208
- ▲ Potential Systems - 2,006

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 3,214

* Data collected thru Dec 31, 2008

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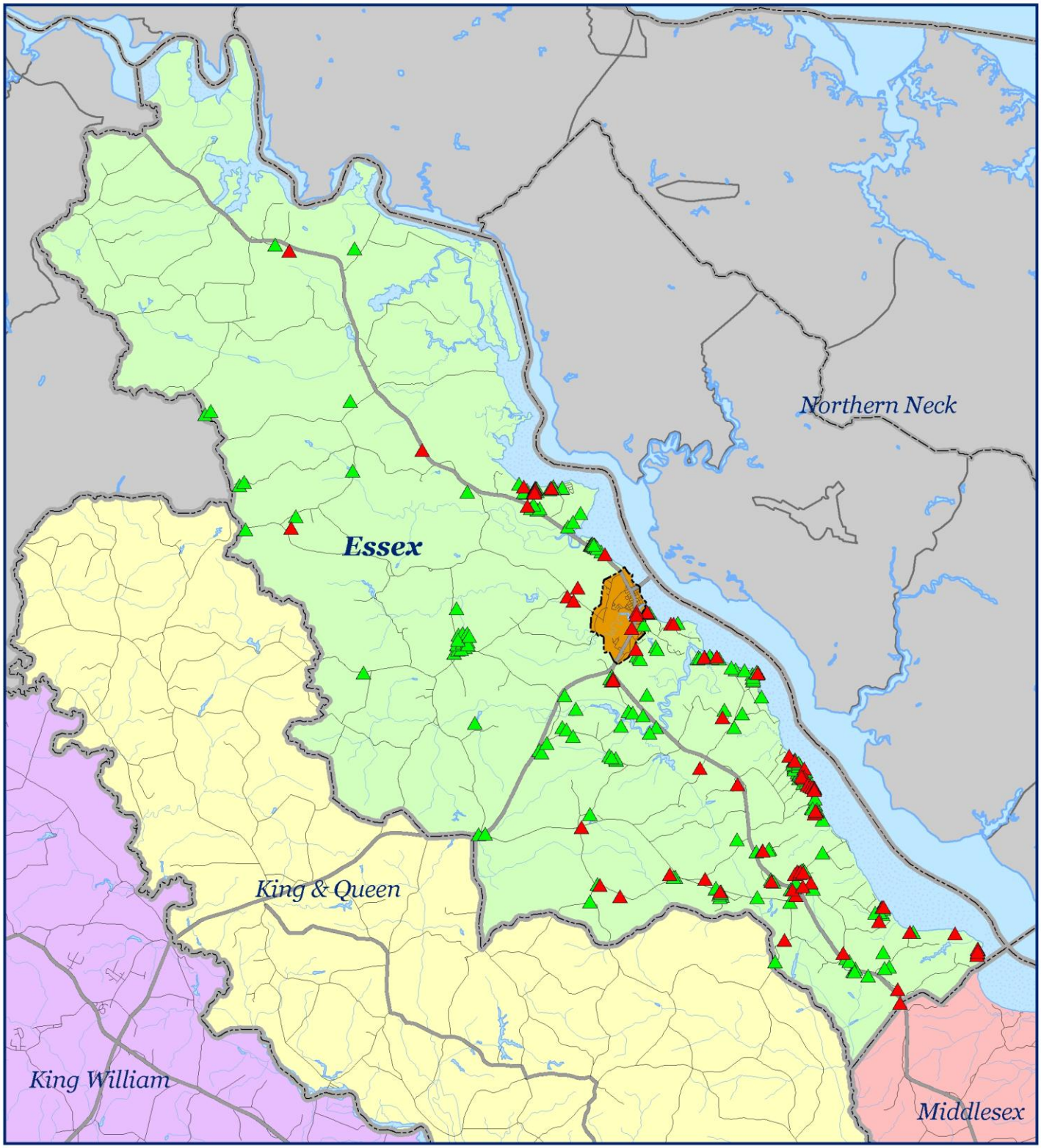
Virginia Coastal Zone MANAGEMENT PROGRAM

Middle Peninsula Planning District Commission - 2009

Essex County Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 77
- ▲ Potential Systems - 243

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 320

* Data collected thru Dec. 31, 2008

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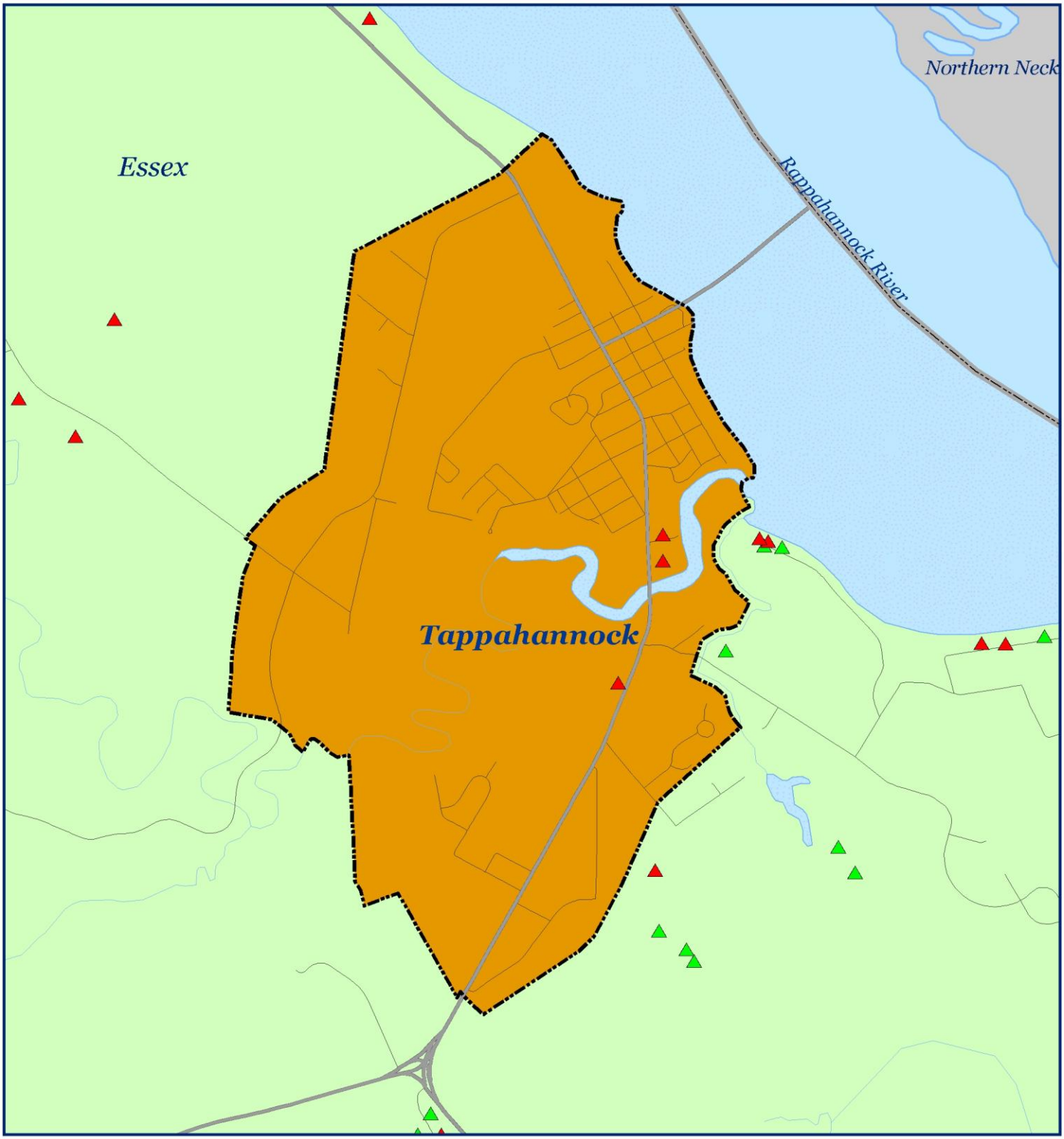
Virginia Coastal Zone MANAGEMENT PROGRAM

Town of Tappahannock Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 3
- ▲ Potential Systems - 0

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 3

* Data collected thru Dec. 31, 2008

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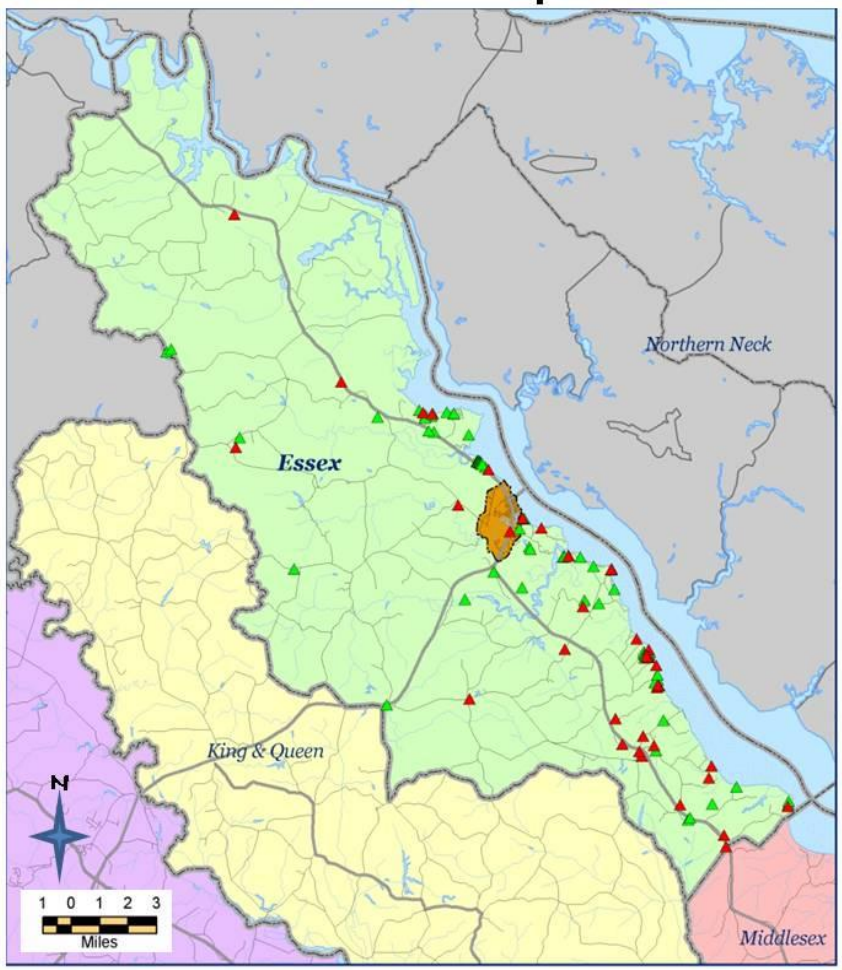
Virginia Coastal Zone MANAGEMENT PROGRAM

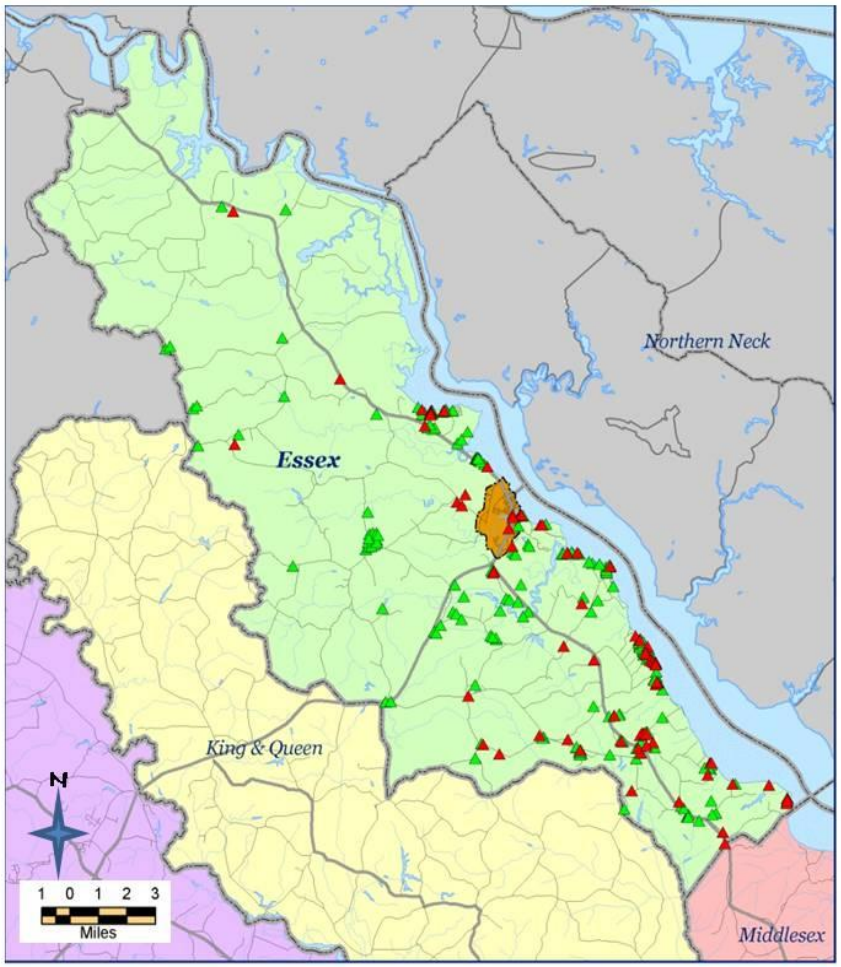
Middle Peninsula Planning District Commission - 2008

Essex County Engineered Septic Systems (Installed and Potential)

2000-2004



2000-2008



Year 2000-2004: Legend

- Installed Systems -39
- Potential Systems -68

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 107

*Data collected thru Oct. 31, 2004

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Year 2000-2008: Legend

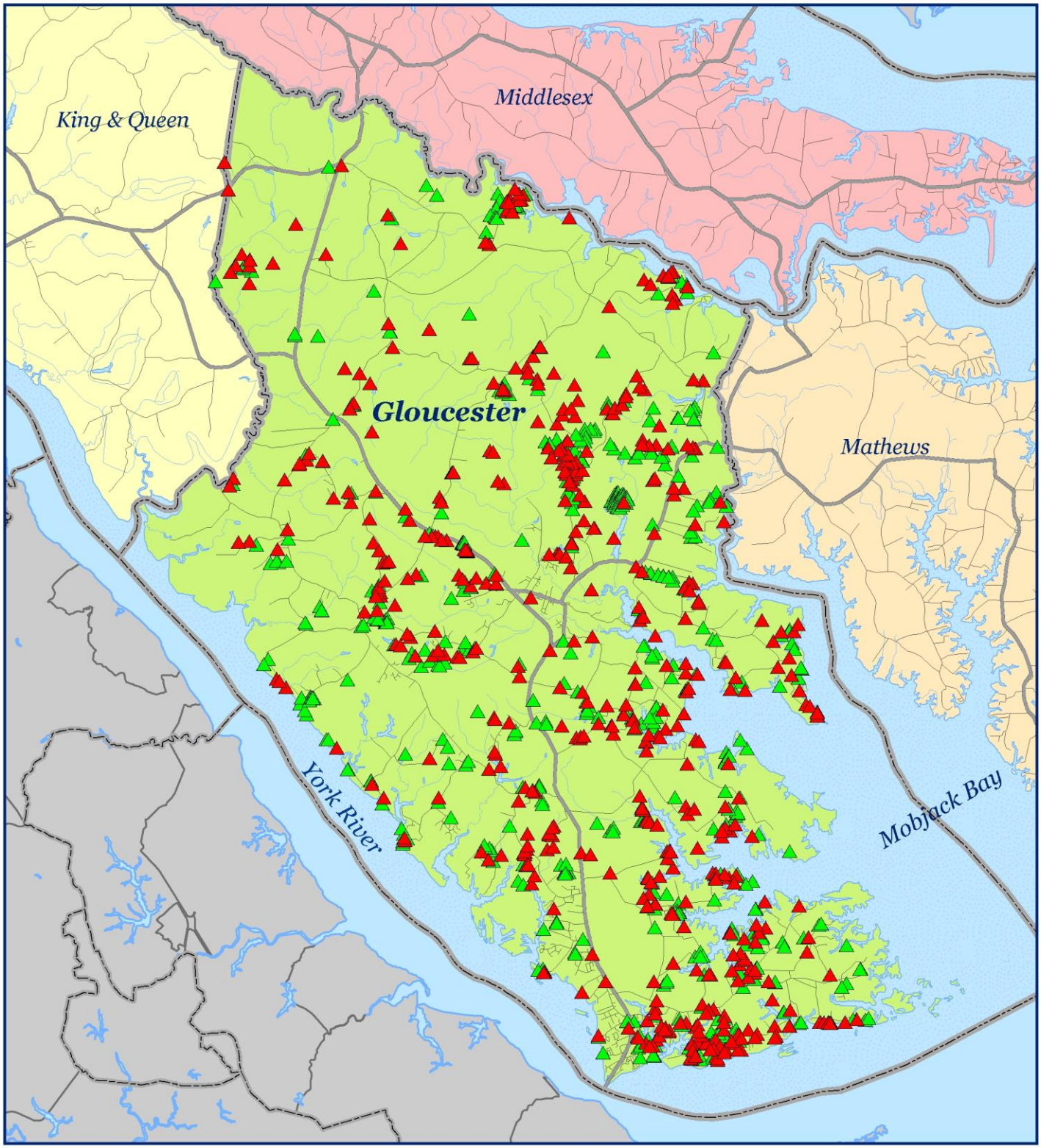
- Installed Systems -77
- Potential Systems -243

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 320

*Data collected thru Dec. 31, 2008

Gloucester County Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 504
- ▲ Potential Systems - 588

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 1092

* Data collected thru Dec. 31, 2008

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Miles

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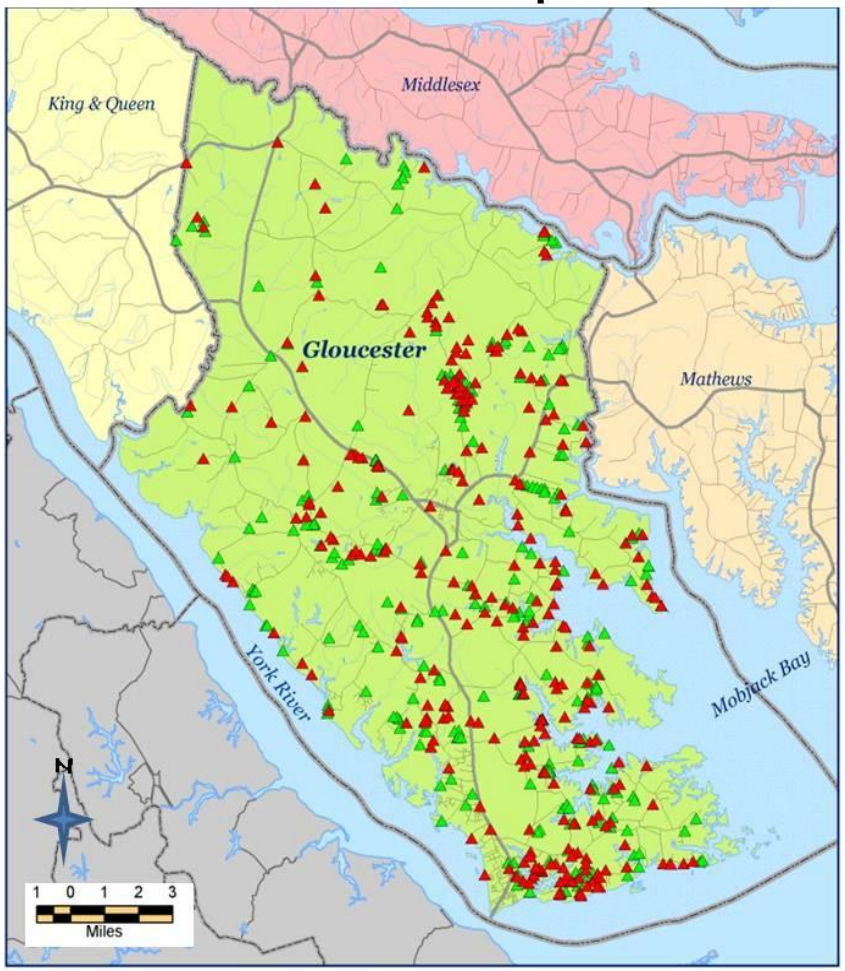
Virginia Coastal Zone MANAGEMENT PROGRAM

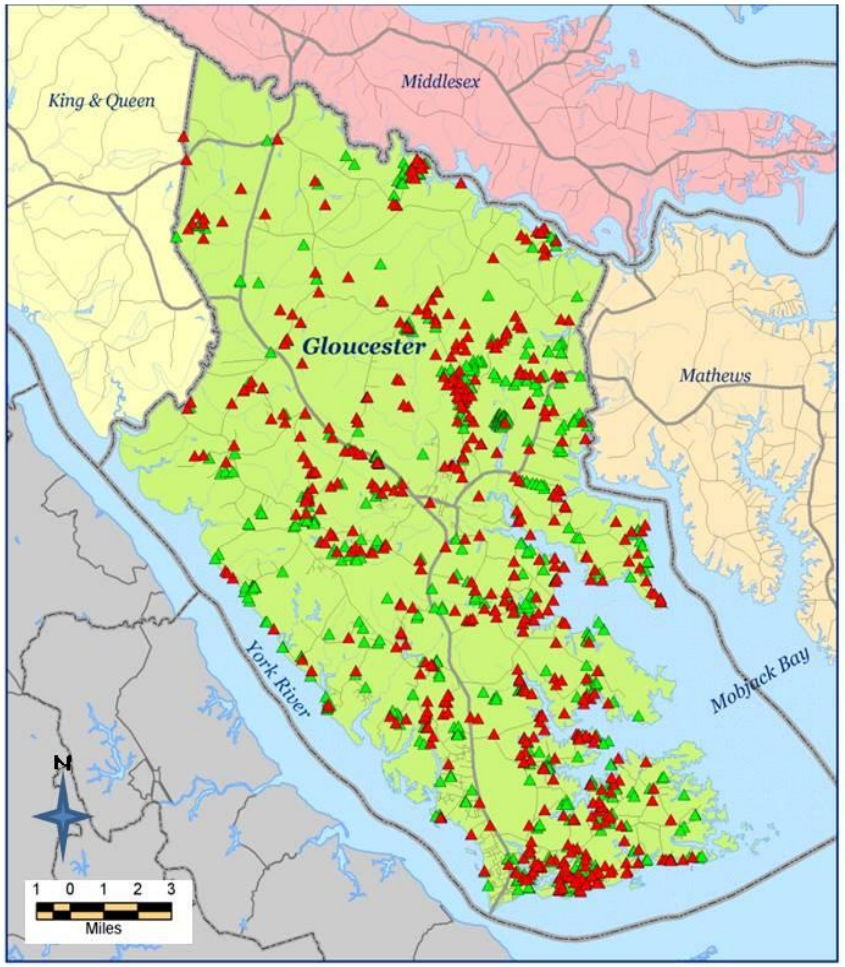
Middle Peninsula Planning District Commission - 2009

Gloucester County Engineered Septic Systems (Installed and Potential)

2000-2004



2000-2008



Year 2000-2004: Legend

- Installed Systems -293
- Potential Systems -247

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 540

*Data collected thru Oct. 31, 2004

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Virginia Coastal Zone MANAGEMENT PROGRAM

Middle Peninsula Planning District Commission - 2009

Year 2000-2008: Legend

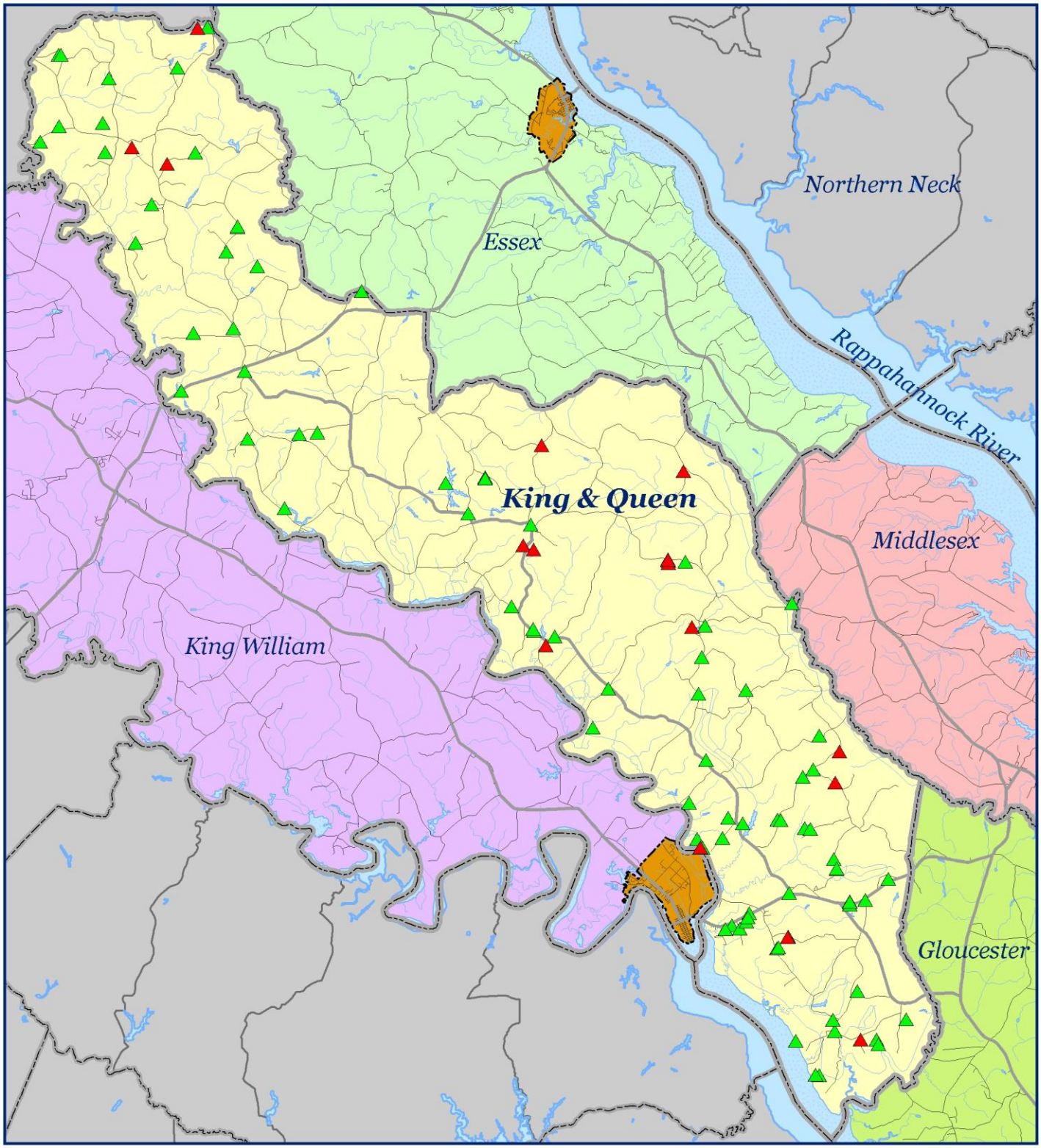
- Installed Systems -504
- Potential Systems -588

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 1,092

*Data collected thru Dec. 31, 2008

King and Queen County Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 16
- ▲ Potential Systems - 86

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 102

* Data collected thru Dec 31, 2008

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Miles

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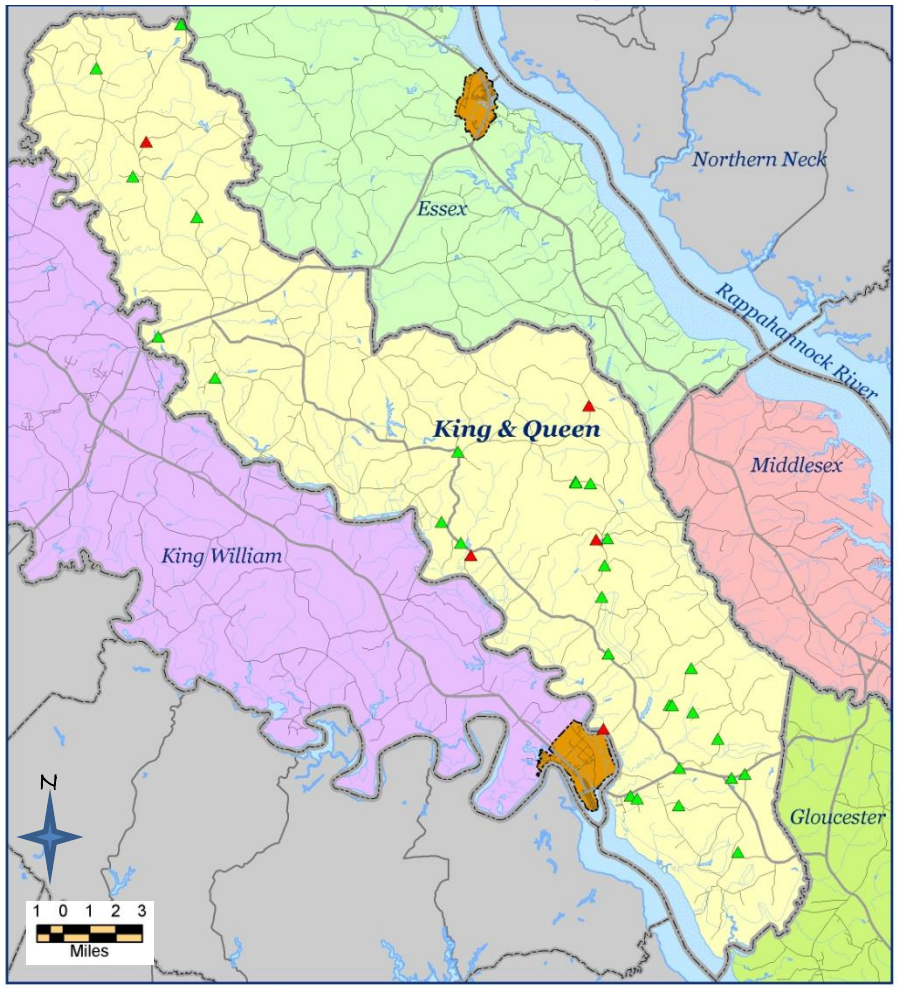
Virginia Coastal Zone MANAGEMENT PROGRAM

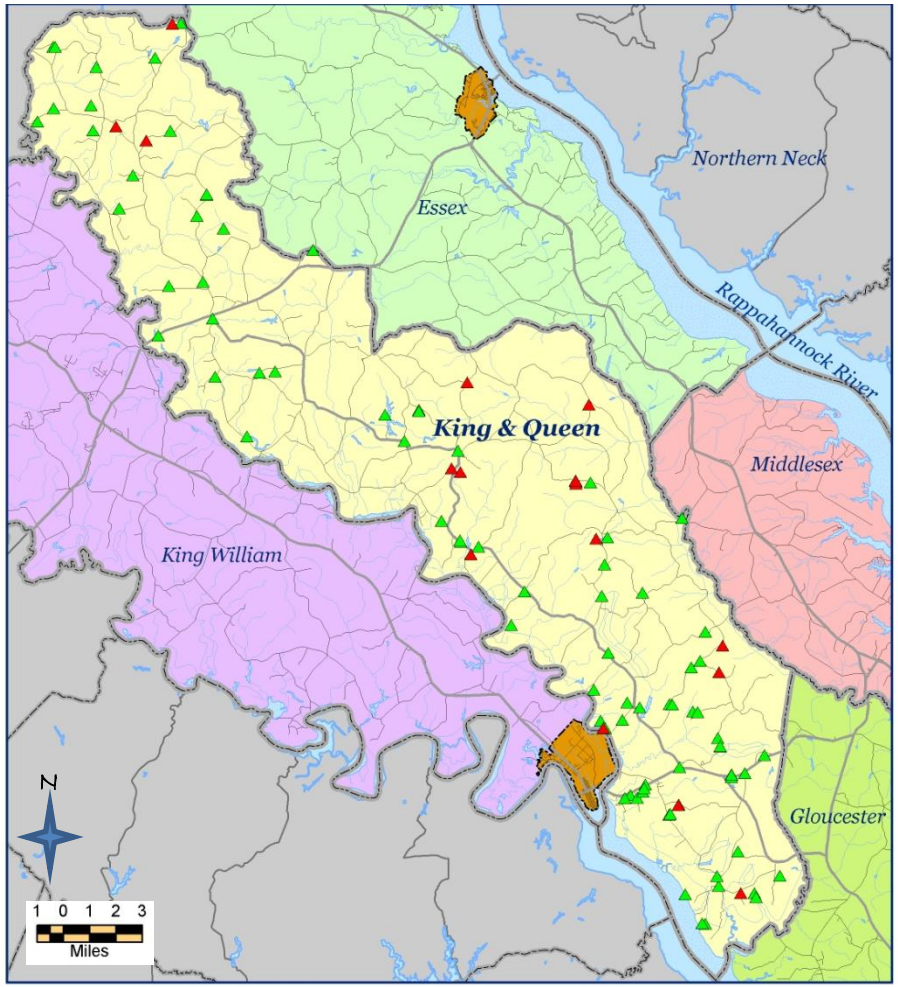
Middle Peninsula Planning District Commission - 2009

King and Queen County Engineered Septic Systems (Installed and Potential)

2000-2004



2000-2008



Year 2000-2004: Legend

▲ Installed Systems -5
▲ Potential Systems -28
(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 33
*Data collected thru Oct. 31, 2004

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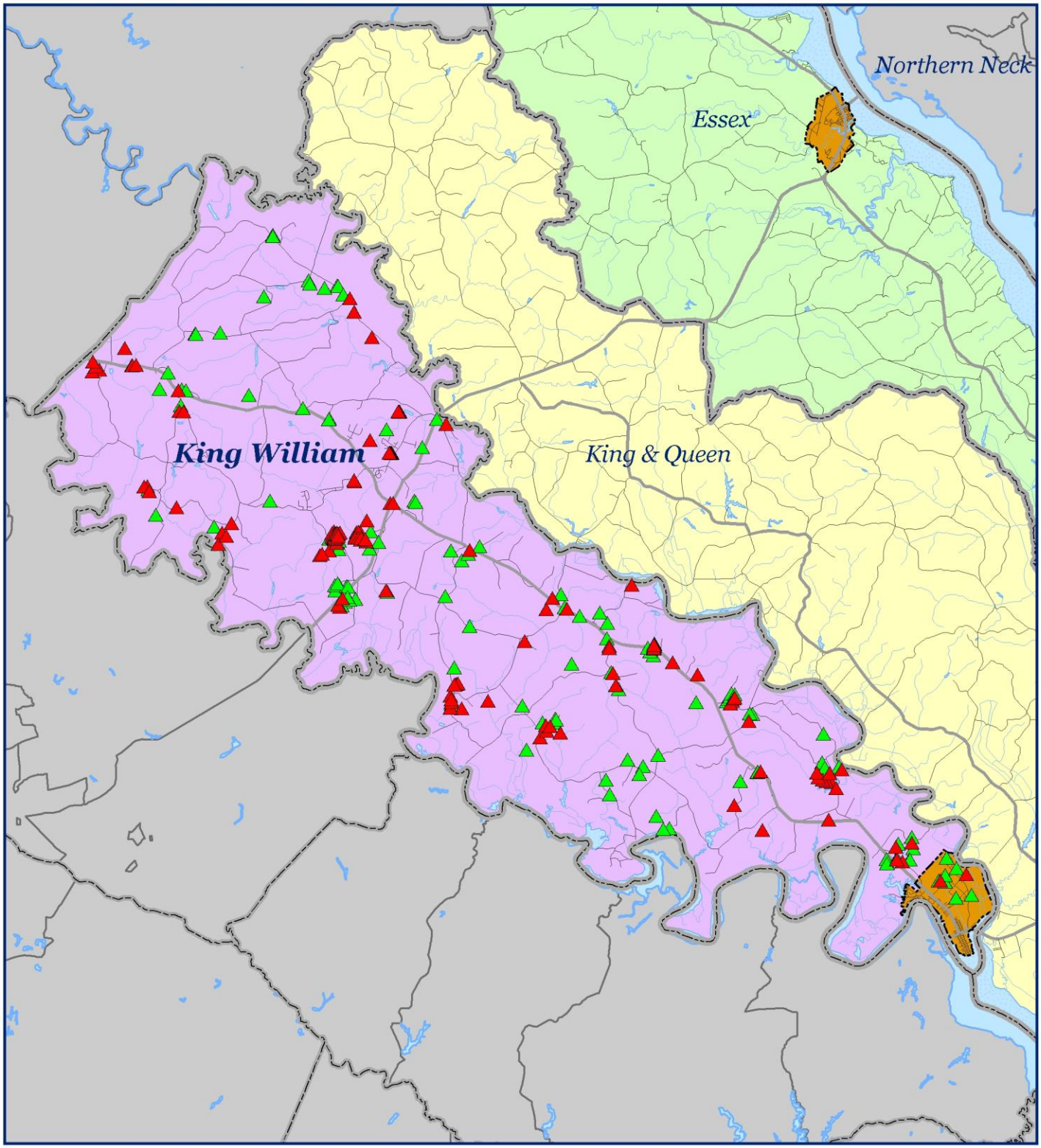
Middle Peninsula Planning District Commission - 2009

Year 2000-2008: Legend

▲ Installed Systems -16
▲ Potential Systems -86
(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 102
*Data collected thru Dec. 31, 2008

King William Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 136
- ▲ Potential Systems - 141

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 277

* Data collected thru Dec. 31, 2008

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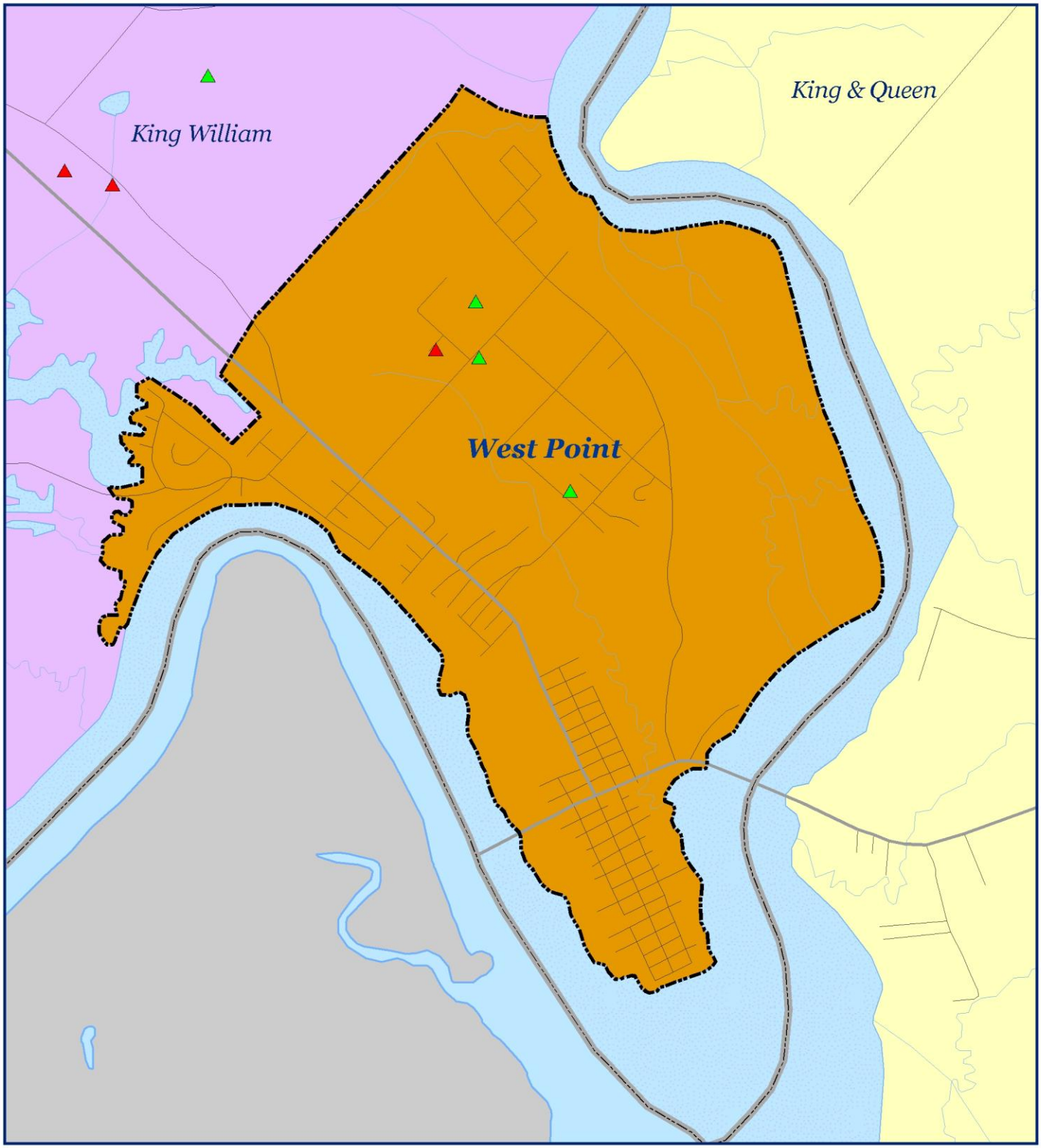
Virginia Coastal Zone MANAGEMENT PROGRAM

Town of West Point Engineered Septic Systems 2000-2004 (Installed and Potential)



Legend

- Installed Systems - 1
- Potential Systems - 3

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 4

* Data collected thru Oct. 31, 2004

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1,000 0 1,0002,000

Feet

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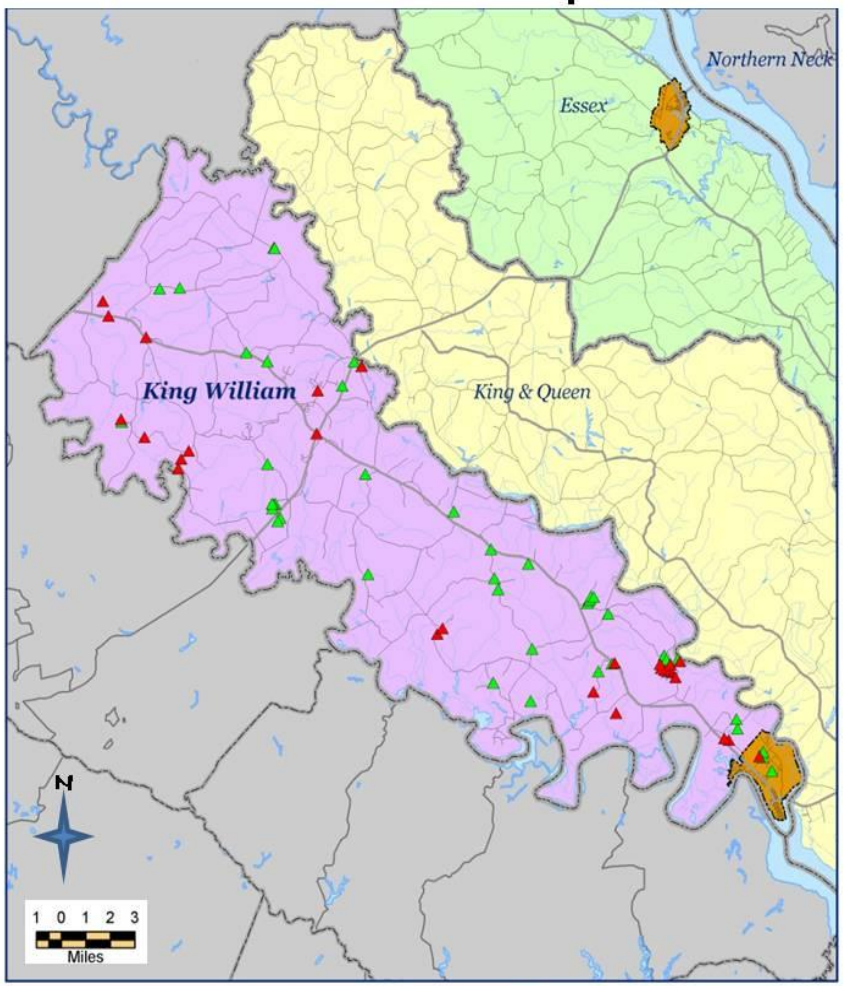
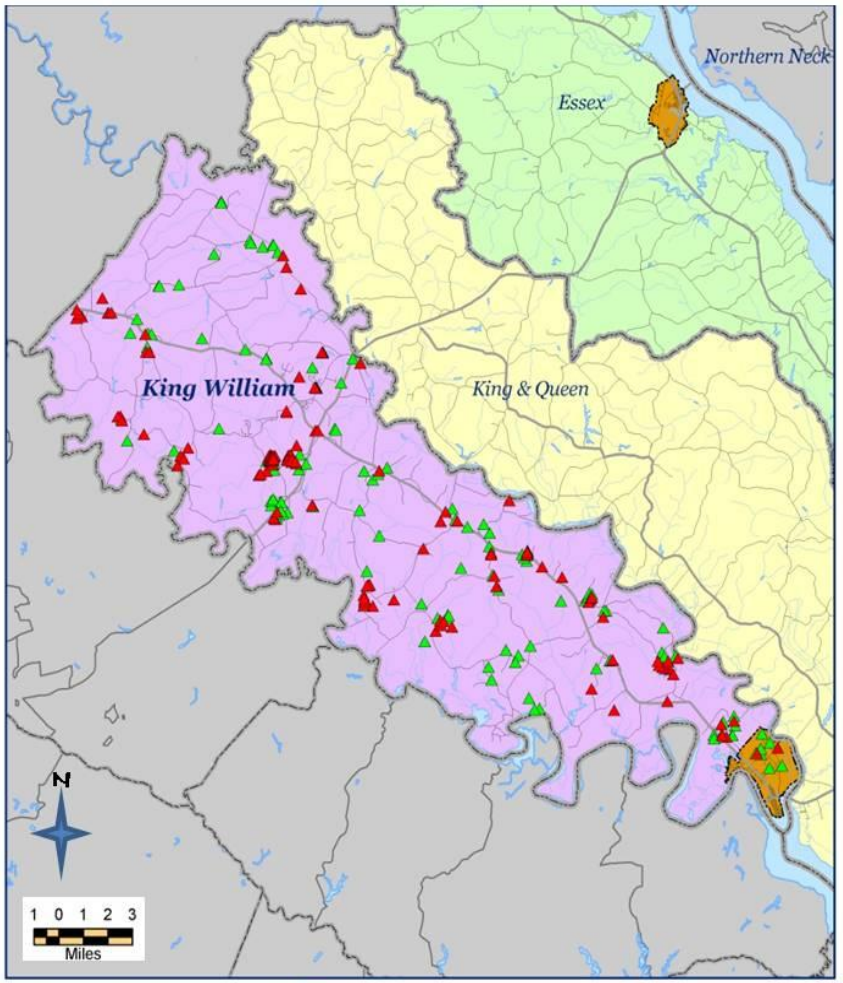
Virginia Coastal Zone MANAGEMENT PROGRAM

King William County Engineered Septic Systems (Installed and Potential)

2000-2004



2000-2008



Year 2000-2004: Legend

- Installed Systems -28
- Potential Systems -42

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTEMS: 70

*Data collected thru Oct. 31, 2004

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Virginia Coastal Zone MANAGEMENT PROGRAM

Year 2000-2008: Legend

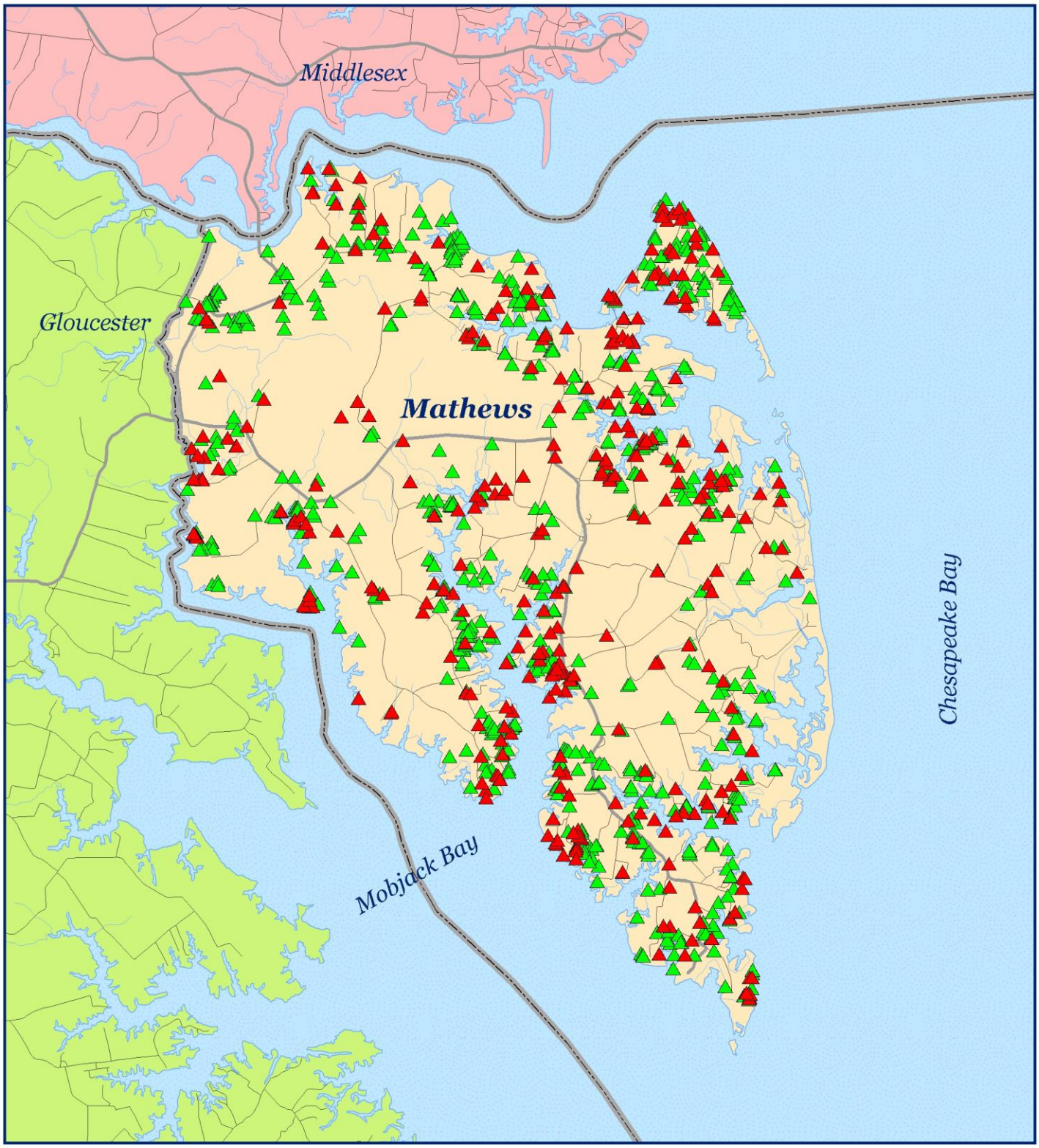
- Installed Systems -136
- Potential Systems -141

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTEMS: 277

*Data collected thru Dec. 31, 2008

Mathews County Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 331
- ▲ Potential Systems - 723

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 1054

* Data collected thru Dec. 31, 2008

N W E S

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Miles

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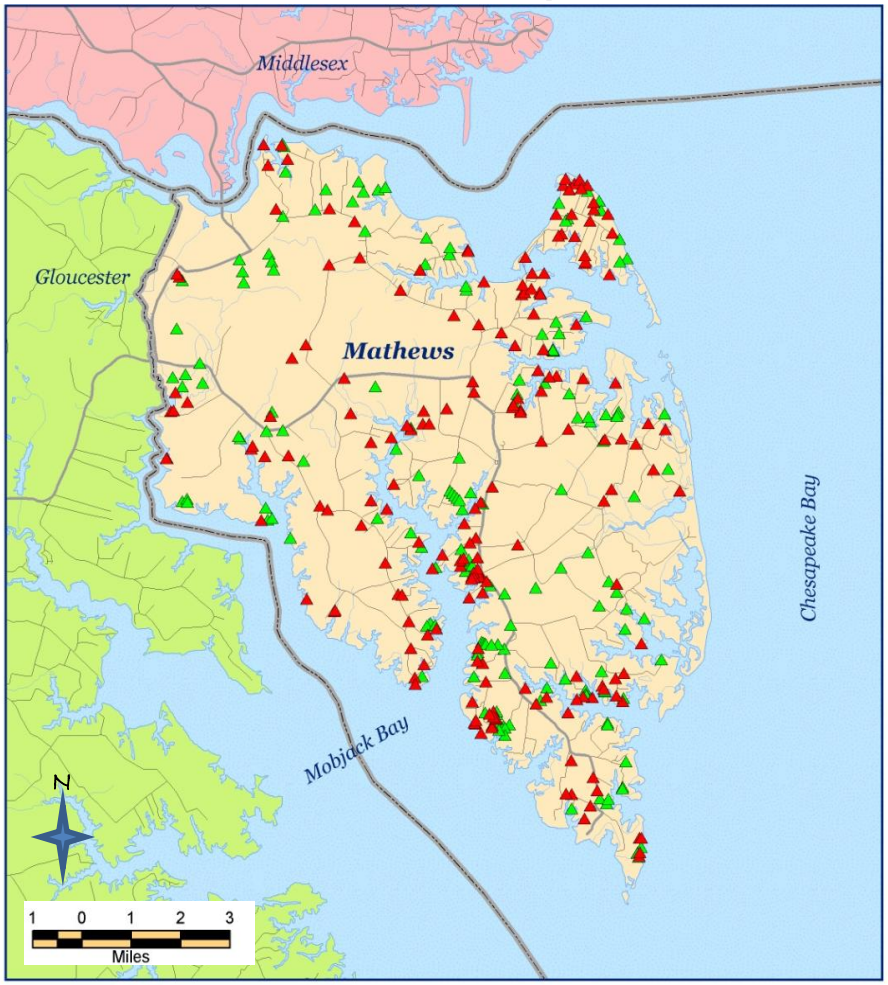
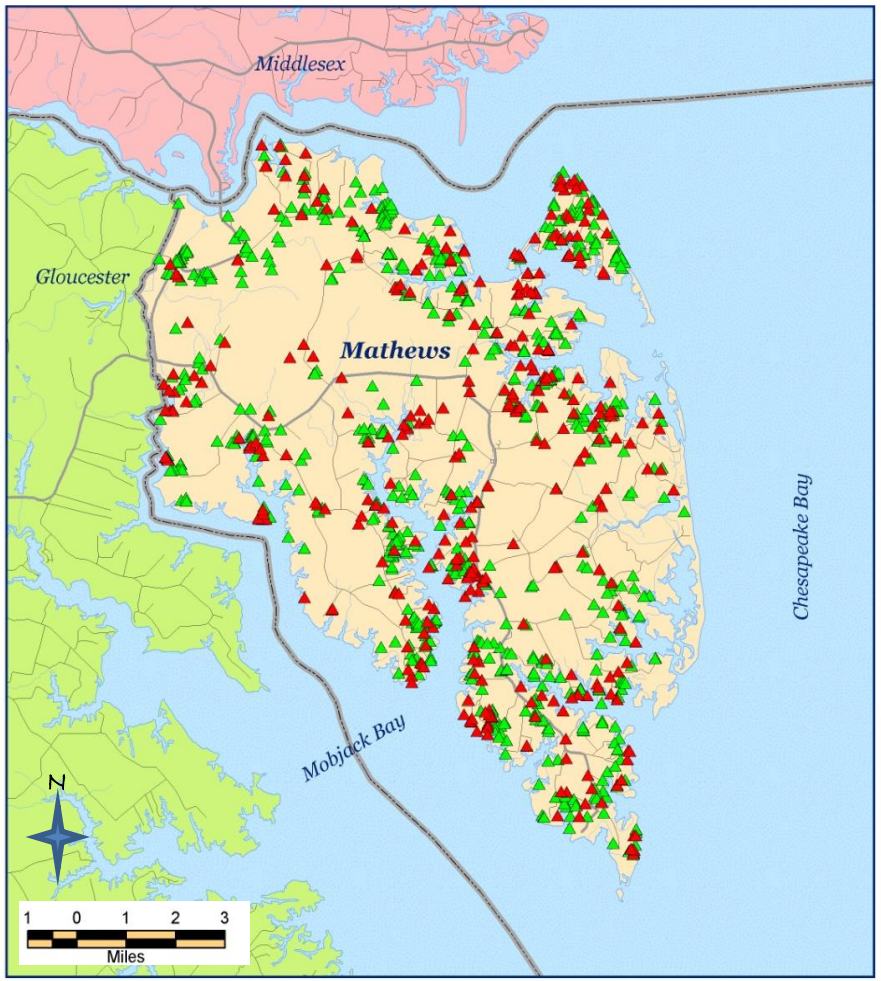
Middle Peninsula Planning District Commission - 2009

Mathews County Engineered Septic Systems (Installed and Potential)

2000-2004



2000-2008



Year 2000-2004: Legend

- Installed Systems -190
- Potential Systems -162

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 352

*Data collected thru Oct. 31, 2004

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Virginia Coastal Zone MANAGEMENT PROGRAM

Middle Peninsula Planning District Commission - 2009

Year 2000-2008: Legend

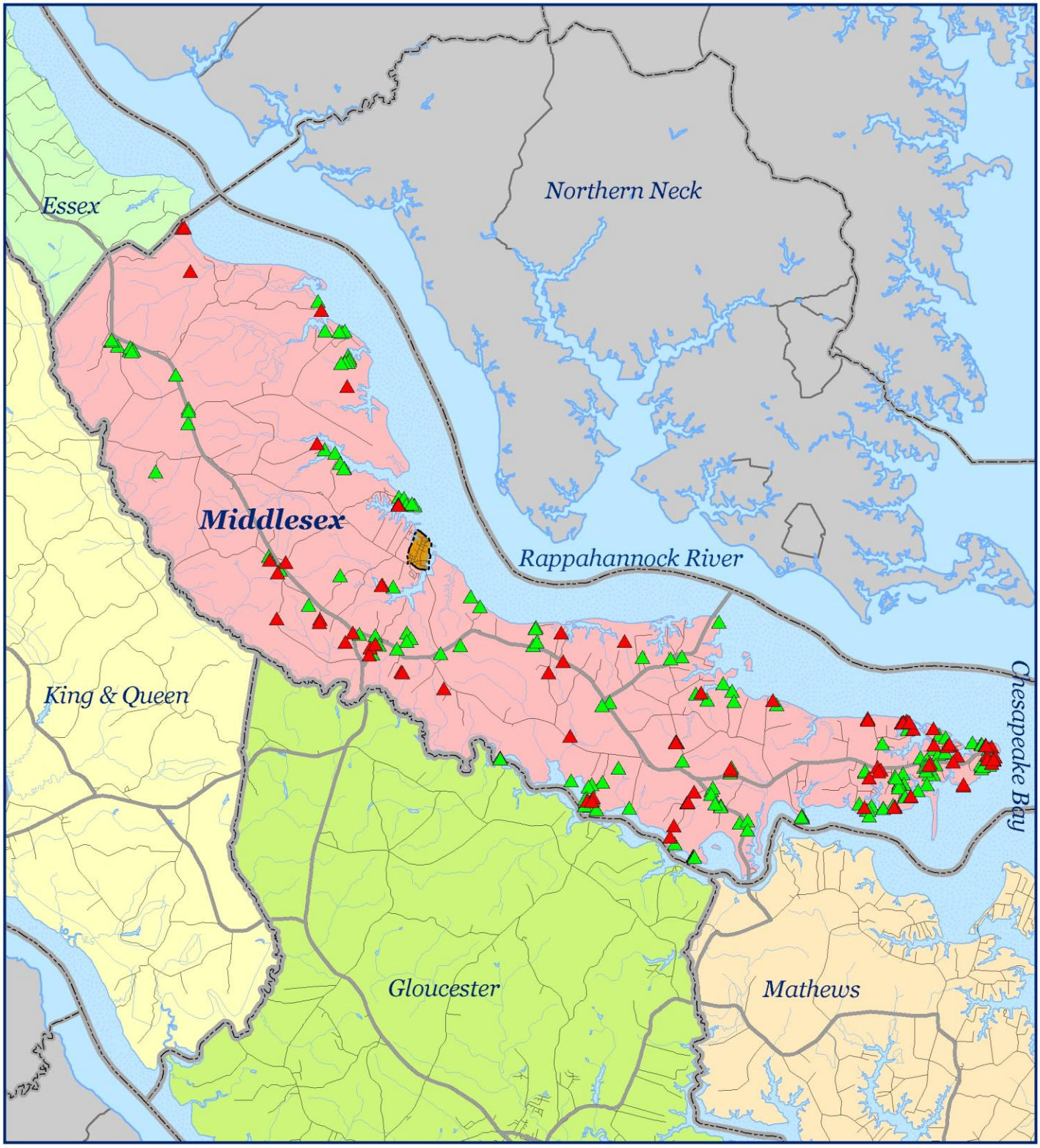
- Installed Systems -331
- Potential Systems -723

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 1,054

*Data collected thru Dec. 31, 2008

Middlesex County Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 144
- ▲ Potential Systems - 225

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 369

* Data collected thru Dec. 31, 2008

N W E S

1 0 1 2 3

Miles

This project was funded by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through grant number #NA06NOS4190088 Task 97.01 of the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended. This project was conducted as part of the Coastal Nonpoint Source Pollution Control Program in partnership with the Department of Conservation and Recreation.

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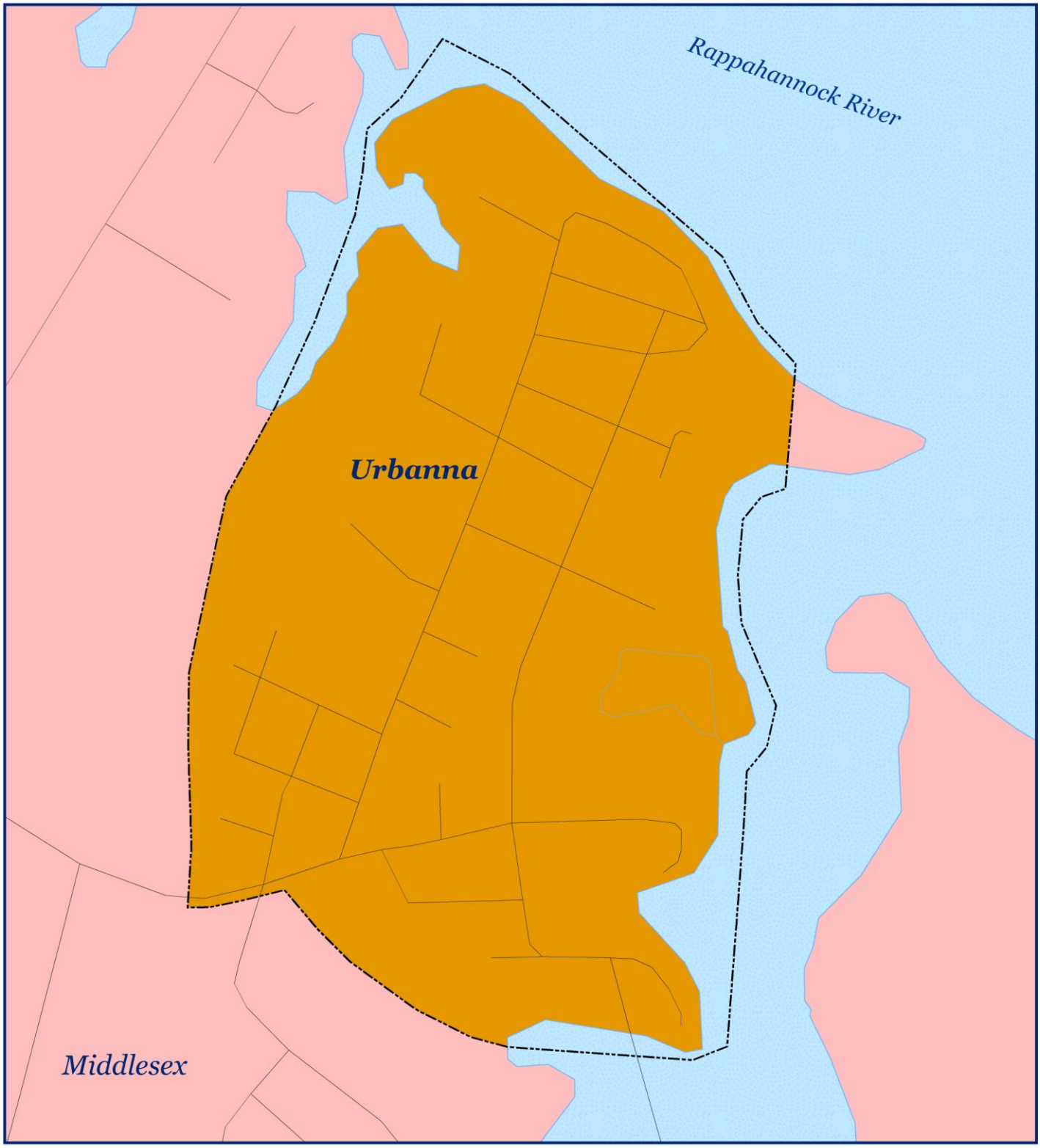
Virginia Coastal Zone MANAGEMENT PROGRAM

Town of Urbanna Engineered Septic Systems 2000-2008 (Installed and Potential)



Legend

- ▲ Installed Systems - 0
- ▲ Potential Systems - 0

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG. SYSTEMS: 0

* Data collected thru Dec. 31, 2008

N W E S

300 0 300 600 900

Feet

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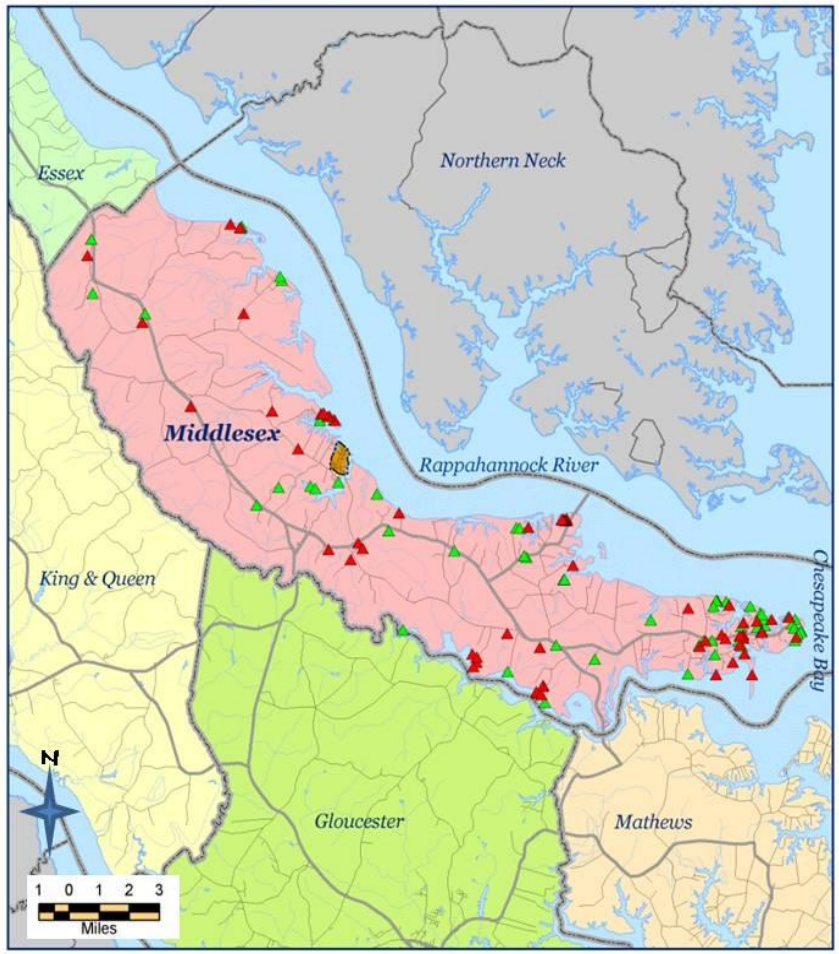
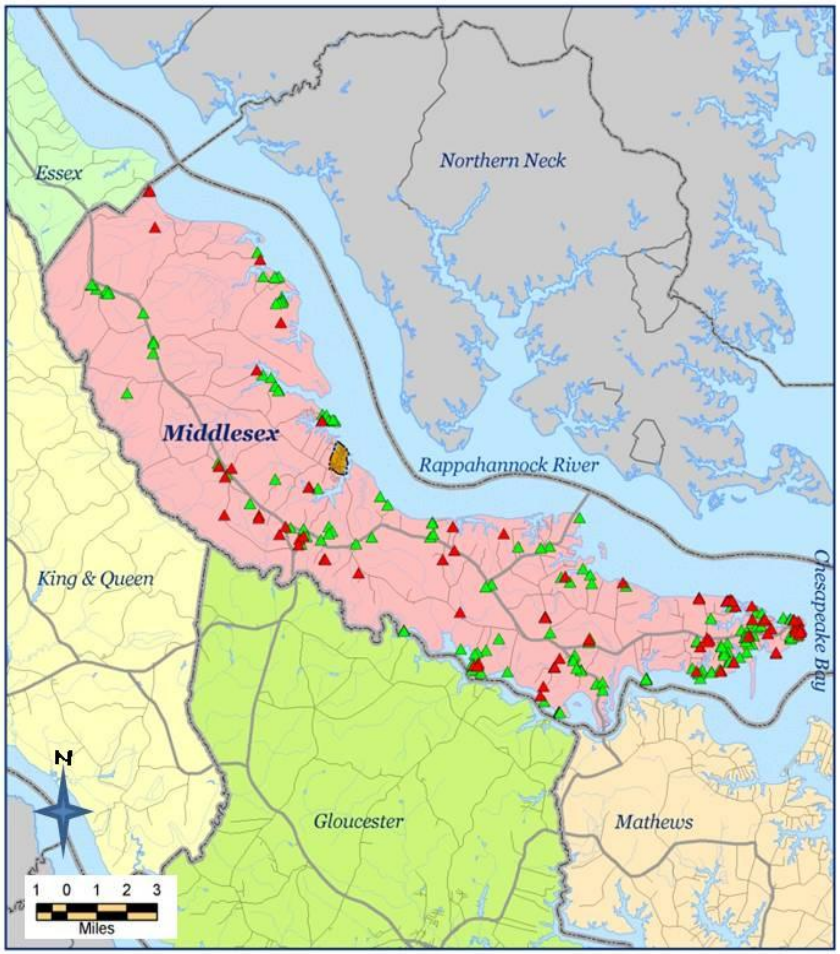
Virginia Coastal Zone MANAGEMENT PROGRAM

Middlesex County Engineered Septic Systems (Installed and Potential)

2000-2004



2000-2008



Year 2000-2004: Legend

- Installed Systems -59
- Potential Systems -58

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 117

*Data collected thru Oct. 31, 2004

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Virginia Coastal Zone MANAGEMENT PROGRAM

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Year 2000-2008: Legend

- Installed Systems -144
- Potential Systems -225

(Cert Letters, Current Permits, Expired Permits)

TOTAL # OF POSSIBLE ENG.SYSTMES: 369

*Data collected thru Dec. 31, 2008