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Dredging Implementation Prioritization and Management for Middle Peninsula Shallow Draft Channels

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Executive Summary

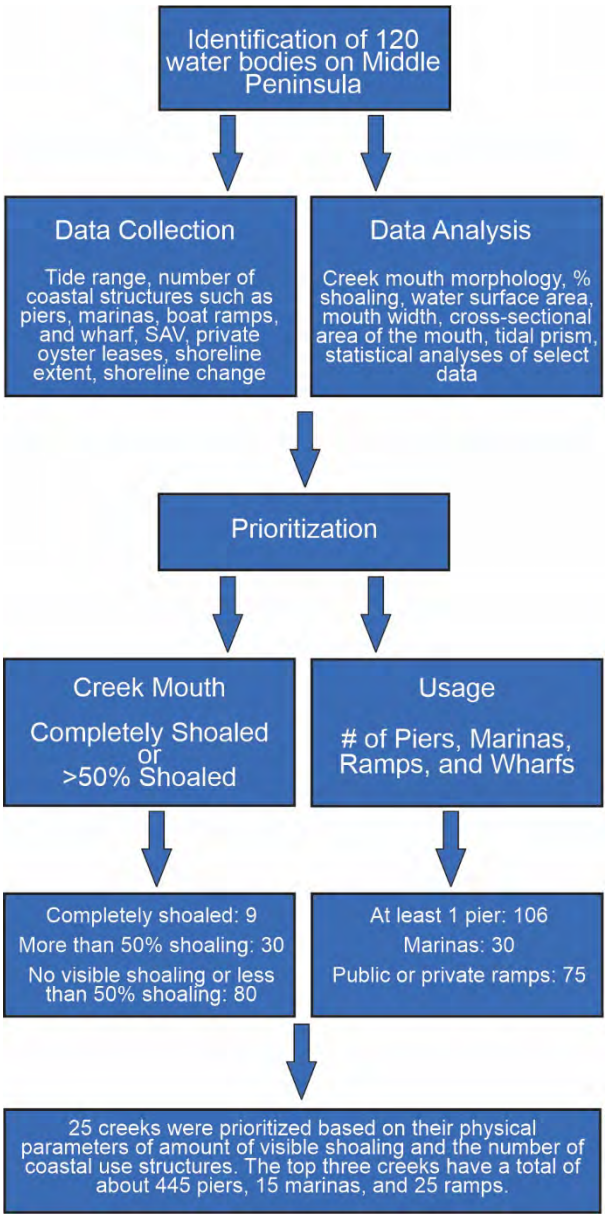
To develop a regional dredging program for the localities of the Middle Peninsula, a database of 120 creeks and rivers was created of its waterbodies from Tappahannock to West Point. Generally, these waterbodies can be categorized into three basic types of shallow draft channels: federally-defined, non-federal with ATONs (aids to Navigation) and non-federal without ATONs. For the Middle Peninsula there are 13 federal channels, 12 non-federal channels in creeks with ATONs, and 94 in creeks without defined channels or ATONs.

Physical parameter data was collected or created for each of these creeks. This data included creek mouth morphology, amount of shoaling in the creek mouth, tide range, number of coastal structures such as piers, marinas, boat ramps, and wharf, the water surface area, mouth width, tidal prism, and cross-sectional area of the mouth (mouth width x average depth). The data collected was used to prioritize dredging needs based on these physical parameters.

Overall, 9 creeks were completely shoaled, and 30 had more than 50% shoaling. Eighty creeks had no visible shoaling or less than 50% shoaling. Fifty creeks had restricted creek mouth morphology. Nearly all the creeks (106) had at least one pier; 30 had marinas; and 75 had public or private boat ramps.

A total of 25 creeks were prioritized based on their physical parameters of amount of visible shoaling and the number of coastal use structures. The top three creeks on the prioritized list are Sarah Creek in Gloucester County, and Robinson Creek and Sturgeon Creek in Middlesex County. These top three prioritized creeks have a total of about 445 piers, 15 marinas, and 25 public or private boat ramps. In addition, most of the prioritized creeks had restricted mouths. This was not a selected feature for prioritization, but these creeks are more likely to be completely or more than 50% shoaled. Also taken into consideration during prioritization was any known local knowledge of the creek.

Utilizing the collected data, the steps that localities need to take for additional data collection to develop a dredging project was outlined, and recommendations were made for additional regional management considerations. Finally, next steps were suggested. These



include utilizing the database for additional studies on the morphology and hydrodynamics of the creeks as well as computer modeling of the systems to better understand the systems and further categorize the to enhance future prioritization. In addition, this research could inform adaptive management of the dredge channels in the face of sea-level rise. By creating a regional program for dredging of shallow water, localities can save time, effort, and money. Such a program also provides ways for localities to plan for the utilization of dredge material to combat repetitive flooding and improve coastal resiliency.

Each creek is shown in Appendix A with a creek-specific data table and map. Appendix B shows the Excel table for all the data.

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1 Introduction

1.1 Dredging Background

Channel dredging is usually considered when the safe navigation into and out of a creek, access channel or other shallow navigation waterway is impended. Historically, Federal designated channels were authorized by Congress in the 1950s and 1960s to support the commercial seafood industry, working waterfronts. The natural channels were not sufficient to allow safe passage and channels had to be created by dredging. Each channel is unique in that regard in terms of tidal hydrodynamics and the need for maintenance dredging so their extent and controlling depths vary depending on the nature of boating requirements. Channel lengths were often determined by where an inside bathymetric contour would be "linked" to the same contour on the river or bay side. Controlling depths vary but generally range from 6 to 10 feet MLW. Channel widths vary from 60 to 100 feet depending. These parameters determined the amount of dredging that was required. The consequent disposal of the dredge material also varied from upland to shoreline to offshore sites. Many of these initial disposal sites are no longer available.

Through the Virginia Waterways Management Fund (Senate Bill 693 https://lis.virginia.gov/cgi-bin/legp604.exe?181+cab+SC10122SB0693+BRREF), localities have the opportunity to seek funding for shallow-draft navigable water channel maintenance dredging and the construction and management of areas for the placement of dredged material. To assist localities on the Middle Peninsula with implementation of these types of projects, a regional approach is needed when considering channels for shallow-draft dredging projects. The regional approach will assist localities in implementing the utilization of dredge material from shallow-draft channels to combat repetitive flooding and mitigating coastal erosion through placement along the shoreline at appropriate sites.

1.2 Project Goals

For the localities of the Middle Peninsula (Figure 1), creating a regional program for dredging of shallow water can save time, effort, and money. It also provides a way for localities to plan for the utilization of dredge material to combat repetitive flooding and improve coastal resiliency.

This report provides base data for every creek and channel on the Middle Peninsula. The data collected was used to prioritize dredging needs based on physical parameters. Once the creeks were prioritized, the steps localities need to take for additional data collection to develop a dredging project were outlined. Finally, recommendations were made for additional regional management considerations.

This method can be used for other regions to have them start to look at all of their creeks rather than just the federal channels or those with larger marinas. It allows for the inclusion of other creeks that might otherwise be overlooked.

2 Middle Peninsula Channels

2.1 Creek Morphology

About 15,000 years ago sea level was about 300 feet lower and the ocean coast was about 60 miles to the east. Since then the coastal plain of Virginia has been progressively inundated and the Chesapeake Bay shoreline has receded in response with flooding of the dendritic watershed. As the marshes erode away the exposed interfluves, eroding upland banks, provide sediments to the littoral system creating beaches and spits (Figure 2).

Creeks are the hydrodynamic and hydrologic connection between the uplands and the Bay. Each has its unique setting based on where it sits the antecedent dendritic watershed of Chesapeake Bay (Hardaway & Byrne, 1999). They are typically the lateral drainages into the main rivers and the Bay. The present shoreline and creek settings are a product of the interaction between hydrodynamic forces of the Bay and the material resistance of the underlying geology.

The lateral creeks vary in size and the types of connections to the adjacent rivers and bay. This is related in part to the size of the creek (area), the tidal prism, and the nature of the adjacent river and bay coasts. These may be marsh shoreline and/or eroding upland banks which provide sediments to the littoral system and interact with the creek entrances. Creek entrances vary from open mouths to restricted to tidal inlets. For tidal inlets, the cross-section of the channel at its mouth has a direct relationship to the tidal prism. The tidal prism is the tidal area of a creek times the tide range. This being the volumetric exchange of the creeks tidal water with the adjacent river or Bay.

The creek morphology is a function of where they sit in the landscape as sea level rise transgresses the Virginia coast. We call them lateral creeks because that how they intersect the adjacent water body similar on a large scale as the main tributary estuaries, the James, York, Rappahannock and Potomac Rivers intersect Chesapeake Bay.

Given these elements each creek is in a state of dynamic equilibrium as those force impact and fluctuate over time. Now comes the anthropogenic modifications and the need for navigation access to the creeks and rivers of the Bay. The equilibrium of the channel mouths is often inadequate for navigation needs over the years. Federal channel is usually designated to support commercial fishing interest that wanted to utilize creeks closer the various fishing species, to some extent. Many of the Federal channels were established in the 1950s and 1960s during the height of oyster and rockfish fisheries.

2.2 Regional Creek Descriptions

There are 120 named creeks the Middle Peninsula coast from Tappahannock to West Point. Each creek is shown in Appendix A with a creek-specific data table and map. Appendix B shows the excel table for all the data. Generally, they can be categorized into three basic types of shallow draft channels: federally-defined, non-federal with ATONs (aids to Navigation) and non-federal without ATONs. For the Middle Peninsula there are 13 federal channels, 12 non-federal channels in creeks with ATONs, and 94 in creeks without defined channels or ATONs.

Most of the creeks are in the lower Middle Peninsula. To assess these channels, it is important to place them in their geomorphic/geologic setting. For the purposes of discussion, the coast is divided into reaches. Reach A extends from Tappahannock to Stingray Point along the Rappahannock River (Figure 3). Reach B from Stingray Point to New Point and includes the Piankatank River shoreline as well as Chesapeake Bay. Reach C encompasses Mobjack Bay to the mouth of the York River at Big Island. Reach D extends up the York River coast to West Point and the Mattaponi River.

2.2.1 Reach A

Most of the Reach A coast is eroding high and low banks that vary in composition but generally have a basal clay stratum overlain by various sandy strata. There are 21 named lateral creeks (Appendix A) which are the remaining upland sections of each lateral watershed (Figure 4). There are no significant, named, tidal creeks between Piscataway Creek and Mud Creek, almost 18 miles of shoreline. This is a function of the antecedent geology/geomorphology. The other 19 tidal creeks occur along the remaining 25 miles of the Reach A shoreline in the lower Rappahannock.

There are 6 federal channels, 3 non-federal with ATONs and the remaining 13 non-federal. Locklies Offshore is a federal channel but is not lateral creek. For the other federal channels, Hoskins, Parrots, Urbana, Whiting and Broad Creeks the controlling depths/widths are -10 ft/70-100 ft; -6 ft/60 ft; -10 ft/150-390 ft; -4 ft,70 ft; and -7 ft/100 ft, respectively (Hardaway et al., 2019). When these channels were established by Congress in the 1950s to the 1970s, a local sponsor was required. The need and frequency to dredge varied per creek from industrial situation at Hoskins Creek to smaller vessel size requirements like Whitings Creek. Cost and maintenance are other factors. Currently, the completely shoaled federal channel is Whitings Creek. The remainder are partially shoaled.

Of the 15 non-federal creeks in Reach A, three have ATONs, LaGrange, Robinson Creek, and Locklies North. Langrange and Robinson have restricted mouths while Locklies North is open. Non-federal channels considered completely shoaled are Harry George Creek, Meachim Creek East, Bush Park Creek and Sturgeon Creek. Bushy Park Creek has an extensive trailer park and campground with adequate water inside the creek but with a significantly shoaled inlet channel. The channel has two wood jetties and is frequently dredged, mechanically, with the sandy material placed on the adjacent north coast. With a southerly net littoral drift that material soon returns to the channel but placing the material on the south side would impact the adjacent small creek inlet of Woods Creek* (not in Appendix A). Finally, Broad Creek has some interior shoals but the main channels are relatively open.

2.2.2 Reach B

Reach B extends from Stingray Point to New Point Comfort along the west coast of Chesapeake Bay in Middlesex and Mathews County including the Piankatank River (Figure 5).

The coastal geomorphology is typically lower upland banks that can have more extensive marshy watersheds. The open Chesapeake Bay has a high wind wave climate. Sediment sources from upland erosion sources have been from Stingray Point to Gwynn Island have been reduced by shoreline hardening overtime. There are broad shoals in the nearshore region along most of the Bay coast down to New Point. There are 29 named channels in Reach B (Appendix A). These include 14 creeks in the Piankatank River, 11 in the Milford Haven watershed and 4 along the open bay coast.

There are 5 federal channel, 3 non-federal with ATONs and the 21 non-federal channels. Horn Harbor is a federal channel through a shoal but there is also a non-federal component to it as well which is reflected in Appendix A. For the federal channels, Jackson, Queens, Milford Haven and Horn Harbor, the controlling depths/widths are -8 ft/60-80 ft; -6 ft/60-200 ft; -10 ft/100 ft; -6 ft/100-400 ft; and -7 ft/100 ft. Jackson Creek and Queens Creek have been recently dredged with material going onto adjacent beaches. Milford Haven is naturally deep but has some shoaling along the outbound side. Horn Harbor was dredged in the last ten years and sandy material put on the adjacent campground coast. Winter Harbor is the most significantly shoaled channel with no access even for shallow draft vessels. Previous disposal sites include three upland areas that are now abandoned and more recently the shoreline north of the channel. The problem is the sandy material, once placed, immediately begins infilling the channel. The better option is to put it on the south shoreline.

The non-federal channels with ATONs channel Hole in the Wall is >50% shoaled and needs dredging. The non-federal channels that are completely shoaled include Warehouse Cove, Chappel Creek, and Garden Creek. Garden Creek watershed has been compromised for years because the adjacent bay barrier was breached thereby reducing the tidal prism. Prior to that, two wood jetties helped keep it open but it still infilled quickly.

2.2.3 Reach C

Reach C includes all the named creeks in the Mobjack Bay estuarine system including the East River, North River, Ware River, and Severn River (Figure 6). The coast around the Mobjack Bay watershed is mostly low upland banks and tidal marshes fronting the uplands. As a result, upland bank erosion is intermittent and occurring where the marsh fringes have eroded out. Consequently, the contribution of eroding bank sediments to the littoral system is somewhat less compared to the Rappahannock River coast. Nevertheless, nearshore sands can impact the tidal creeks as evidenced by infilling of the Davis Creek channel over time.

There are 54 named creeks, one, Davis Creek, is federal, three are non-federal with ATONs including Pepper Creek, Greenmasion Creek and Browns Bay. The remaining 50 are non-federal without Coast Guard ATONs (Appendix A). The small lateral tidal creeks either enter Mobjack Bay proper or one on the 4 larger lateral rivers, East River, the North River, the Ware River and the Severn River. The controlling depth/width of Davis Creek is -8 ft/80 ft.

Davis Creek is nearly completely shoaled at the entrance to the federal channel. Put in Creek actually has sufficient water depth up to where the channel narrows and then is completely shoaled for the last 2,000 feet to Mathews Court House. Mill Creek 2 is partially shoaled in the main creek but the adjacent boat ramp is almost completed sanded in. Whittaker Creek is

relatively shallow up to and into the dredged canal where it is very shoaled in. Finally, Freeschool Creek has a very narrow entrance channel into the creek and shoals in the nearshore at the public landing.

2.2.4 Reach D

Reach D extends from Big Island at the mouth of the York River upriver to West Point and the entrance to the Mattaponi River, about 32 miles (Figure 7). Big Island is part of an extensive tidal marsh complex including Monday Creek, and the shoreline transitions to very low eroding upland (+5 ft) along the Guinea Neck to the Perrin River. The upland banks increase in elevation slightly up to Sarahs Creek (+10 ft). Most of the shoreline has been developed and hardened. The uplands rise sharply (+30 ft) past Sarahs Creek where the Suffolk Scarp intersects the York River. This coast is also mostly developed and hardened. The high bank coast continues up the north coast of the York River where numerous lateral tidal creeks occur. Old marshy point bar systems occur between creeks including the Catlett Islands, straddled by Timberneck and Cedarbush Creeks. Another marshy point bar coast occurs further upriver between Purtan Creek and the Poropotank River. The low marsh coast continues upriver, transitioning to low eroding uplands back to a low marsh coast that extends into the mouth of the Mattaponi River.

There are 16 named creeks in Reach D. One is federal (Aberdeen Creek), three have ATONs, Perrin River, Sarahs Creek and Timberneck Creek, and the rest are non-federal channels without Coast Guard ATONs. Upriver portions of the Mattaponi River are federal but not the entrance which is the only section included in this project (shown in Appendix A). The controlling depth/width of Aberdeen Creek is -6 ft/80 ft.

The Perrin River, Sarahs Creek, Timberneck Creek, Cedarbush Creek and Aberdeen Creek (Federal) all have some type of working waterfront infrastructure including marinas in the Perrin River and Sarahs Creek. The Perrin River and Sarahs Creek have migrating sandy shoals into the entrance channel. The narrow channel into Aberdeen Creek is also significantly shoaled with sand. The natural channels into Timberneck and Cedarbush have infilled over the years but with muddy material.

3 Methods

3.1 Channel Morphology

For this project, the 120 creeks present on the Middle Peninsula were identified manually from topographic maps in Esri ArcMap. All tidal creeks open to a larger body of water and that could potentially have a navigation channel were included. Though some creeks did not have a name on the chart, one was assigned them either from local knowledge or were named by the researchers after a road or feature near the creek.

Creeks were categorized in several ways. The channel type categories are Federal, which includes those shallow draft creeks that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined creeks that have aids to navigation; and Non-Federal, which includes those creeks that are not federally-defined channels nor do they have aids to navigation.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project that had four categories. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no significant shoals/ land impeding creek flow.

Percent shoaling of a creek was another qualitative assessment used to categorize creeks for this project. It defines the amount of shoaling within the creek, usually at the creek mouth or just outside the creek and is generally related to the need for dredging. The assessment was performed manually using visual inspection of the 2017 VGIN images. The four categories are: No Visible Shoaling; <50% of channel; >50% of channel; Completely shoaled. It must be stressed that this is a qualitative assessment using visual data and only identifies potential shoaling issues.

Where it exists, the submerged aquatic vegetation (SAV) footprint was mapped to show the extent of the grasses between 2015 and 2019 as mapped by the VIMS SAV program (https://www.vims.edu/research/units/programs/sav/access/maps/index.php). Private oyster lease GIS layer was downloaded from the Virginia Marine Resource Commission. Tide range was obtained using NOAA resources, and the existing structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database (data collected between 1998-2016). Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned). However, it should be noted that many errors were found within this dataset and should be used only as a guide. No better dataset existed for most of these small, lateral creeks that have not been surveyed.

Several tidal creek parameters were calculated based on this data. Water surface area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the

entire creek from the mouth to its headwaters (Hardaway et al., 2020). Surface area was calculated in GIS. The location of the mouth or inlet was visually-defined on the 2017 VGIN images and its width determined. Determining the position of the creek mouth is somewhat subjective but, in most cases, its intuitively obvious, particularly on creeks with restricted mouths or inlets. Cross-sectional area of the mouth was determined. This was the mouth/inlet width times water depth. In addition, the tidal prism, which is the volume of water in an estuary or inlet between mean high tide and mean low tide, or the volume of water leaving an estuary at ebb tide, was determined by multiplying the average tidal range times the surface area of the basin.

3.2 Prioritizing Channels

The goal of this project was to develop data for a regional dredging plan. Utilizing the collected and analyzed data, channels were prioritized to determining the need for channel dredging. These creeks were both objectively, based on collected data, and subjectively prioritized, based on knowledge of the creek. This will be creek-dependent and involves the creek geomorphology/hydrodynamics as well as the extent of upland development, working waterfront requirements and residential boat activity. The prioritization was based only on physical parameters such as the amount of shoaling that would restrict boating access, the type of creek mouth, and whether marinas, piers, and boat ramps are present. The shoreline structure information was obtained from the VIMS Center for Resources Management shoreline inventory GIS data (https://www.vims.edu/ccrm/research/inventory/index.php). Information obtained for federal channels analyzed for the Hardaway, et al. (2019) report was also included.

4 Regional Dredging

4.1 Regional Prioritization

From the results of this project, Table 1 has a list of 20 channels prioritized by physical parameters for dredging. These creeks were either completely shoaled or were categorized as having >50% shoaling. Most are inlet or restricted creek mouths; although unnamed cove is open, but completely shoaled. Most of the creeks occur in Middlesex and Gloucester counties, although three are in Mathews County. The complete data table is shown in Appendix B. An additional five creeks are listed because they are either completely shoaled or have >50% shoaling and have some piers inside the creek. However, for these five creeks, the number of piers is relatively low.

The top four creeks on the prioritized list are Sarah Creek in Gloucester County, and Robinson Creek, Sturgeon Creek and Whiting Creek in Middlesex County. Sarah Creek is a non-federal channel that has ATONs (Figure 8). It has a restricted mouth that is greater than 50% shoaled. Along its shoreline, over 200 private piers, 8 marinas and 11 boat ramps occur. Having easy access for boats is essential for homeowners and businesses and will boost the economy of Gloucester County through tax revenues. It appears that only the mouth of the creek, where shoaling is occurring due to alongshore transport of material, needs to be dredged. The creek has the 4th largest tidal prism in the dataset (Appendix B). Submerged aquatic vegetation (SAV) will not be an issue for dredging this channel; however private oyster lease owners will need to be addressed. Shoreline adjacent to the creek on the York River could be used as a placement area for sandy dredge material.

Robinson Creek is a non-federal channel that has ATONs (Figure 9). It has a restricted mouth that is greater than 50% shoaled. Along its shoreline, 111 piers, 5 marinas, and 5 boat ramps occur. Aerial photography shows a defined channel that could indicate that the channel is dredged, a review of the VMRC database did not show a permit since 2000. It could be naturally maintained because the creek has the 13th largest tidal prism out of all the 120 creeks. SAV would not be an issue for dredging, and although private oyster leases are close to the channels, they could be avoided. Shoreline downdrift of the creek could be used for placement of sandy dredge material.

Sturgeon Creek does not have a federal channel nor any ATONs (Figure 10). It has a restricted mouth that is completely shoaled, and along its shoreline, 121 piers, 2 marinas, and 9 boat ramps occur. It also has noncommercial and commercial aquaculture. Neither SAV nor private oyster leases will be an issue for dredging. The nearshore along the Rappahannock River at the mouth of Sturgeon appears to be relatively shallow and shoaled offshore. This could be an issue for dredging in that the dredge channel may need to be longer to get to deep water. However, without bathymetry data, this is conjecture.

Whiting Creek is a federal channel that has a restricted mouth and is completely shoaled based on the 2017 VGIN imagery (Figure 11). The Creek has been dredged at least 4 times in

1956, 1962, 1970, and 1998. After 1970, dredging information is based on the VMRC permit database. In 1998, about 80,000 cubic yards (cy) of material was removed. Based on a 2017 survey by the US Army Corps of Engineers, the channel needs dredging again to maintain the channel.

If the physical characteristics of the creeks were disregarded and need was based on economic concerns in terms of the number of access structures, these four creeks are still within the top ten. If the creeks are categorized by the greatest number of piers, marinas, and boat ramps, the top ten includes Sarah, Queens, Sturgeon, Horn Harbor (inside the creek, not the outer federal channel), Robinson, Stutts, Jackson, Meachim, Urbanna, and Whiting.

Table 2 lists the channels that do not appear to need dredging at this time because they showed no visible shoaling. However, this prioritization does not consider local knowledge that may increase or decrease a creek's dredging need. Jackson Creek is a federal channel on this list. However, in 2016, five thousand cy of material was dredged from the channel. Jackson Creek was also dredged in 2001 (15,000 cy) indicating that regular maintenance dredging is needed.

Put in Creek is also on this list. Though the mouth and most of the channel do not need dredging, the upper portion had previously been dredged for boating access to Mathews Courthouse. Over time, the dredge channel filled in and marsh grew. With current environmental regulations, the marsh cannot be removed. However, the small narrow channel immediately adjacent to the courthouse area could be dredged for small skiff and kayak access. Other creeks on Table 2 may also have local issues that would increase their need for dredging.

4.2 Data Needs

Once channels have been prioritized, these are data needs for the next step toward developing a dredging project. The general steps are:

1) Federal versus non-federal channels: Federal channels have pre-defined parameters including dredge channel location, width, and depth, as well as pre-authorized disposal areas. This can make permitting easier.
2) Defining the channel limits: For non-federal channels, actual channel dimensions need to be defined. If ATONs exist, they typically mark the channel and potential shoals and should be used as guidance when determining the channel location. For channels without ATONs, finding the natural channel is necessary. Nearby federal channels can be used to determine needed channel widths and depths. These dimensions are dependent on the type of boat that will be using the channel. The channel should be wide enough to allow for 2-way traffic of the potentially largest boats in the waterway.
3) Determining the amount of material that will be dredged: This is crucial to determining the size of the project and how much area will be needed for disposal of material.
4) Testing dredge material for sediment type: Only sandy material (90-95% sand) can be placed along the shoreline. It also needs to have a median grain size of 0.25 mm. Smaller, muddier material has to be placed in an upland disposal facility.
5) Determine where material will be disposed: based on the type of material, locations need to be found to place the material wither along the shore or in an upland facility. The closer the disposal site is to the dredge channel, the more cost-effective the project.

Once these steps have concluded, a permit application should be submitted and specifications readied for procurement of dredge services. Specific data needs are listed below.

Bathymetric Data

The most important data to collect on a potential dredging site is bathymetry. Knowing the depths is crucial to establishing the need for the project. It also will provide the volume of material that will need to be removed which relates directly to cost. The bathymetry data should be referenced to mean lower low water to define the channel depth. Points should be spaced closely enough accurately represent the bottom depths and cover a large enough area to be able to define all sections of the creek that may need dredged. If ATONs exist in the creek, they should be surveyed in as well.

Channel creation

For non-federal channels, the dredge channels need to be defined. Channel design must balance safety, economic, and sustainability requirements. Channels also must be wide and deep enough to safely accommodate vessel traffic but not so large as to require excessive dredging or habitat modification. However, if a channel is designed deeper than needed at this time, it could offer less habitat impacts in the future if dredging maintenance cycles are reduced. If ATONs exist, they can be located either through a GIS database or a survey. The ATONs generally mark a channel and shoaled areas and can be used as a guide in determining channel location. If no ATONs occur in the creek, locating the natural channel through bathymetric data will help define the channel location. The channel needs to extend far enough into deeper water to match the defined channel depth. Federal channels in the vicinity can be a guide to determining needed channel widths and depths. Once the channel is defined, the volume of material that needs to be dredged can be calculated.

Coring

Sediment cores need to be taken to determine the types of material present in the channel. Because the top layer of material often is different from what material lies below the bottom, the cores need to be deep enough to reach the maximum dredge depth. The cores should be photographed and described to show the depths that have different materials. Sediment samples should be taken and analyzed for composition. Using the bottom depth at the core location, the depth to which the channel will be dredged can be determined on the core. The material type to this length on the core should be mean-weighed by depth to determine the type of material that will be removed from the channel. The disposal site(s) can be defined based on sediment composition.

Determining Resource Impacts

Impacts to biological resources can be large for dredge projects. When this occurs, permitting may be an issue. Determining the impacts before project design and modifying the project as necessary to minimize them is essential. Dredging impacts benthic and fishery habitat and should be assessed. Generally, motile forms of biota should be able to avoid the dredging operation; as such, most fish will not be impacted. The main potential impact is by entrainment of the species in the hydraulic dredging operation itself. Dredging would result in the temporary

destruction of marine habitat and the associated benthos in the channel affecting benthic habitat. For oysters, larval stage impacts have been reported. If private oyster leases occur in the channel, the owners of the leases need to be approached for permission. If public oyster leases will be affected, the matter must be considered by VMRC and/or the Virginia General Assembly. SAV may be impacted if it is located in the channel or immediately adjacent to it. After dredging, repopulation of benthic organisms within the dredging will begin quickly (Newell et al., 1998). In estuaries, communities are well adapted to rapid recolonization of deposits because they are typically subject to frequent natural disturbances. Rates of recovery vary from 6-8 months in estuarine muds, possibly 2-3 in sand and gravel habitats.

Sometimes permitting agencies will invoke a time of year (TOY) restriction on dredging when these species are migrating and/or overwintering. In general, small shallow draft dredge projects will not cause long-term adverse effects on the surrounding ecosystem. The goal is to minimize any effects on the environment, and these should be offset by the project benefits of maintaining safe navigation and commerce.

As noted above, private oyster leases are an issue for dredging projects because the lease owner has to approve during the permitting process. Although many leases presently exist, a regional dredging program could address issuance of future private oyster leases. When leases cover an entire creek mouth as occurs at Lagrange Creek (Figure 9), a dredge channel could be difficult to permit. Many private leases also often extend close to the shoreline. This could impact potential disposal sites of sandy material. If dredge channels and potential disposal areas are identified in a regional program, this could influence the issuance of future private leases in the area thereby reducing a future problem.

Chemical Testing

The Evaluation of Dredged Material Proposed for Discharge in the Waters of the U.S. – Testing Manual was developed as a joint effort by the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (EPA&USACE, 1998) and is referred to as the "Inland Testing Manual (ITM)." The purpose of the manual was to "establish procedures applicable to the evaluation of potential contaminant-related environmental impacts associated with the discharge of dredged materials in inland waters, near coastal waters and surrounding environs." The ITM was primarily developed to establish testing protocols associated with the disposal of dredged material discharges associated with navigation dredging.

The ITM utilizes a tiered approach to determining test requirements for dredged material disposal. There are four tiers: Tier I is an evaluation based on existing information; Tier II includes a chemical evaluation of identified contaminants of concern; Tier III is associated with general toxicity and bioaccumulation tests; and Tier IV provides for project specific toxicity and bioaccumulation tests.

The development of testing requirements always starts with a Tier I evaluation which is an analysis based on existing information. The evaluation can be based on previously collected physical, chemical or biological data; physical sediment characteristics (i.e. is the material comprised of sand, gravel or inert materials); or if the dredged material is associated with known

sources of contamination. If there is no available chemical data at the dredging site, but the material is a sandy or inert material or there are no known sources of contamination or contaminant pathways to the dredging site, then there is "no reason to believe" that the disposal of the dredged material would have an adverse impact at the disposal site. Once it has been determined that there is "no reason to believe," then the dredged material passes the Tier I and no additional evaluation is required. If, however, there is "reason to believe" that there is the potential for contaminants to exist at the dredging site, then a Tier II evaluation would be initiated. The "contaminants of concern" must be identified and a then a sampling plan should be designed to address the concentration of those specific contaminants in the site sediment and water. The results of the Tier II evaluation determine the need for evaluation at higher tiers. If the dredging site passes a Tier I evaluation, the only other time that chemical testing may be required is for disposal of dredged material into a regulated area such as a landfill.

It is unlikely that any contaminated creeks occur on the Middle Peninsula. Data collected at Aberdeen Creek, Cedarbush Creek, and Timberneck Creek in Gloucester; Davis Creek, Hole in the Wall, and Winter Harbor in Mathews; and Parrotts Creek in Middlesex showed no contamination for the following substances (Table 3). Chemical testing only needs to occur if strong reasoning occurs that a creek might be contaminated or if it is a requirement for dredge material disposal particularly if it will eventually be disposed of in a landfill.

Disposal Options

For shallow draft channels in Chesapeake Bay, disposal of dredge material is both a concern and a major component of the dredge planning process. In the past, dredge material was disposed of on the upland, along the shore, or in open-water. However, many previously used upland sites have been filled to capacity, previously-leased shore sites are no longer available, and environmental concerns sometimes limit open-water disposal. As such, new sites must be considered.

Beneficial reuse is the preferred option for dredge disposal. However, material needs to be 90-95% sand with a minimum median grain size (D_{50}) of about 0.25 mm. Smaller, muddier material has to be place in a contained site. For these sandy materials, sites need to be identified downdrift of the dredge channel. Typically, adjacent sites are the most cost effective. Sites within about 1 mile would be most cost-effective, but with booster pumps, material can be dredge farther to ensure the material is disposed where it can be the best use.

Upland sites typically require a containment berm located nearby on property where a lease has been obtained. Confined disposal facilities (CDF) are discussed in Hardaway et al. (2019). In addition to created a berm with on-site material, Geotubes® have been recommended to create the berm to hold material (Hardaway et al., 2020). These tubes are filled with dredge material then stacked around the site to create a basin for additional material. This allows for more material to be stored in a smaller area. Once material in a CDF has dried, it can be disposed of in a land fill or used for other purposes, perhaps fill material or some other technology.

Creating a joint upland disposal site for multiple creeks can create a better cost to benefit ratio. Many of the creeks will have dredge projects with only small amounts of material that will need to be disposed. Identifying public lands close to the site that could be used for disposal would be beneficial for a regional dredge program. Also, creating a site that can be used for multiple dredging cycles would be more cost-effective. The dredging could be grouped to reduce mobilization and demobilization costs.

In some areas of Virginia, modified open water disposal is being used. Geotubes® are filled and placed on the bottom and typically extend above mean high water. Additional dredge material is placed within the tubes. Though it is being used, permitting may be an issue as this method would be covering state bottom.

Coastal wetlands in many areas are deteriorating due, in part, to sediment depletion, subsidence, and sea level rise. Studies of the effects of placing dredged materials on marshes originated with recognition that marshes are adapted to respond to natural processes, such as storms, which deposit wrack and sediments on the marsh surfaces (Ray, 2007). Thin-layering of dredge material has been used in Chesapeake Bay, particularly in Maryland, to recreate marsh habitat. Although the technique is certainly not applicable in all restoration scenarios, it could be targeted toward areas where marsh migration is not possible or where islands are disappearing due to both exterior erosion and internal ponding. It would be a useful tool to help adapt for coastal resiliency. Developing regional thin-layering program would be the cheapest way to dispose of dredge material plus have the additional benefit of helping marshes keep up with sea-level rise. A study by VIMS (2014) looked at the issues and policy considerations of thin-layering.

5 Next Steps

For an efficient regional program, next steps would be to collect data and develop a management structure. The Middle Peninsula Planning District Commission has begun this process by collecting data on 22 creeks, developing dredge plans for 7 of those creeks, and researching how to optimize dredging funds (report in progress). Continuing to collect data and designing projects on prioritized creeks will create a database of information that will be ready as funding becomes available. Of the data that needs to be collected, bathymetry and coring are the most important to determine the need for dredging and what type of disposal site will be needed.

To maximize future planning efforts, further research can be conducted on the morphology and hydrodynamics of the creeks as well as modeling of the systems. This research could inform adaptive management of the dredge channels in the face of sea-level rise. Research has shown that wetland loss inside an estuary increases open water thereby affecting the tidal prism, cross-sectional area of the mouth, and sediment deposition on both flood and ebb tidal shoals such that wetland loss can change regional sediment transport patterns (Sanchez, 2008). The coverage, extent, and density of vegetation associated with estuarine wetlands influence the long-term evolution of estuary morphology and tidal inlets, navigation channels, and the wetlands themselves. Determining the change in wetland coverage for each creek could be translated into predictive morphological tools for management of navigation channels and tidal inlets. In addition, it could provide opportunities for thin-layering. Alternatively, increasing the tidal prism could potentially increase natural flushing and allow the dredge channel to better maintain itself. If tidal prism could be enlarged while simultaneously enhancing wetlands, this would provide habitat benefits while reducing dredging costs.

For this project, physical parameters such as water surface area, inlet cross-sectional area, inlet width, and tidal prism were calculated for the 120 creeks. The data were plotted to look for relationships that could be useful in developing information for the dredge program. Initial results indicate that the variability in creek types effect the outcome of the comparisons. In particular, the tidal prism versus the inlet mouth cross-sectional area should be a linear relationship (Hughes, 2002). However, other variables likely influence the data possibly resulting in several trends that could be fleshed out (Figure 12). Overall, the creek types are too varied and do not provide meaningful data as a group; however, determining parameters to separate data points for statistics may provide meaningful data.

Due to funding constraints, a detailed analysis of this database did not occur. However, data was separated into its creek mouth category and plotted to determine if that simple measure provided information. Only two relationships seemed to have some relationship. For the inlet creek mouth category, plotting water surface area versus creek mouth width provided some relationship (Figure 13). For open creek mouths, plotting water surface area versus creek mouth cross-sectional area resulting in a linear relationship (Figure 14). Additional research into these

data could provide tools to better understand the hydrodynamics of each creek and potentially ways to manage them better.

In addition, the effects of sea-level rise on coastal morphology can be difficult to study by field observations alone; hydrodynamic numerical modeling could provide a sophisticated means of analyzing coastal processes over several time-scales and linking processes to long termer term issues.

6 References

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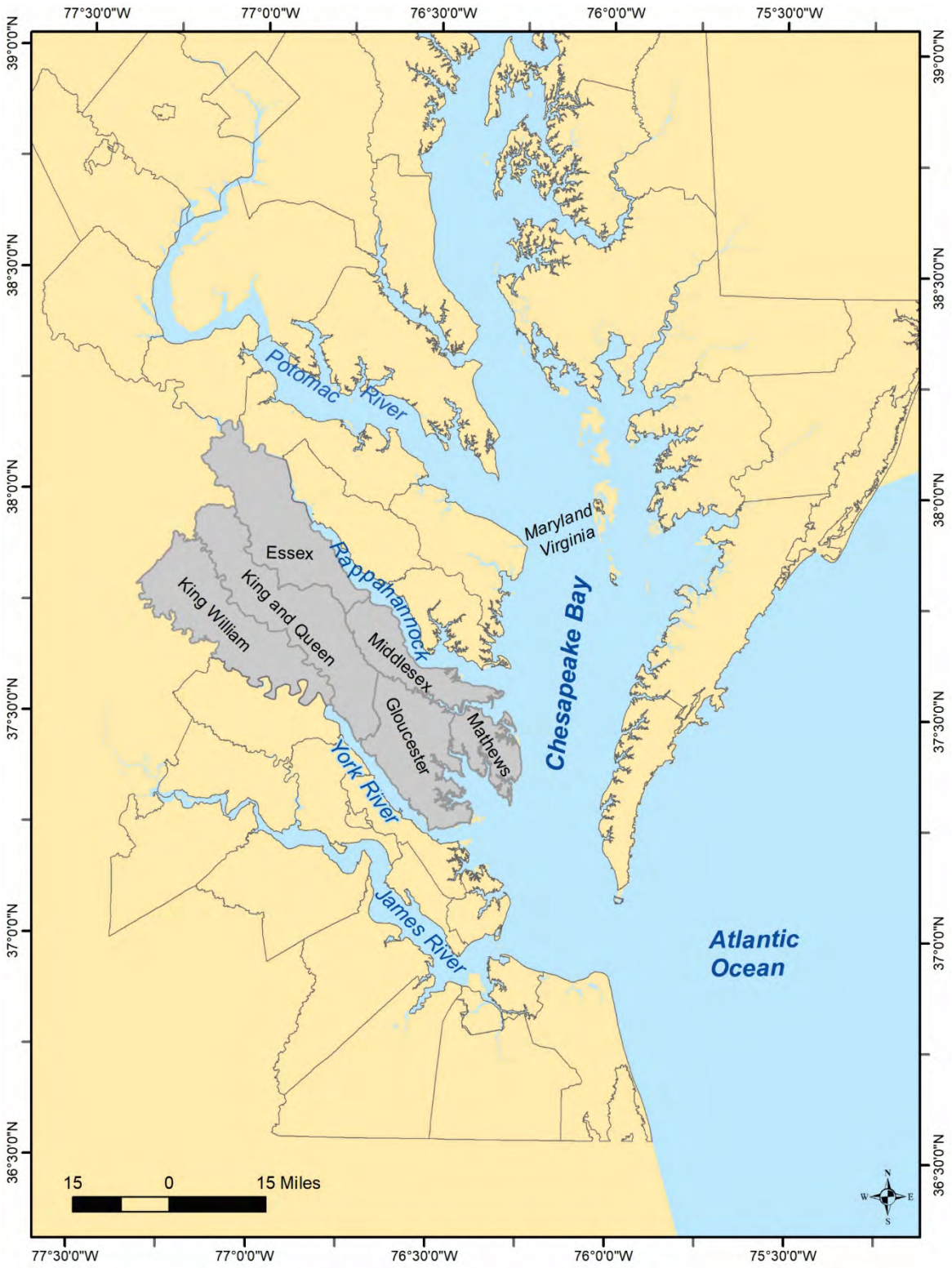


Figure 1. Location of Middle Peninsula counties with the Chesapeake Bay estuarine system.

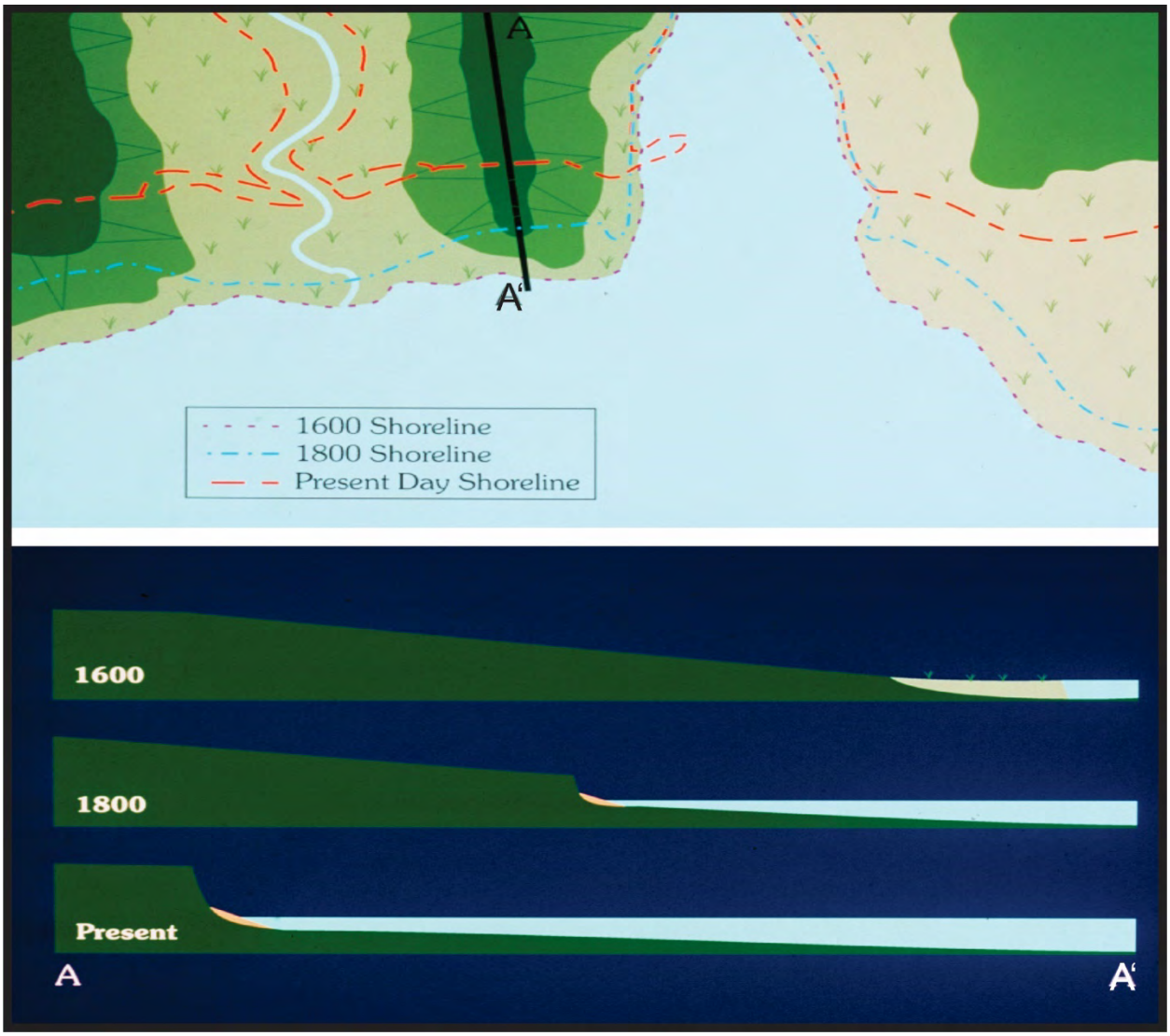


Figure 2. Eroding marshes expose interfluves (eroding upland banks) and provide sediments to the littoral system creating beaches and spits over time. From Hardaway et al. (1999).

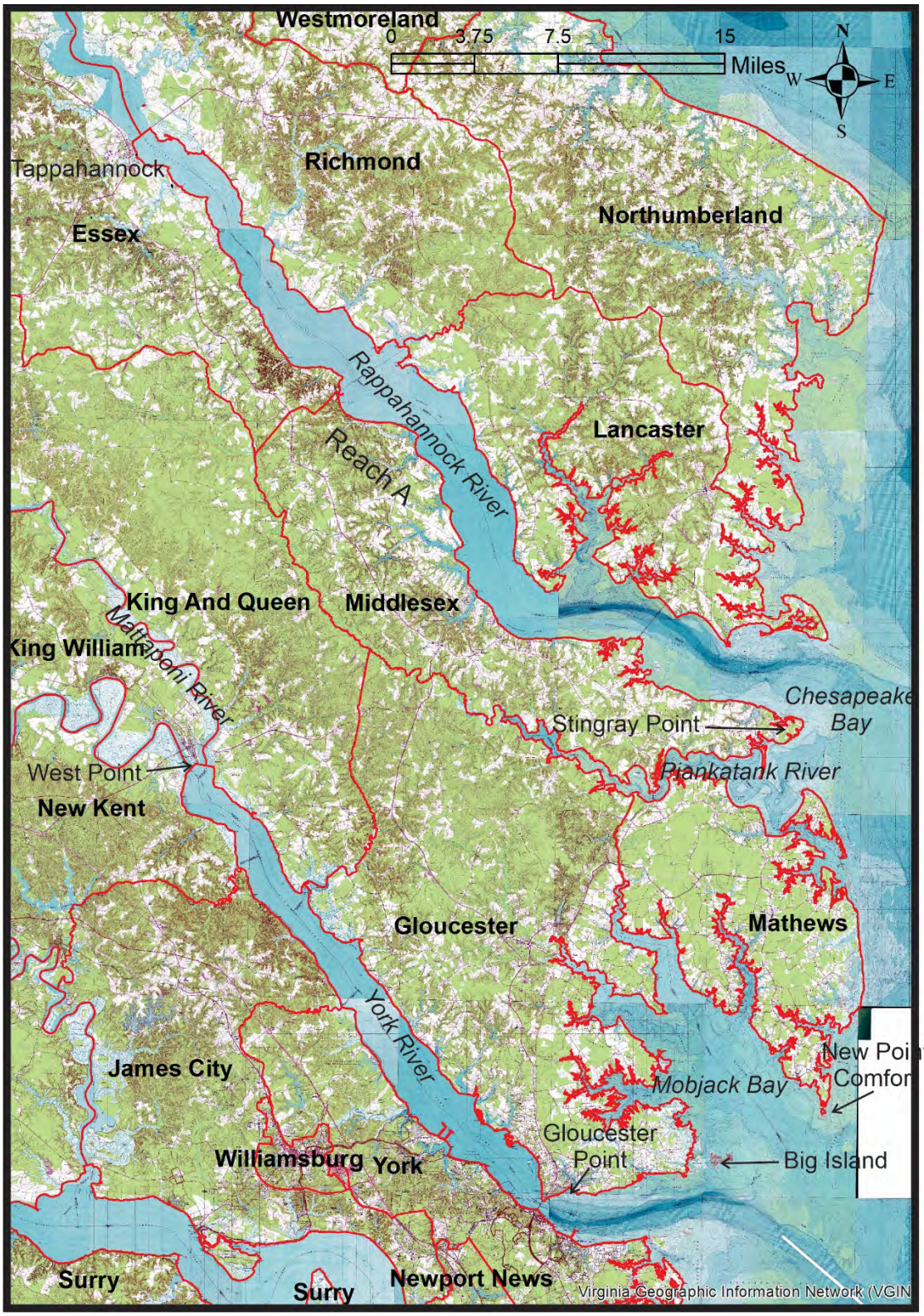


Figure 3. Topographic and bathymetric map of the Middle Peninsula counties.

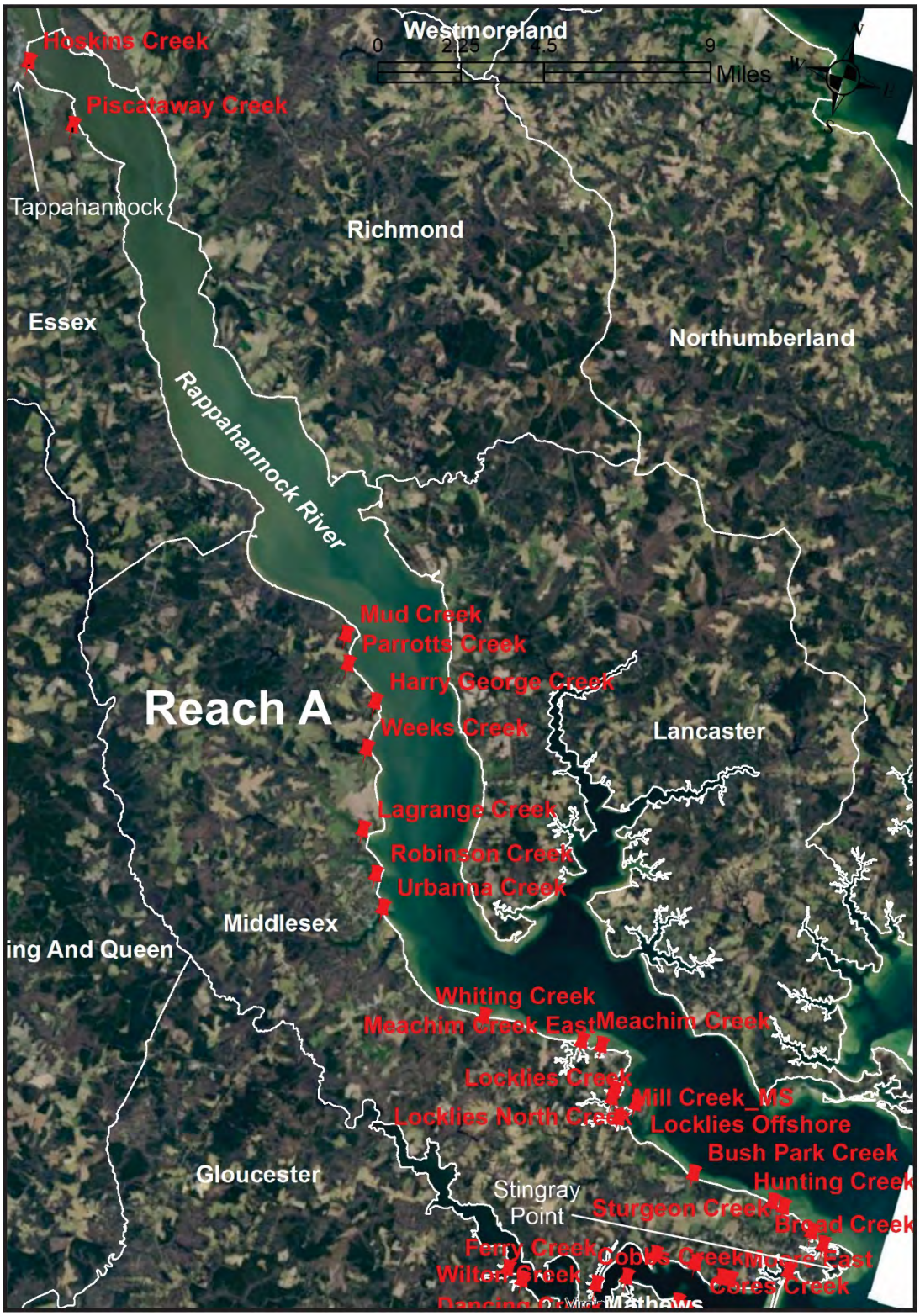


Figure 4. Tidal creeks along the Rappahannock River in Reach A.

Figure 5. Location of tidal creeks along Chesapeake Bay, Milford Haven, and Pianatank River in Reach B.

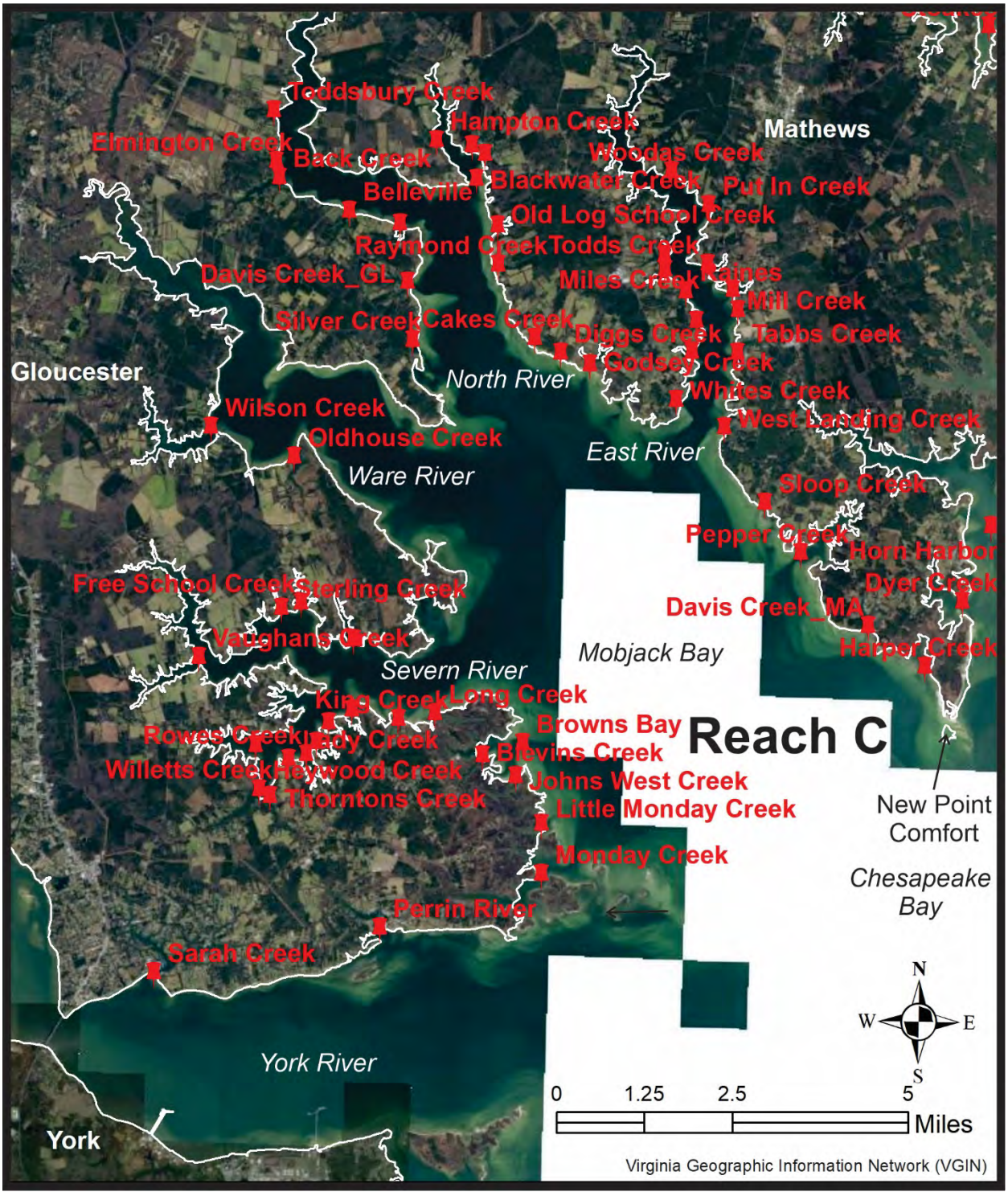


Figure 6. Tidal creeks in Mobjack Bay and associated rivers in Reach C.

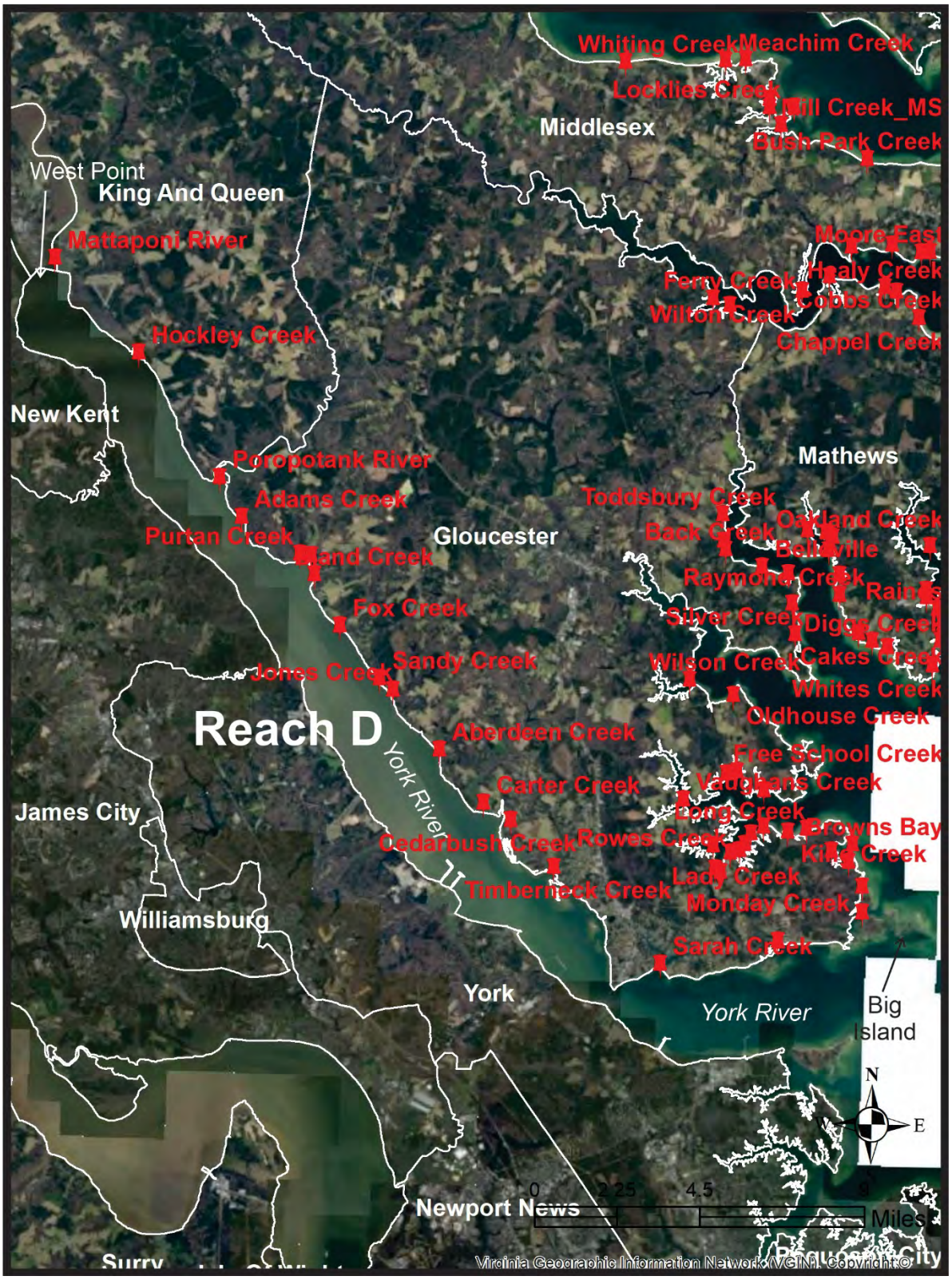


Figure 7. Location of tidal creeks along the York River in Reach D.

Table 1. List of prioritized creeks for dredging based on physical assessment.

Priority Number	Consecutive ID Num	Creek Name	Type	County	Channel Type	Water Body	Creek Mouth	Creek Shoaled	# Piers	# Marina	# Ramps	# Wharf
1	106	Sarah	Creek	Gloucester	Non-Federal ATON	York River	Restricted	>50% of channel	213	8	11	0
2	8	Robinson	Creek	Middlesex	Non-Federal ATON	Rappahannock River	Restricted	>50% of channel	111	5	5	0
3	19	Sturgeon	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted	Completely shoaled	121	2	9	0
5	10	Whiting	Creek	Middlesex	Federal	Rappahannock River	Restricted	Completely shoaled	59	0	1	0
6	17	Bush Park	Creek	Middlesex	Non-Federal	Rappahannock River	Inlet	Completely shoaled	38	5	4	0
7	9	Urbanna	Creek	Middlesex	Federal	Rappahannock River	Restricted	>50% of channel	66	4	6	0
8	52	Davis	Creek	Mathews	Federal	Mobjack Bay	Inlet	>50% of channel	13	2	5	5
9	107	Timberneck	Creek	Gloucester	Non-Federal ATON	York River	Restricted	>50% of channel	27	1	2	0
10	110	Aberdeen	Creek	Gloucester	Federal	York River	Restricted	>50% of channel	22	1	4	0
4	12	Meachim East	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted	Completely shoaled	83	2	3	0
11	11	Meachim	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted	>50% of channel	83	0	1	0
12	48	Winter	Harbor	Mathews	Federal	Chesapkeake Bay	Inlet	>50% of channel	44	1	2	0
13	4	Parrotts	Creek	Middlesex	Federal	Rappahannock River	Restricted	>50% of channel	19	0	4	0
14	87	Free School	Creek	Gloucester	Non-Federal	Severn River	Restricted	>50% of channel	19	0	4	0
15	88	Sterling	Creek	Gloucester	Non-Federal	Severn River	Restricted	>50% of channel	10	0	2	0
16	28	Ferry	Creek	Gloucester	Non-Federal	Piankatank River	Restricted	>50% of channel	17	0	1	0
17	29	Dancing	Creek	Gloucester	Non-Federal	Piankatank River	Restricted	>50% of channel	14	0	1	0
18	20	Unnamed	Cove	Middlesex	Non-Federal	Rappahannock River	Open	Completely shoaled	18	0	0	0
19	68	Godsey	Creek	Mathews	Non-Federal	North River	Restricted	>50% of channel	6	0	1	0
20	85	Oldhouse	Creek	Gloucester	Non-Federal	Ware River	Restricted	>50% of channel	6	0	1	0
21	33	Chappel	Creek	Mathews	Non-Federal	Piankatank River	Inlet	Completely shoaled	8	0	0	0
22	5	Harry George	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted	Completely shoaled	5	0	0	0
23	32	Warehouse	Cove	Mathews	Non-Federal	Piankatank River	Inlet	Completely shoaled	4	0	0	0
24	25	Cores	Creek	Middlesex	Non-Federal	Piankatank River	Inlet	>50% of channel	8	0	0	0
25	35	Winder	Creek	Mathews	Non-Federal	Piankatank River	Inlet	>50% of channel	9	0	0	0

Figure 8. Sarah Creek in Gloucester County showing aids to navigation, private oyster leases, and SAV.

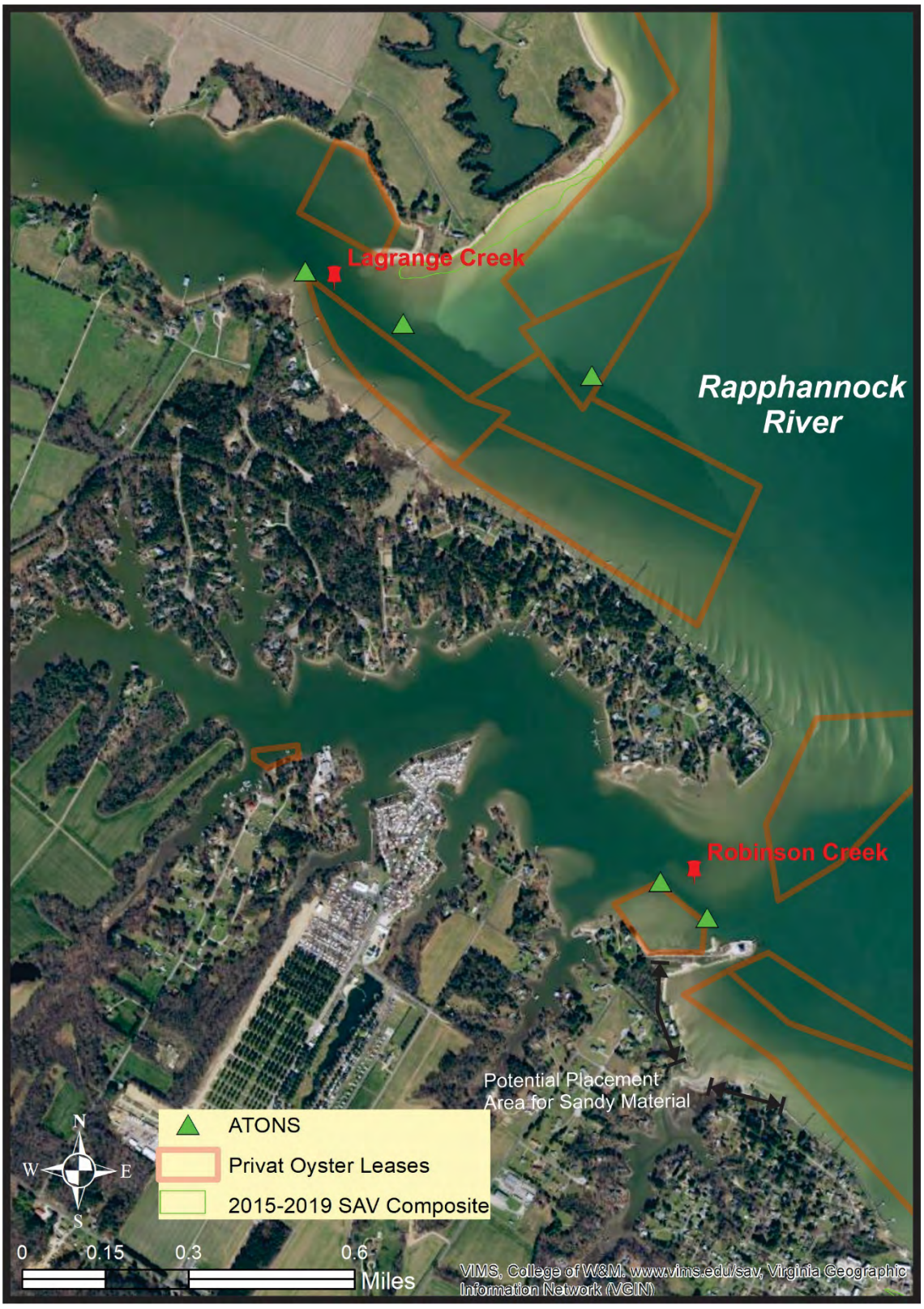


Figure 9. Robinson Creek in Middlesex County showing ATONs and private oyster leases. No SAV occurs in the area of Robinson Creek.

Figure 10. Sturgeon Creek in Middlesex County showing ATONs and private oyster leases. No SAV occurs in the area of Sturgeon Creek.

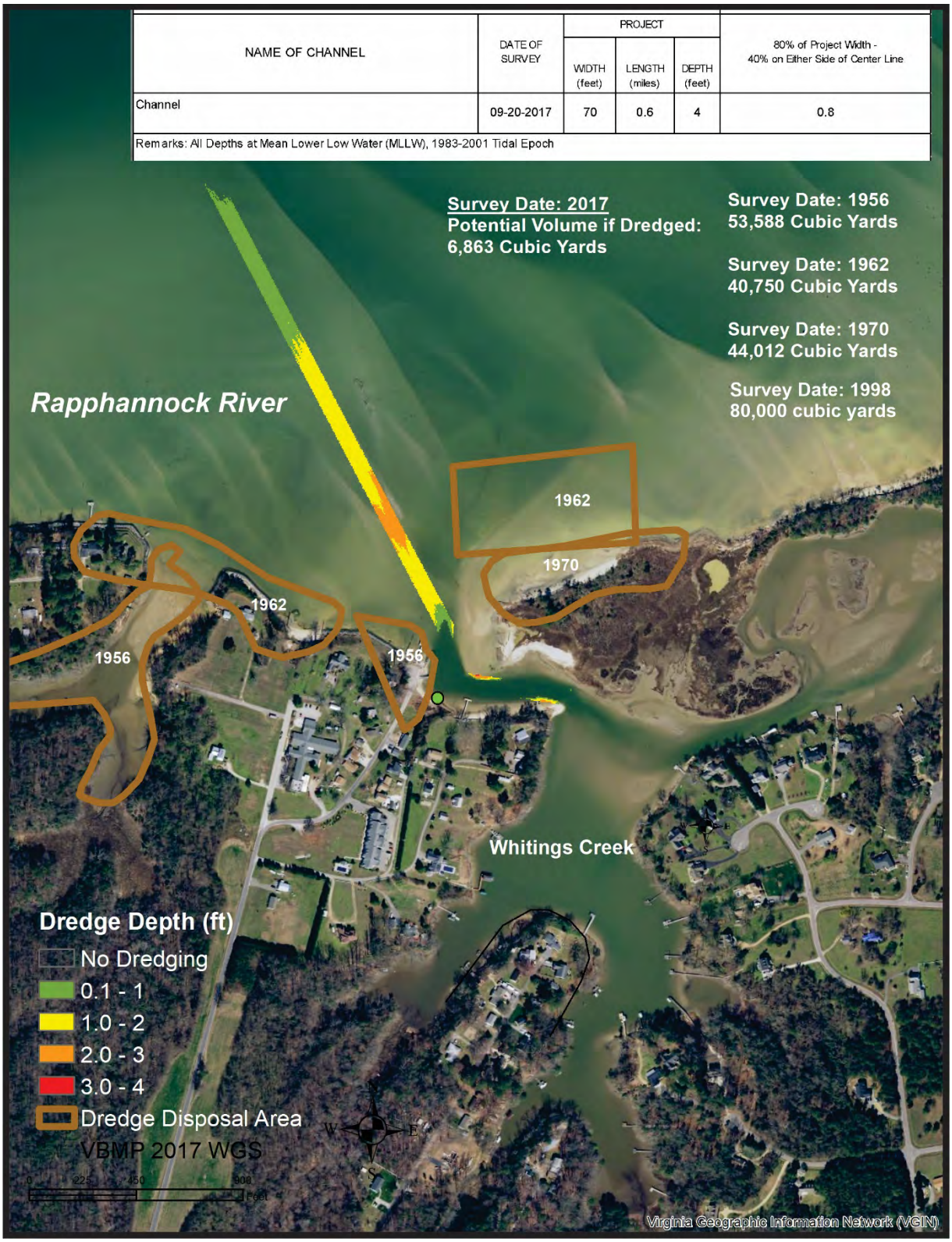


Figure 11. Whiting Creek federal channel in Middlesex County showing the amount of material that needs to be dredged from the channel as well as precious dredge cycles and disposal areas. From Hardaway et al. (2019).

Table 2. List of creeks on the Middle Peninsula that had no visible shoaling identified on the 2017 VGIN aerial image. As such, dredging is likely not needed except in special cases.

Consecutive ID Num	Creek Name	Type	County	Channel Type	Water Body	Creek Mouth	Creek Shoaled	# Piers	# Marina	# Ramps	# Wharf
41	Stutts	Creek	Mathews	Non-Federal ATON	Milford Haven	Open	No Visible Shoaling	108	1	5	0
22	Jackson	Creek	Middlesex	Federal	Piankatank River	Restricted	No Visible Shoaling	103	5	6	0
30	Cobbs	Creek	Mathews	Non-Federal ATON	Piankatank River	Open	No Visible Shoaling	58	3	1	0
75	Blackwater	Creek	Mathews	Non-Federal	North River	Open	No Visible Shoaling	51	1	4	0
27	Wilton	Creek	Middlesex	Non-Federal	Piankatank River	Open	No Visible Shoaling	50	2	1	0
60	Put In	Creek	Mathews	Non-Federal	East River	Open	No Visible Shoaling	48	0	1	0
84	Wilson	Creek	Gloucester	Non-Federal	Ware River	Semi-Restricted	No Visible Shoaling	42	0	5	0
45	Morris	Creek	Mathews	Non-Federal	Stutts Creek/Milford Haven	Open	No Visible Shoaling	37	0	2	0
2	Piscataway	Creek	Essex	Non-Federal	Rappahannock River	Open	No Visible Shoaling	36	0	4	0
39	Barn	Creek	Mathews	Non-Federal	Milford Haven	Open	No Visible Shoaling	32	0	1	0
38	Edwards	Creek	Mathews	Non-Federal	Milford Haven	Open	No Visible Shoaling	29	1	0	0
37	Lanes	Creek	Mathews	Non-Federal	Milford Haven	Open	No Visible Shoaling	26	0	1	0
42	Billups	Creek	Mathews	Non-Federal	Milford Haven	Open	No Visible Shoaling	24	1	5	0
61	Woodas	Creek	Mathews	Non-Federal	East River	Open	No Visible Shoaling	23	0	2	0
89	Vaughans	Creek	Gloucester	Non-Federal	Severn River (Northern Branch)	Open	No Visible Shoaling	21	0	1	0
26	Healy	Creek	Middlesex	Non-Federal	Piankatank River	Open	No Visible Shoaling	21	1	1	0
109	Carter	Creek	Gloucester	Non-Federal	York River	Open	No Visible Shoaling	20	0	0	0
62	Miles	Creek	Mathews	Non-Federal	East River	Open	No Visible Shoaling	19	0	1	0
82	Davis	Creek	Gloucester	Non-Federal	North River	Restricted	No Visible Shoaling	18	0	0	0
80	Belleville	Creek	Gloucester	Non-Federal	North River	Restricted	No Visible Shoaling	17	0	1	0
93	Thorntons	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open	No Visible Shoaling	16	0	2	0
53	Pepper	Creek	Mathews	Non-Federal ATON	Mobjack Bay	Restricted	No Visible Shoaling	16	0	1	0
50	Dyer	Creek	Mathews	Non-Federal	Chesapeake Bay	Open	No Visible Shoaling	14	0	4	0
59	Todds	Creek	Mathews	Non-Federal	East River	Open	No Visible Shoaling	13	0	0	0
90	Willets	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open	No Visible Shoaling	12	1	1	0
74	Greenmansion	Cove	Mathews	Non-Federal ATON	North River	Restricted	No Visible Shoaling	10	1	1	0
73	Oakland	Creek	Mathews	Non-Federal	North River	Semi-Restricted	No Visible Shoaling	8	0	1	0
117	Adams	Creek	Gloucester	Non-Federal	York River	Restricted	No Visible Shoaling	8	0	0	1
44	Stoakes	Creek	Mathews	Non-Federal	Milford Haven	Open	No Visible Shoaling	7	1	2	0
114	Bland	Creek	Gloucester	Non-Federal	York River	Restricted	No Visible Shoaling	6	0	0	0
96	Bill Browns	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open	No Visible Shoaling	5	0	0	0
77	Toddsbury	Creek	Gloucester	Non-Federal	North River	Restricted	No Visible Shoaling	4	0	1	0
113	Fox	creek	Gloucester	Non-Federal	York River	Inlet	No Visible Shoaling	3	0	1	0
6	Weeks	Creek	Middlesex	Non-Federal	Rappahannock River	Open	No Visible Shoaling	2	0	1	0
92	Heywood	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open	No Visible Shoaling	2	0	0	0
100	Browns	Bay	Gloucester	Non-Federal ATON	Mobjack Bay	Open	No Visible Shoaling	1	0	1	0
99	Long	Creek	Gloucester	Non-Federal	Severn River	Restricted	No Visible Shoaling	0	0	0	0
116	Purtan	Creek	Gloucester	Non-Federal	York River	Open	No Visible Shoaling	0	0	0	0
119	Hockley	Creek	King and Queen	Non-Federal	York River	Open	No Visible Shoaling	0	0	0	0
76	Hampton	Creek	Mathews	Non-Federal	North River	Open	No Visible Shoaling	0	0	0	0
120	Mattaponi Entrance*	River	King and Queen	Non-Federal	Mattaponi River	Open	No Visible Shoaling	15	0	1	0

*Mattaponi River is included, but only the shoreline at the mouth of the river was considered.

Table 3. A list of chemicals and metals tested in samples taken from Middle Peninsula creeks as well as their possible source.

Analysis:	Source:
MTBEX*	fuel component for gasoline engines
TCLP Silver	Industrial use
TCLP Mercury	Industrial use
TCLP Arsenic	Industrial use
TCLP Lead	Industrial use
TCLP Barium	Industrial use
TCLP Selenium	Industrial use
TCLP Cadmium	Industrial use
TCLP Chromium	Industrial use
PCB**	Commercial electrical equipment
TCLP Predetermination SVOC***	Occurs naturally/Industrial use
TCLP Pest	Industrial use
TCLP Herb	Industrial use
Semi-Volatile Hydrocarbons as TPH Diesel Range Organics****	Compounds in diesel fuel
Organochlorine Pesticides and PCB's as Aroclor	Pesticides in agriculture
TCLP Organochlorine Herbicides	Pesticides in agriculture/plant removal
TCLP Organochlorine Pesticides and PCB's	Pesticides in agriculture

Note: TCLP stands for "Toxicity Characteristic Leaching Procedure"
*MTBEX refers to methyl tert-butyl ether (MtBE) which is the analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX)
**PCB refers to polychlorinated biphenyls, a harmful and highly toxic industrial compound
***SVOC refers to Semi Volatile Organic Compounds
****TPH refers to Total Petroleum Hydrocarbons

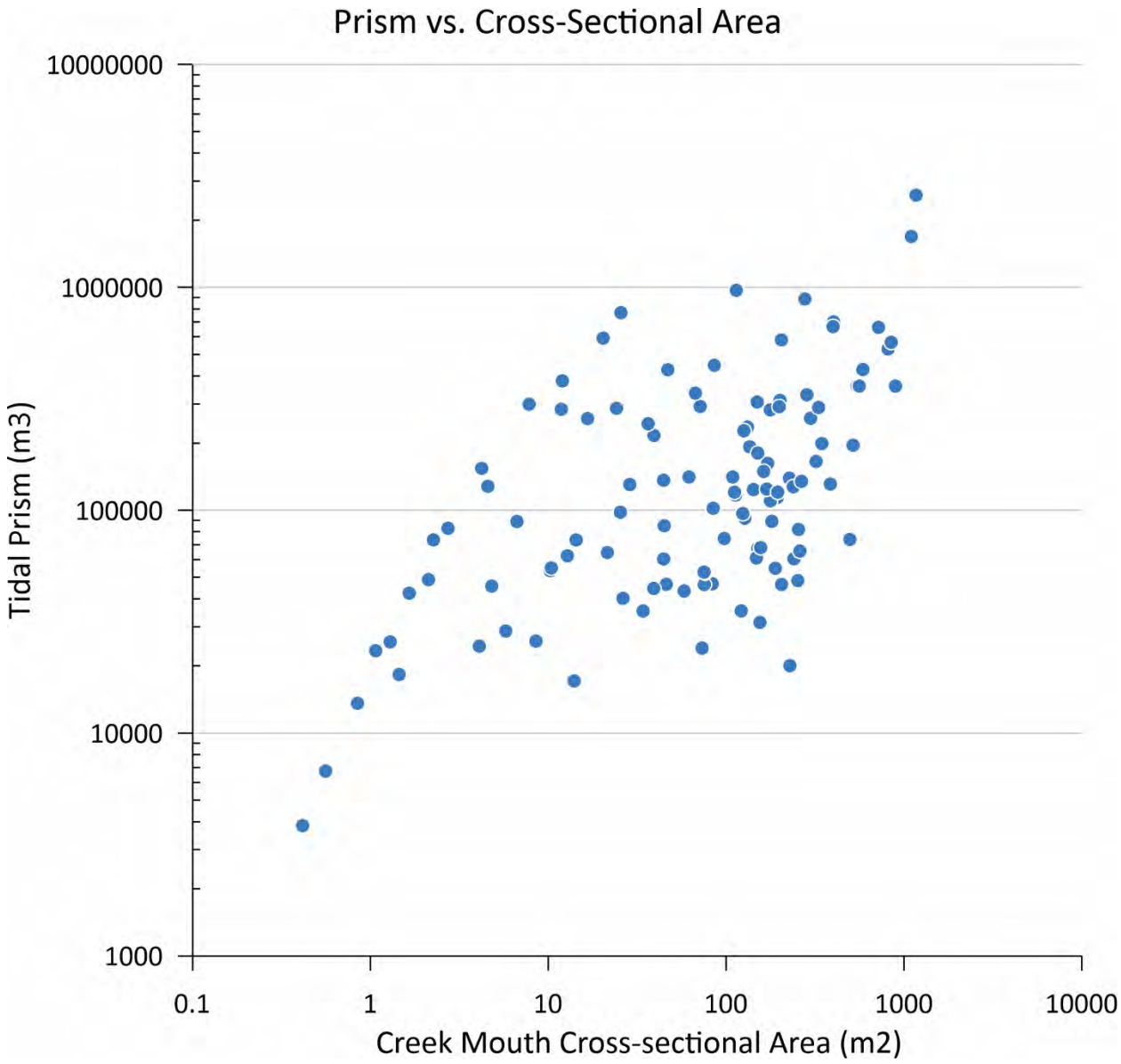


Figure 12. Plot of tidal prism versus creek mouth cross-sectional area for 120 creeks on the Middle Peninsula. No relationship is obvious due to variability in creek types.

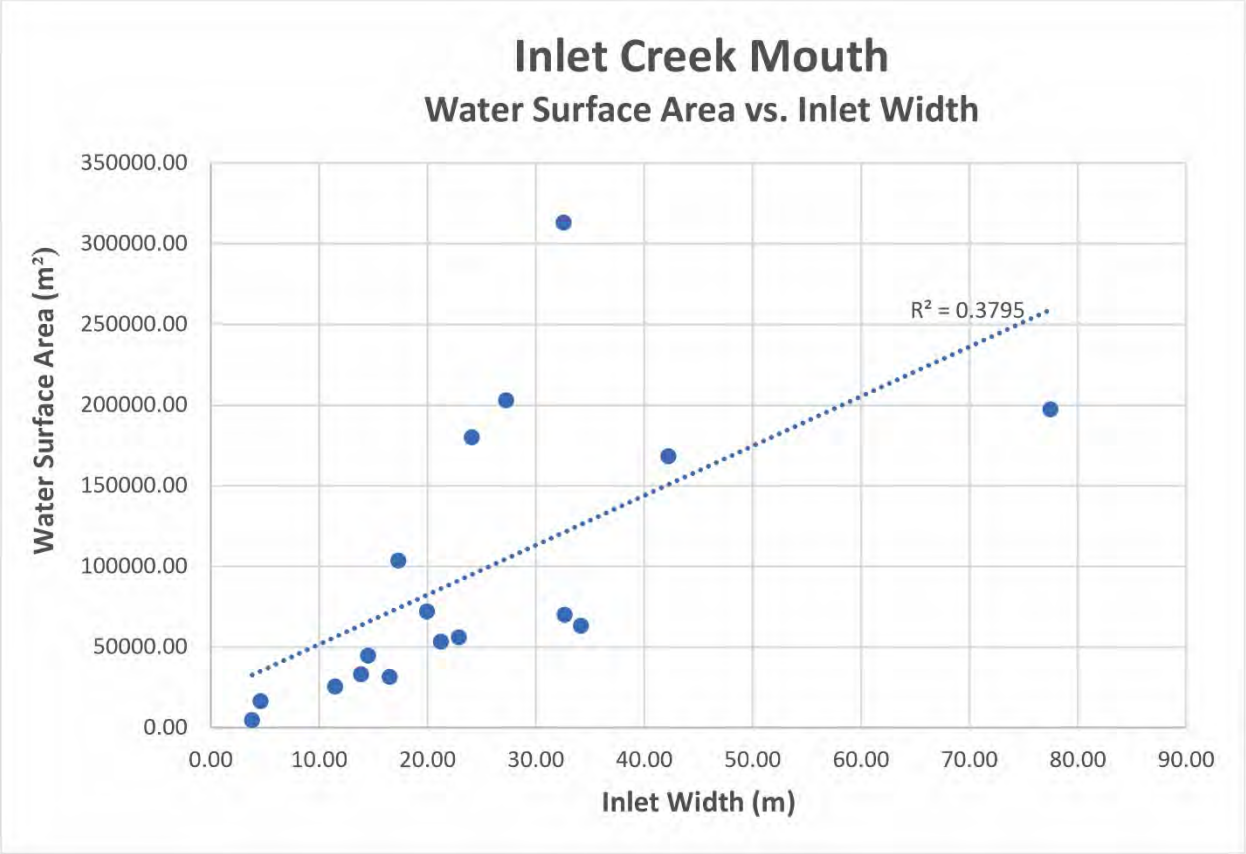


Figure 13. Plot of water surface area versus inlet width for inlet creek mouth categorized creeks on the Middle Peninsula. A slight relationship exists and could be potentially improved if outliers could be disqualified from the analysis.

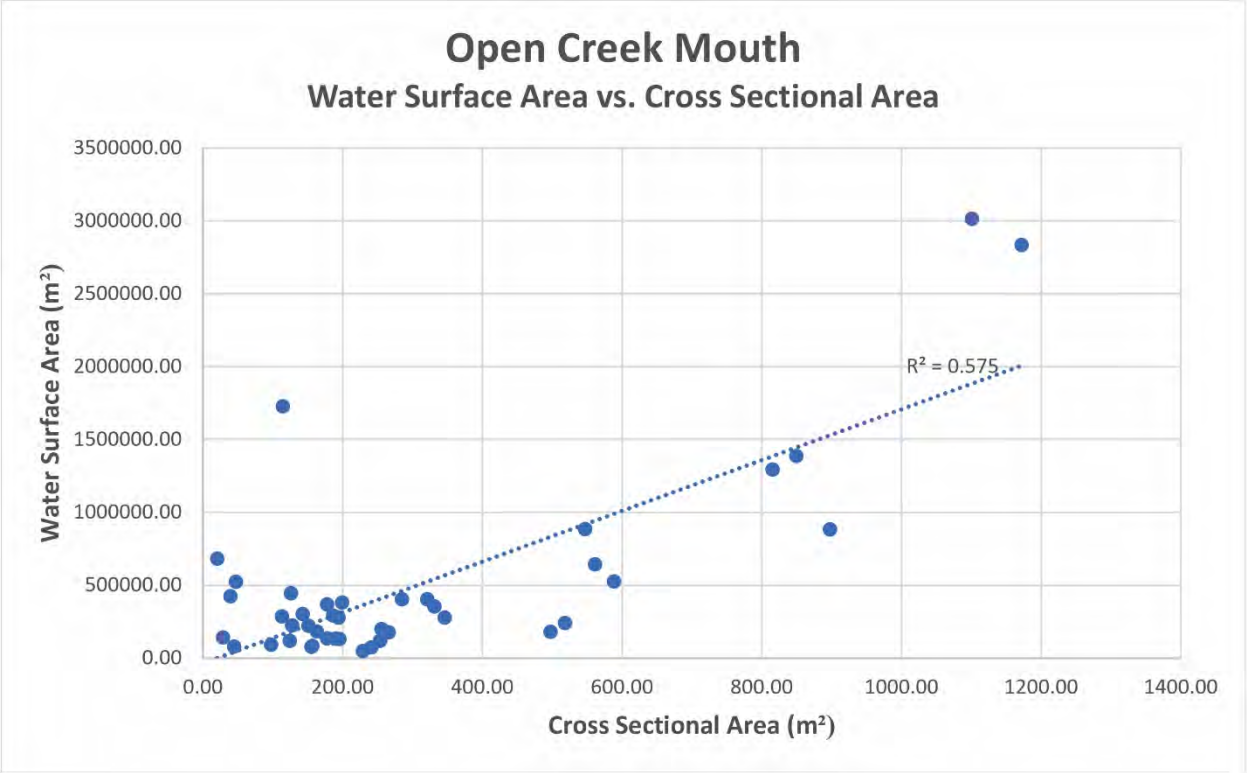


Figure 14. Plot water surface area versus creek mouth cross-sectional area for open creek mouth categorized creeks on the Middle Peninsula. A slight relationship exists and could be potentially improved if outliers could be disqualified from the analysis.

Appendix A

Individual Creek Data and Maps

Data Sheet for **Hoskins Creek**

Creek ID Number: 1	**Locality:** Essex
Water Body: Rappahannock River	**Channel Type:** Federal
Latitude: 37.9223	**Longitude:** -76.8534
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 18	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.8	**Creek Area (acres):** 132
Average Depth of Creek Mouth (ft): -0.4	**Maximum Depth of Creek Mouth (ft):** -0.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

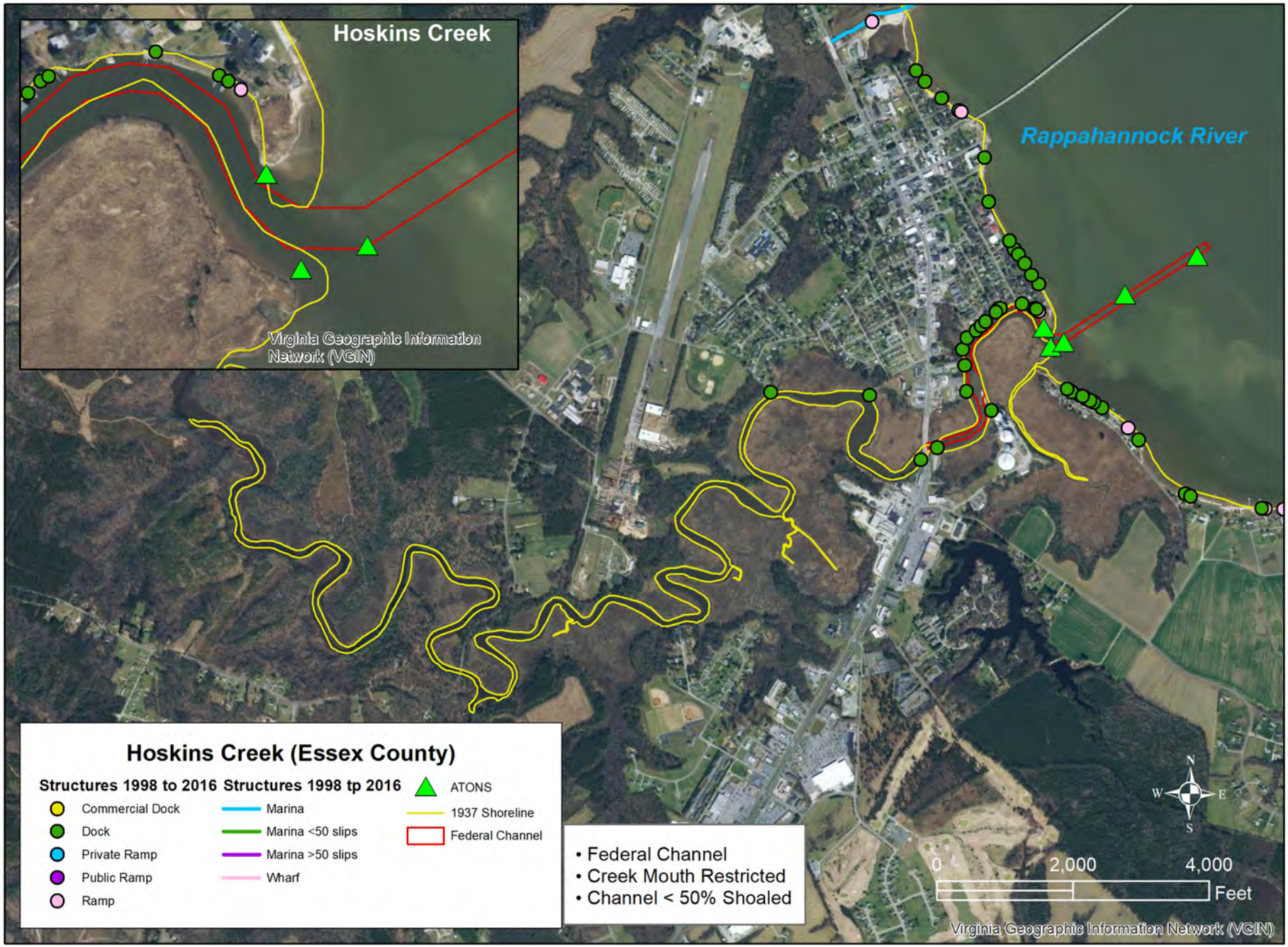
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hoskins Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Hoskins Creek (Essex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
N
W
E
S
0
2,000
4,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Piscataway Creek**

Creek ID Number: 2	**Locality:** Essex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.9028	**Longitude:** -76.8236
Number of Marinas: 0	
Number of Boat Ramps: 4	
Number of Piers: 36	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.8	**Creek Area (acres):** 427
Average Depth of Creek Mouth (ft): -2.2	**Maximum Depth of Creek Mouth (ft):** -2.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

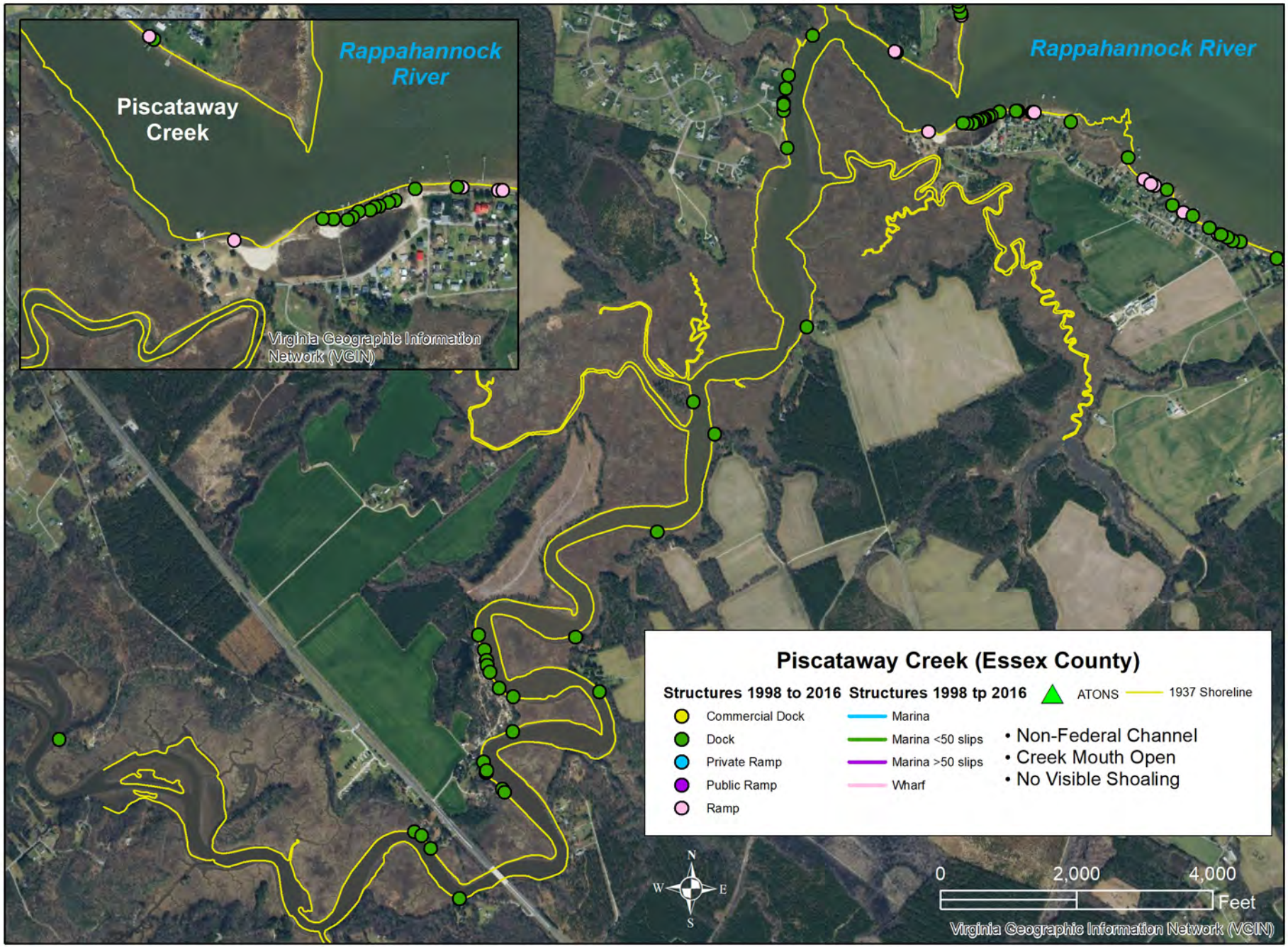
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Piscataway Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Piscataway Creek (Essex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
N
W
E
S
0
2,000
4,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Mud Creek**

Creek ID Number: 3	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.7400	**Longitude:** -76.6233
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 1	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.7	**Creek Area (acres):** 105
Average Depth of Creek Mouth (ft): -1.3	**Maximum Depth of Creek Mouth (ft):** -1.8

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

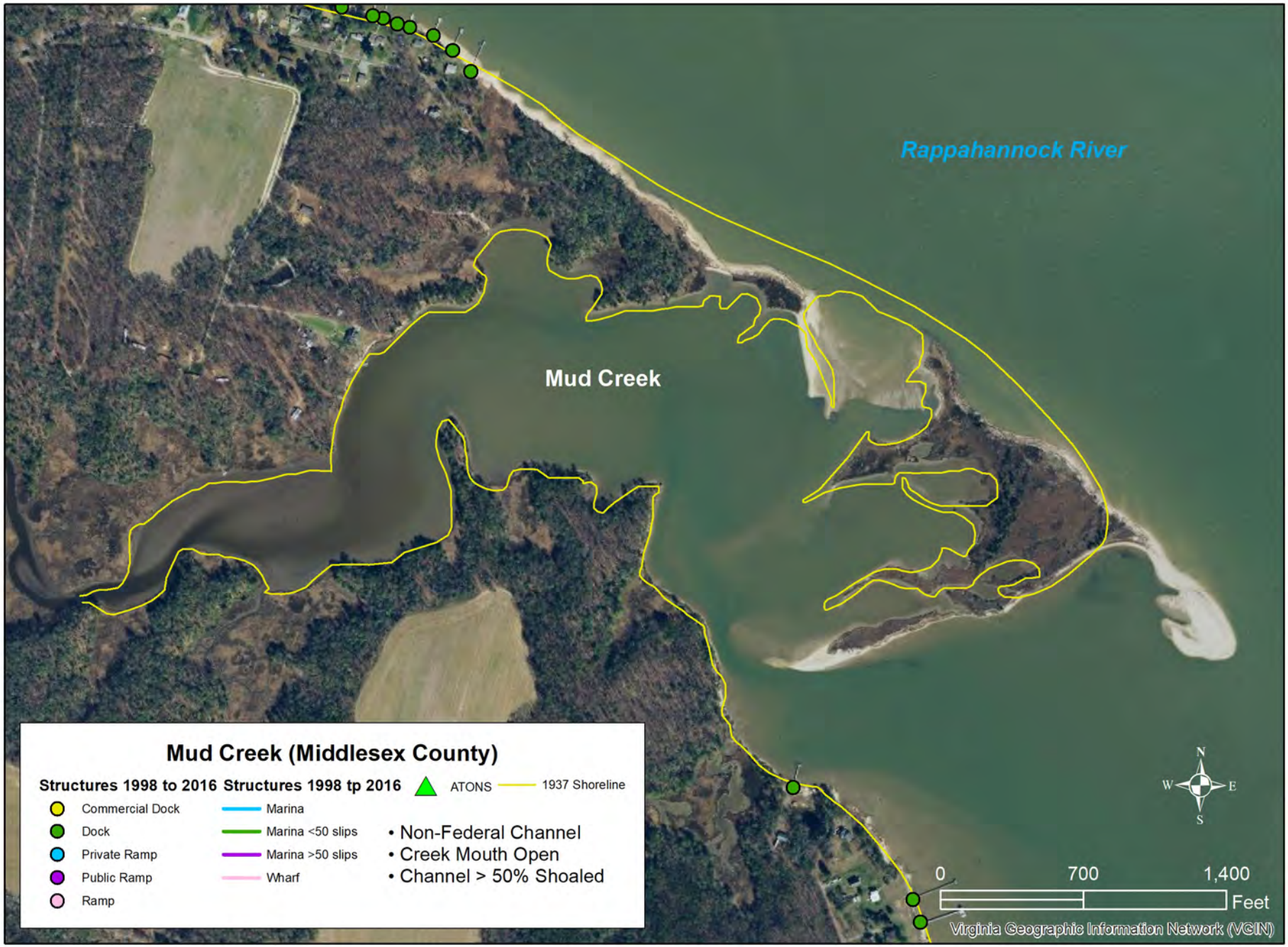
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Mud Creek
Mud Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• Channel > 50% Shoaled
N
W
E
S
0
700
1,400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Parrotts Creek**

Creek ID Number: 4	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Federal
Latitude: 37.7290	**Longitude:** -76.6183
Number of Marinas: 0	
Number of Boat Ramps: 4	
Number of Piers: 19	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.7	**Creek Area (acres):** 115
Average Depth of Creek Mouth (ft): -2.7	**Maximum Depth of Creek Mouth (ft):** -4.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

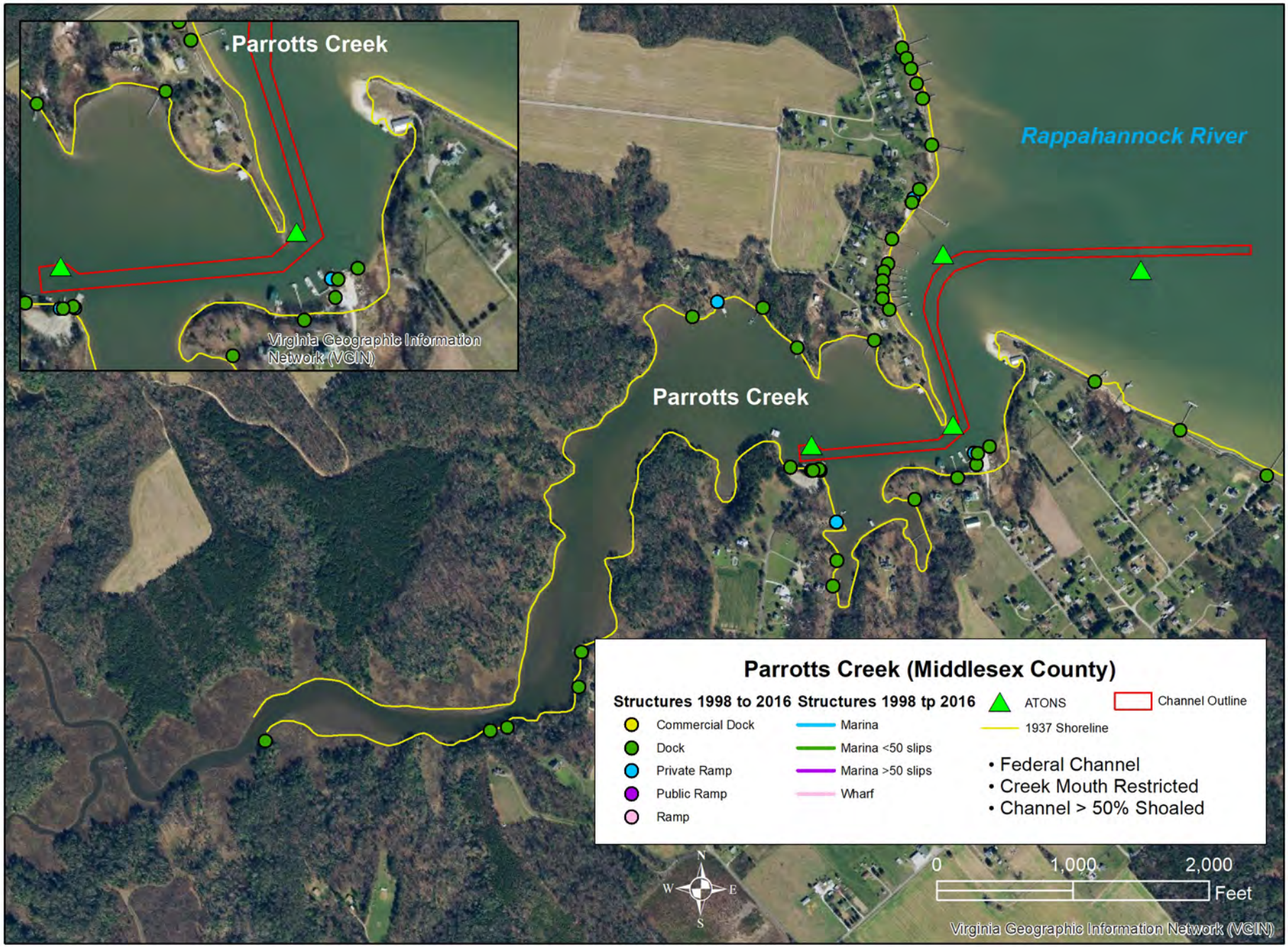
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Parrotts Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Parrotts Creek
Parrotts Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Channel Outline
• Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
W
E
S
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Harry George Creek**

Creek ID Number: 5	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.7177	**Longitude:** -76.6003
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 5	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.7	**Creek Area (acres):** 48
Average Depth of Creek Mouth (ft): -1.0	**Maximum Depth of Creek Mouth (ft):** -1.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

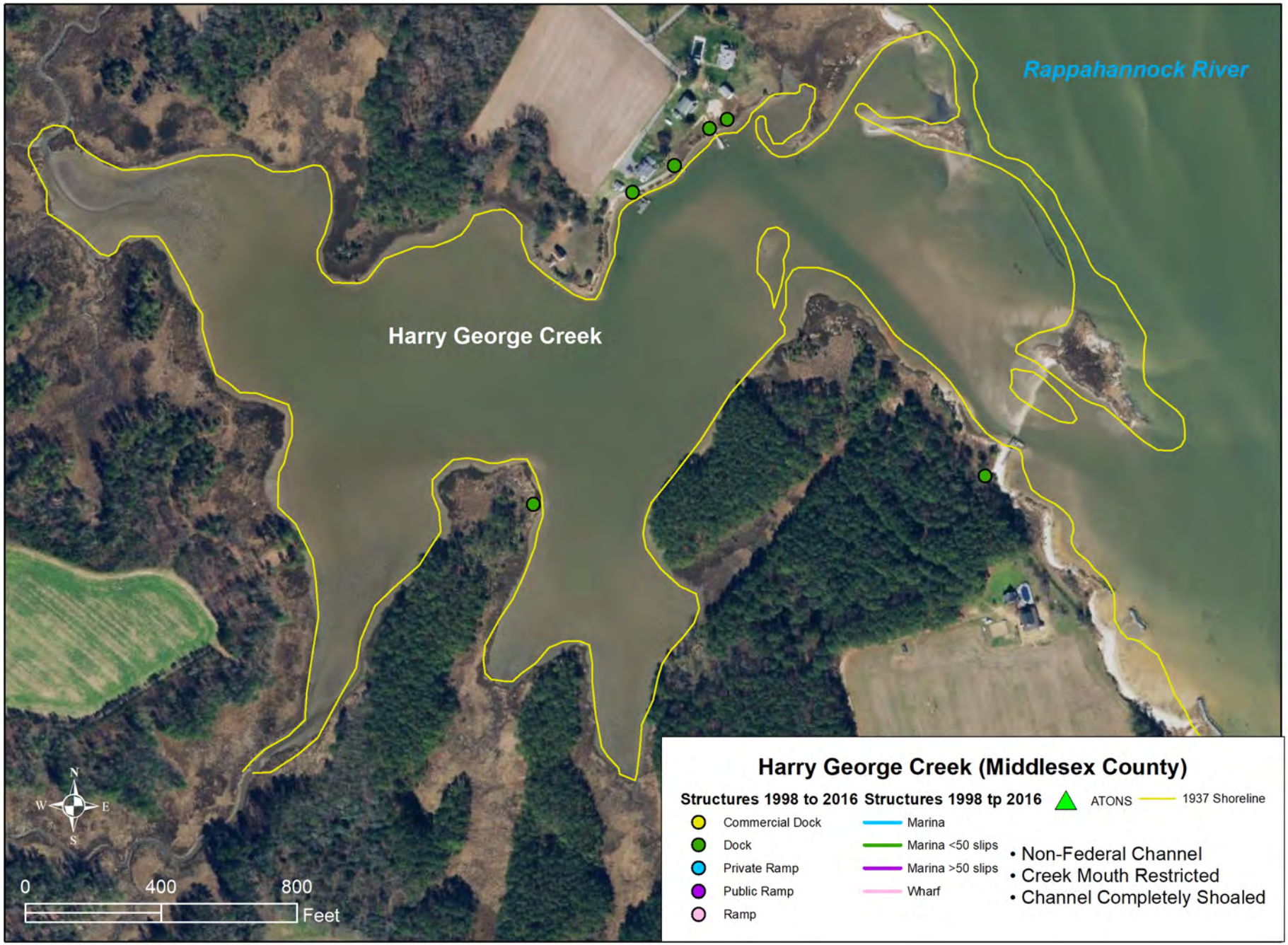
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Harry George Creek
N
W
E
S
0
400
800
Feet
Harry George Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Restricted
• Channel Completely Shoaled

Data Sheet for **Weeks Creek**

Creek ID Number: 6	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.6991	**Longitude:** -76.5982
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 2	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.7	**Creek Area (acres):** 110
Average Depth of Creek Mouth (ft): -2.6	**Maximum Depth of Creek Mouth (ft):** -3.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

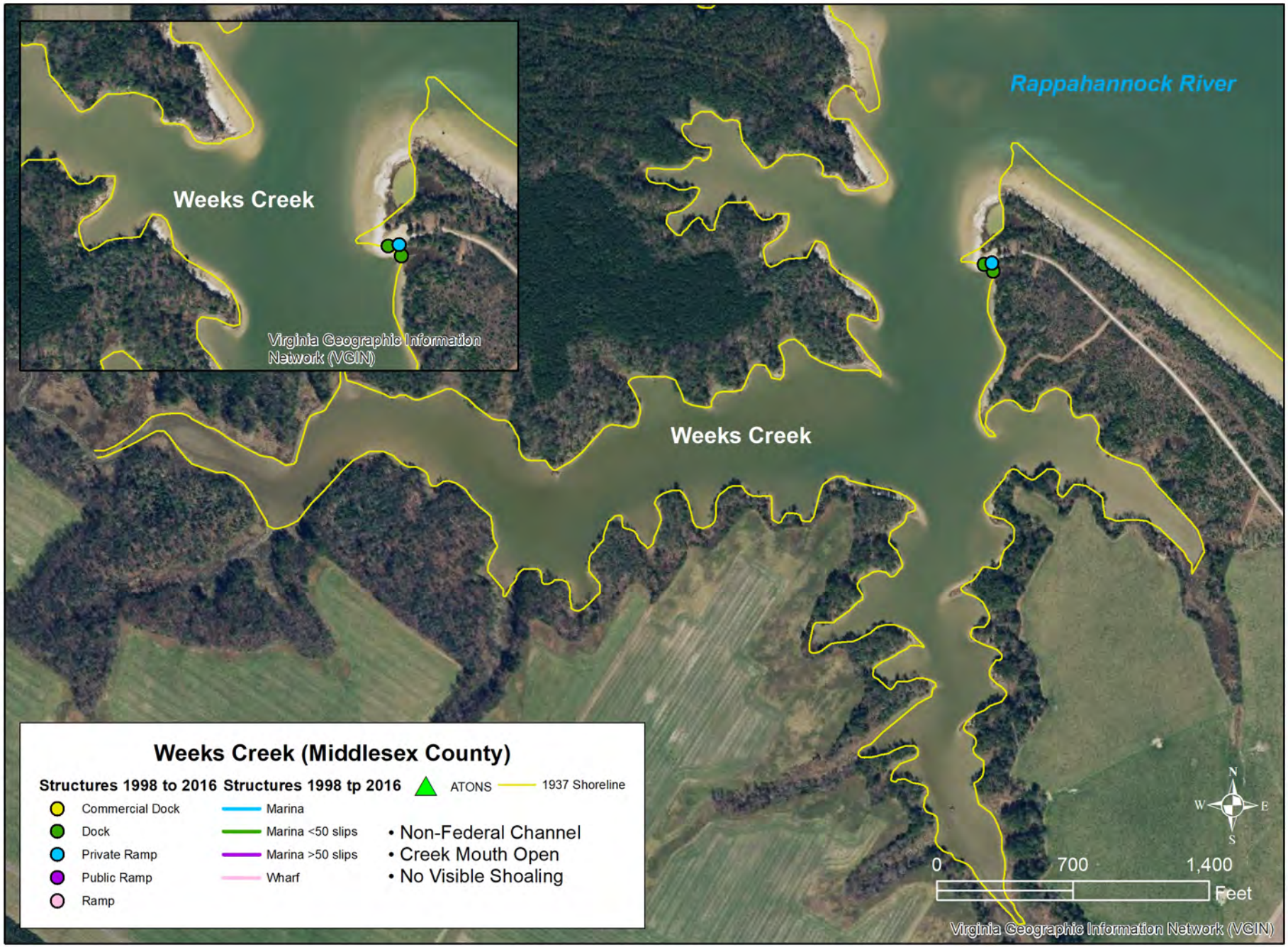
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Weeks Creek
Weeks Creek
Virginia Geographic Information Network (VGIN)
Weeks Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
N
W
E
S
0
700
1,400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Lagrange Creek

Creek ID Number: 7	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal ATON
Latitude: 37.6679	**Longitude:** -76.5887
Number of Marinas: 1	
Number of Boat Ramps: 6	
Number of Piers: 49	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.5	**Creek Area (acres):** 416
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

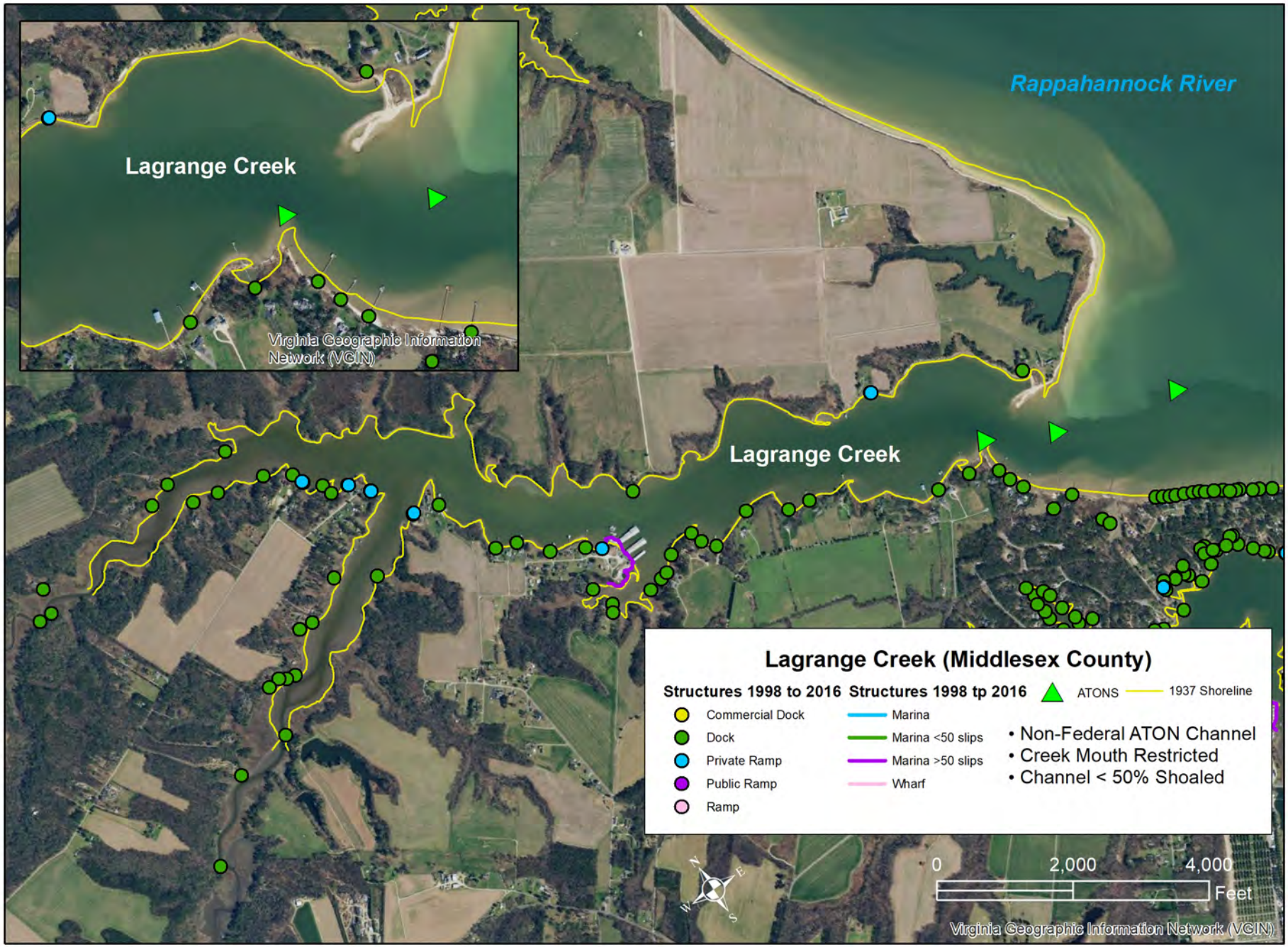
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Lagrange Creek
Lagrange Creek
Virginia Geographic Information Network (VGIN)
Lagrange Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal ATON Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
N
E
W
S
0
2,000
4,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Robinson Creek

Creek ID Number: 8	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal ATON
Latitude: 37.6525	**Longitude:** -76.5765
Number of Marinas: 5	
Number of Boat Ramps: 5	
Number of Piers: 111	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.5	**Creek Area (acres):** 241
Average Depth of Creek Mouth (ft): -0.5	**Maximum Depth of Creek Mouth (ft):** -1.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

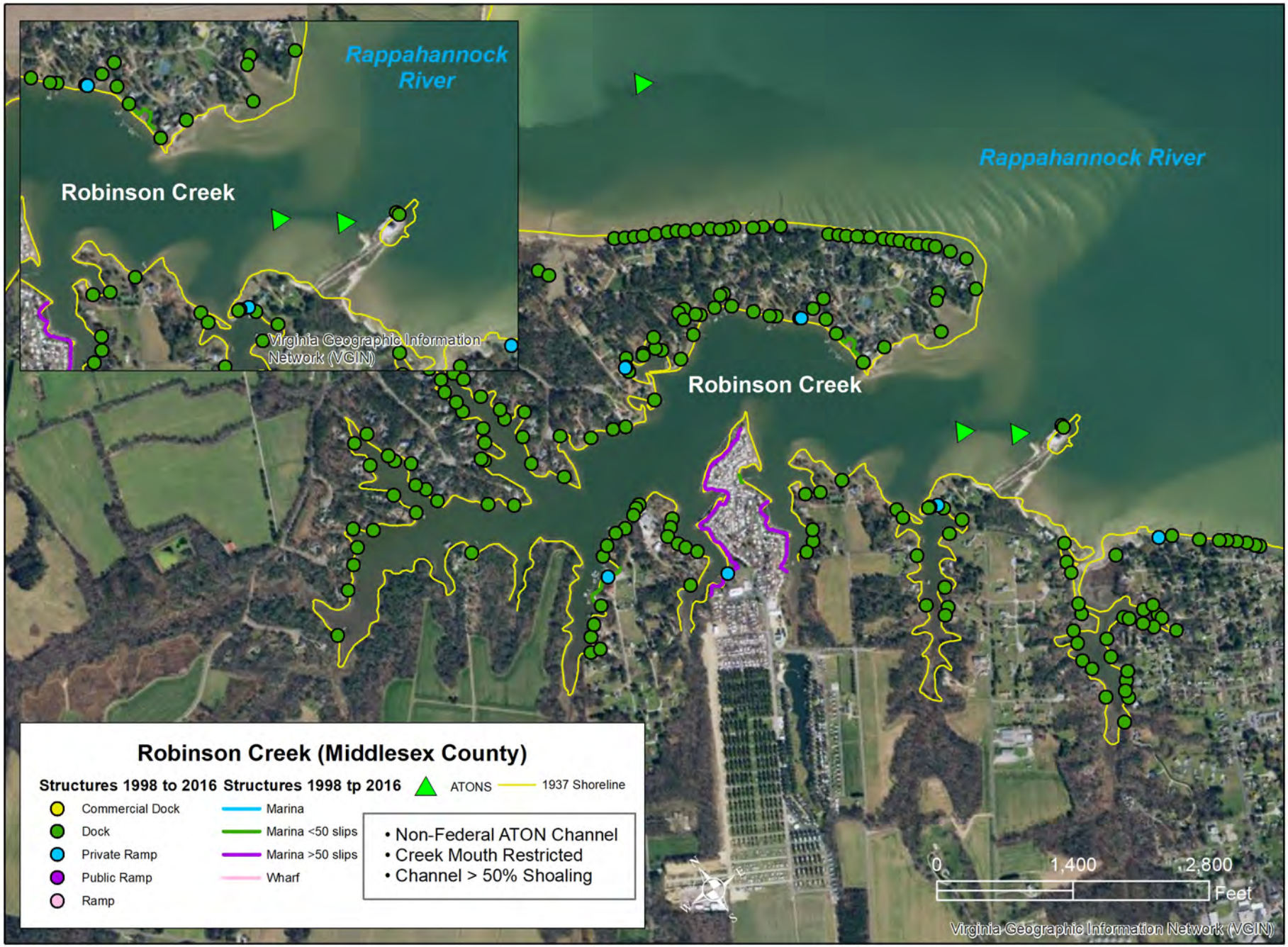
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Robinson Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Robinson Creek
Robinson Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal ATON Channel
• Creek Mouth Restricted
• Channel > 50% Shoaling
0
1,400
2,800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Urbanna Creek

Creek ID Number: 9	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Federal
Latitude: 37.6405	**Longitude:** -76.5686
Number of Marinas: 4	
Number of Boat Ramps: 6	
Number of Piers: 66	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.5	**Creek Area (acres):** 314
Average Depth of Creek Mouth (ft): -3.7	**Maximum Depth of Creek Mouth (ft):** -10.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

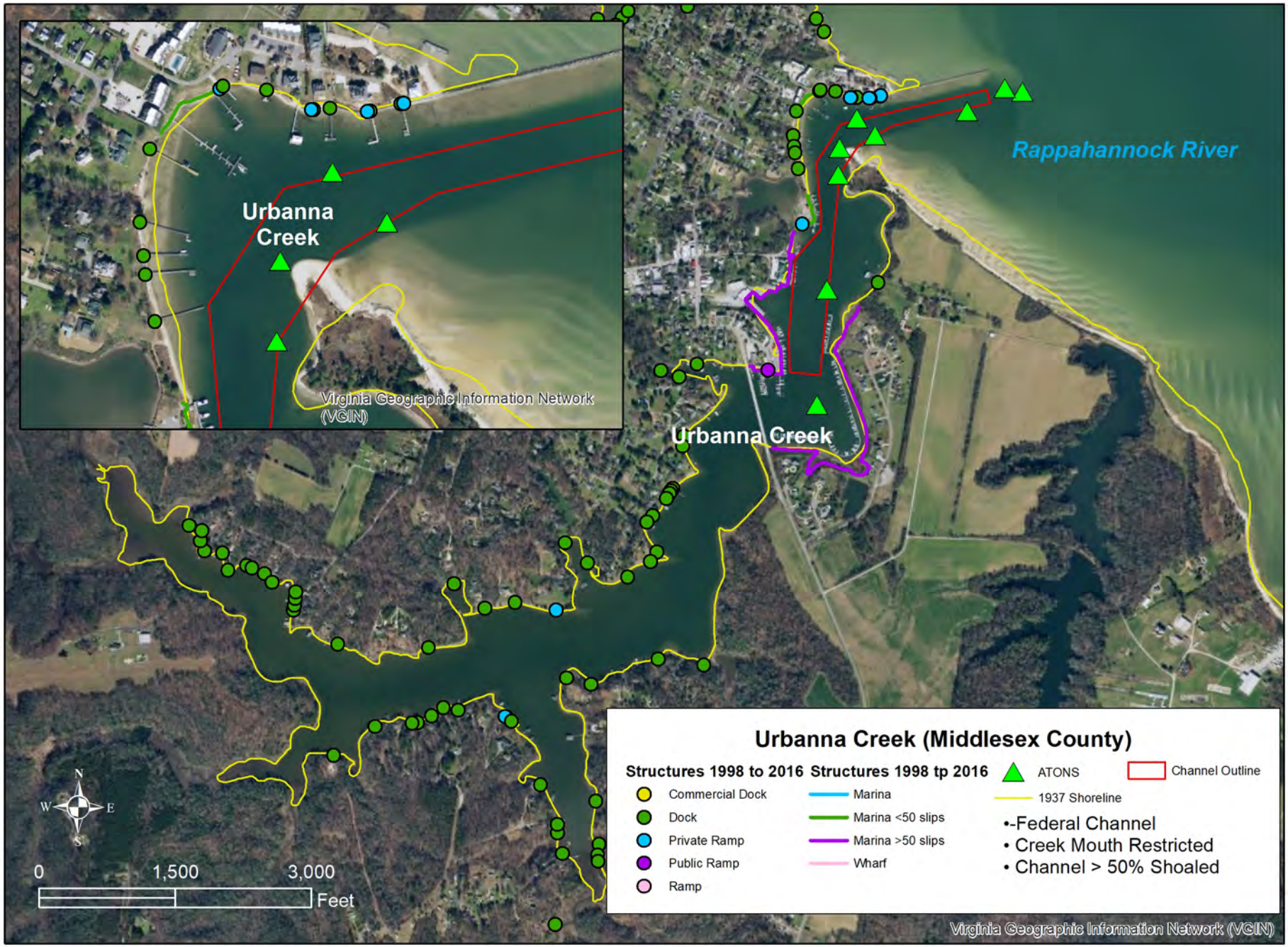
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Urbanna Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Urbanna Creek
Urbanna Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Channel Outline
•-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
W
E
S
0
1,500
3,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Whiting Creek

Creek ID Number: 10	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Federal
Latitude: 37.6103	**Longitude:** -76.5058
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 59	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.5	**Creek Area (acres):** 132
Average Depth of Creek Mouth (ft): -1.3	**Maximum Depth of Creek Mouth (ft):** -2.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

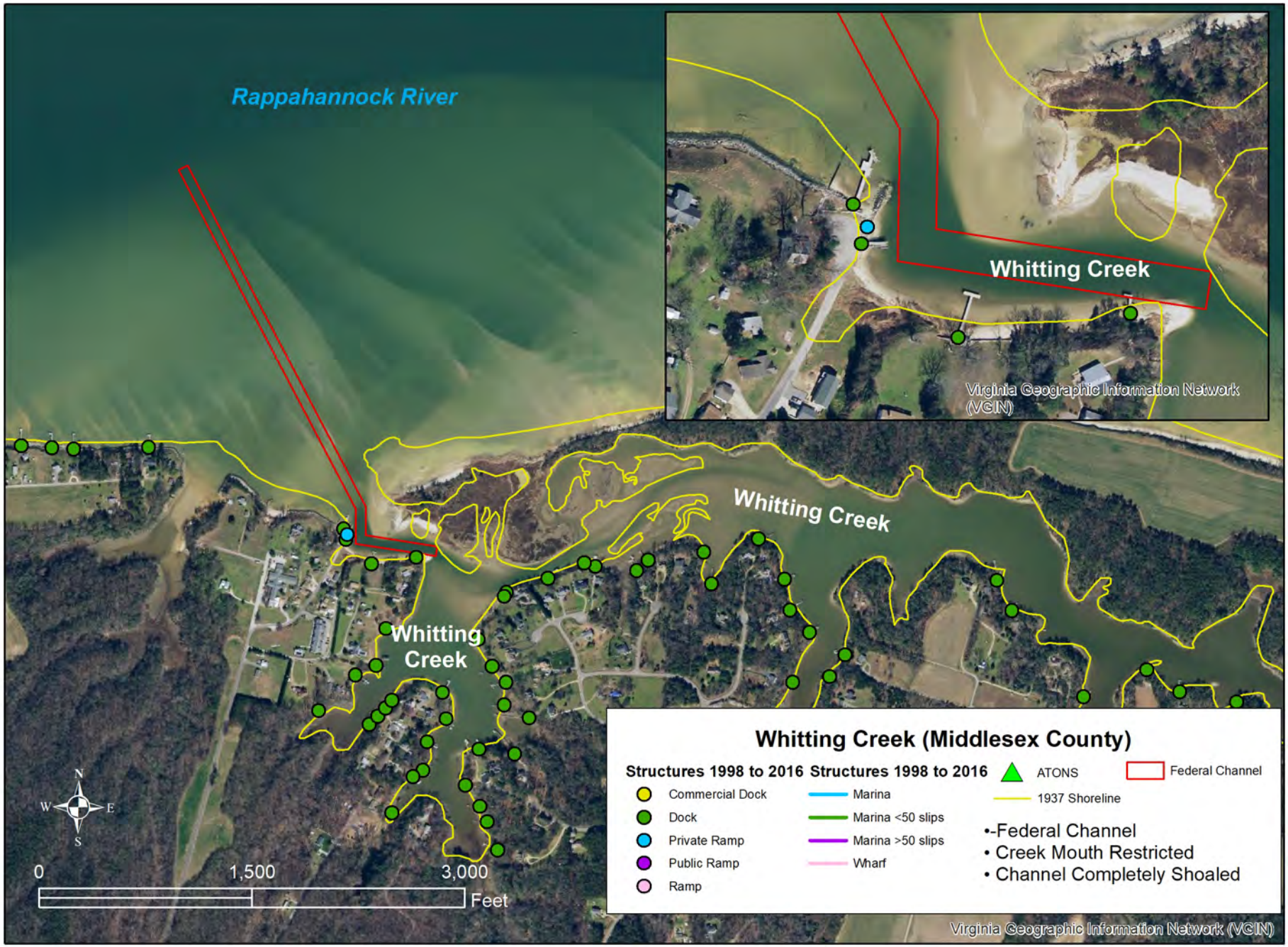
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Whitting Creek
Virginia Geographic Information Network (VGIN)
Whitting Creek
Whitting Creek
N
W
E
S
0
1,500
3,000
Feet
Whitting Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
•-Federal Channel
• Creek Mouth Restricted
• Channel Completely Shoaled
Virginia Geographic Information Network (VGIN)

Data Sheet for **Meachim Creek**

Creek ID Number: 11	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.6115	**Longitude:** -76.4559
Number of Marinas: 0	
Number of Boat Ramps: **2**	
Number of Piers: 83	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.5	**Creek Area (acres):** 158
Average Depth of Creek Mouth (ft): -2.2	**Maximum Depth of Creek Mouth (ft):** -5.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

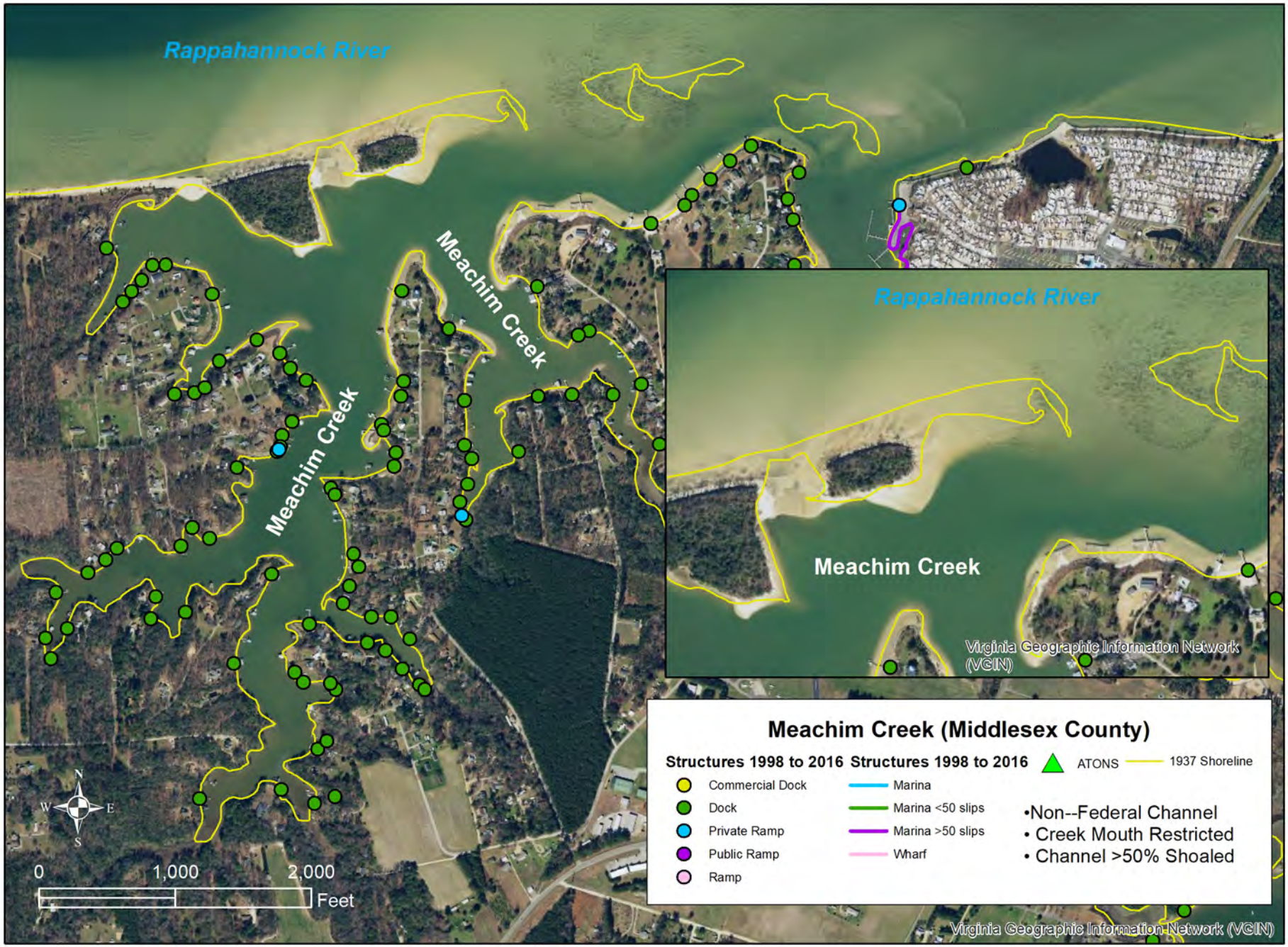
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Meachim Creek
Meachim Creek
Rappahannock River
Meachim Creek
Virginia Geographic Information Network (VGIN)
N
W
E
S
0
1,000
2,000
Feet
Meachim Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
•Non--Federal Channel
• Creek Mouth Restricted
• Channel >50% Shoaled
Virginia Geographic Information Network (VGIN)

Data Sheet for Meachim Creek East

Creek ID Number: 12	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.6120	**Longitude:** -76.4459
Number of Marinas: 2	
Number of Boat Ramps: 1	
Number of Piers: 9	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.5	**Creek Area (acres):** 25
Average Depth of Creek Mouth (ft): -3.1	**Maximum Depth of Creek Mouth (ft):** -4.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

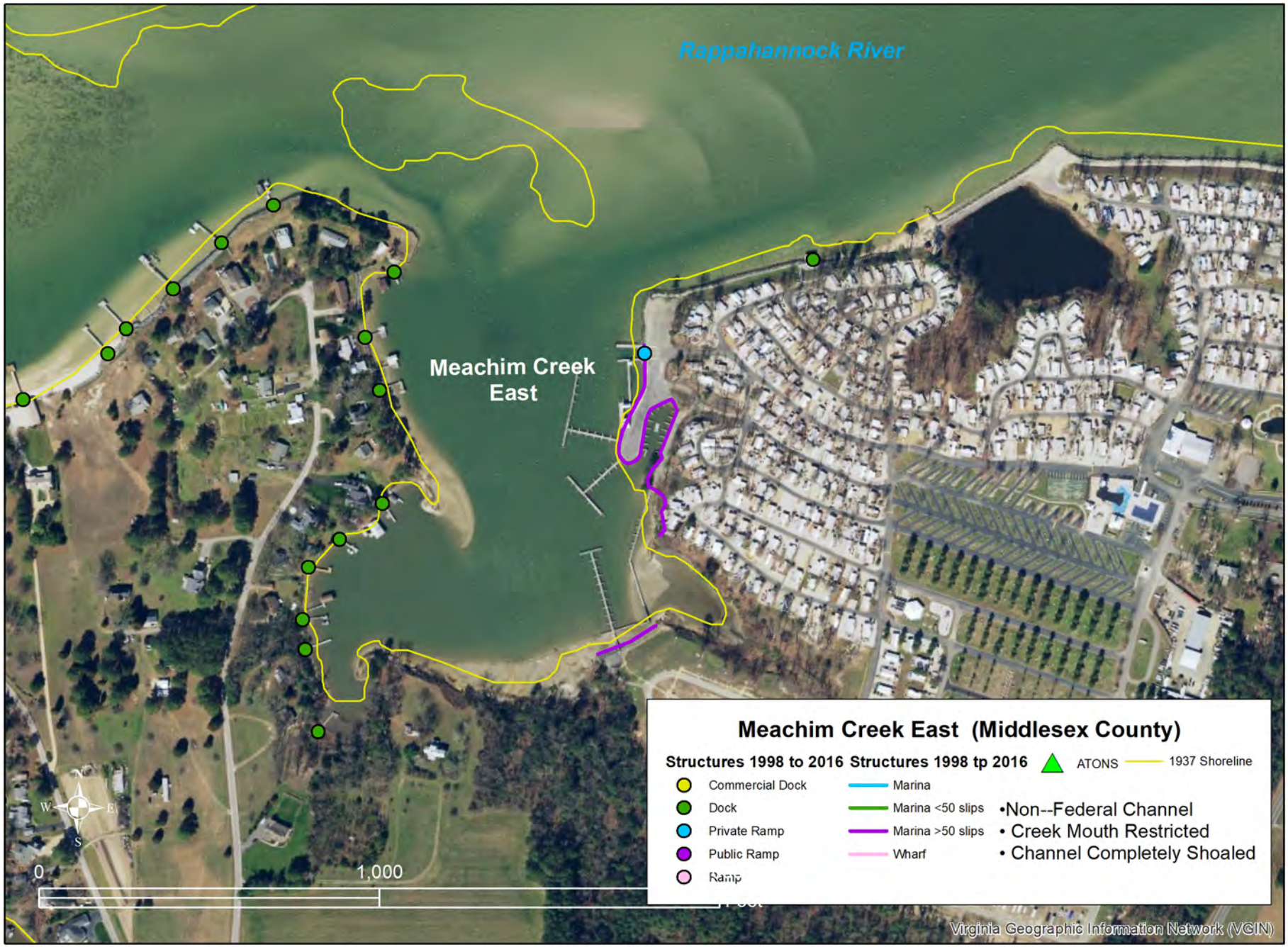
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Meachim Creek East
Meachim Creek East (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
•Non--Federal Channel
• Creek Mouth Restricted
• Channel Completely Shoaled
N
W
E
S
0
1,000
Virginia Geographic Information Network (VGIN)

Data Sheet for Locklies North Creek

Creek ID Number: 13	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5965	**Longitude:** -76.4338
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 11	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 29
Average Depth of Creek Mouth (ft): -3.9	**Maximum Depth of Creek Mouth (ft):** -5.8

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

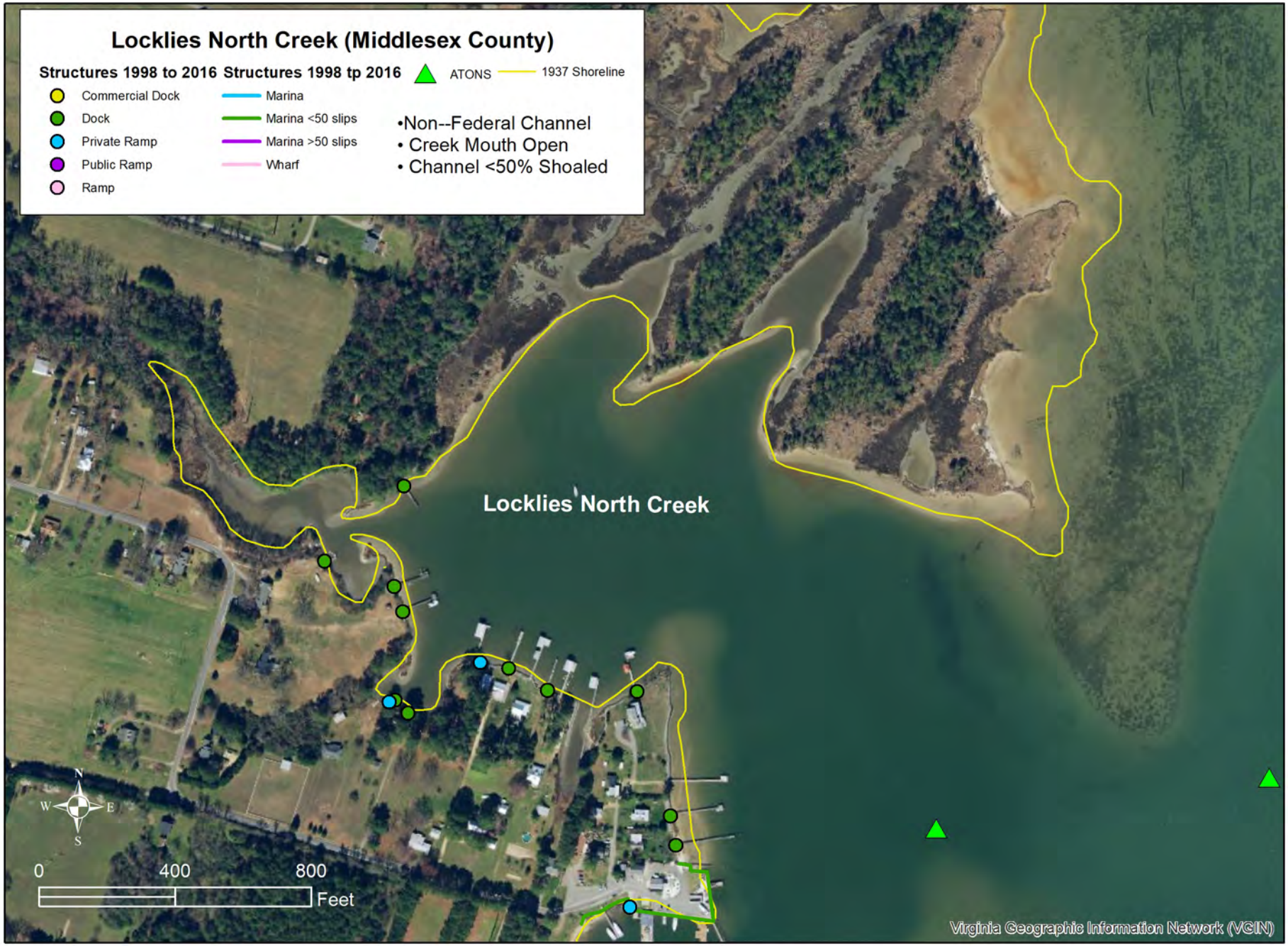
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Locklies North Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
•Non--Federal Channel
• Creek Mouth Open
• Channel <50% Shoaled
Locklies North Creek
N
W
E
S
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Locklies Creek

Creek ID Number: 14	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5933	**Longitude:** -76.4337
Number of Marinas: 3	
Number of Boat Ramps: 5	
Number of Piers: 32	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 71
Average Depth of Creek Mouth (ft): -2.7	**Maximum Depth of Creek Mouth (ft):** -4.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

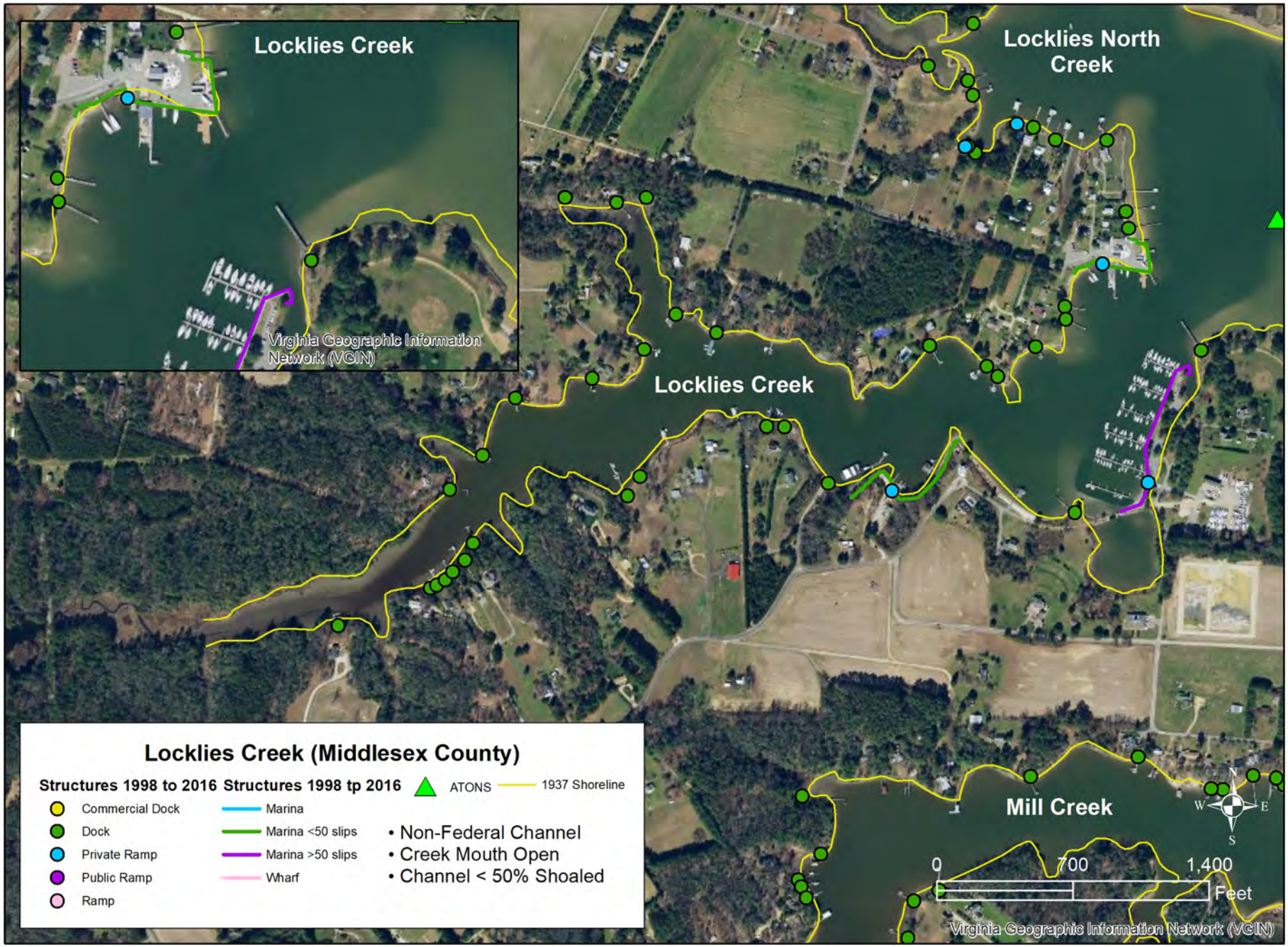
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Locklies Creek
Virginia Geographic Information Network (VGIN)
Locklies North Creek
Locklies Creek
Mill Creek
Locklies Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
N
W
E
S
0
700
1,400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Locklies Offshore

Creek ID Number: 15	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Federal
Latitude: 37.5936	**Longitude:** -76.4216
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: N/A	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 8
Average Depth of Creek Mouth (ft): N/A	**Maximum Depth of Creek Mouth (ft):** N/A

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Parrott Island
Locklies Offshore
Locklies Offshore (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth N/A
• Channel < 50% Shoaled
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Mill Creek_MS

Creek ID Number: 16	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5863	**Longitude:** -76.4280
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 37	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 75
Average Depth of Creek Mouth (ft): -2.7	**Maximum Depth of Creek Mouth (ft):** -4.8

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

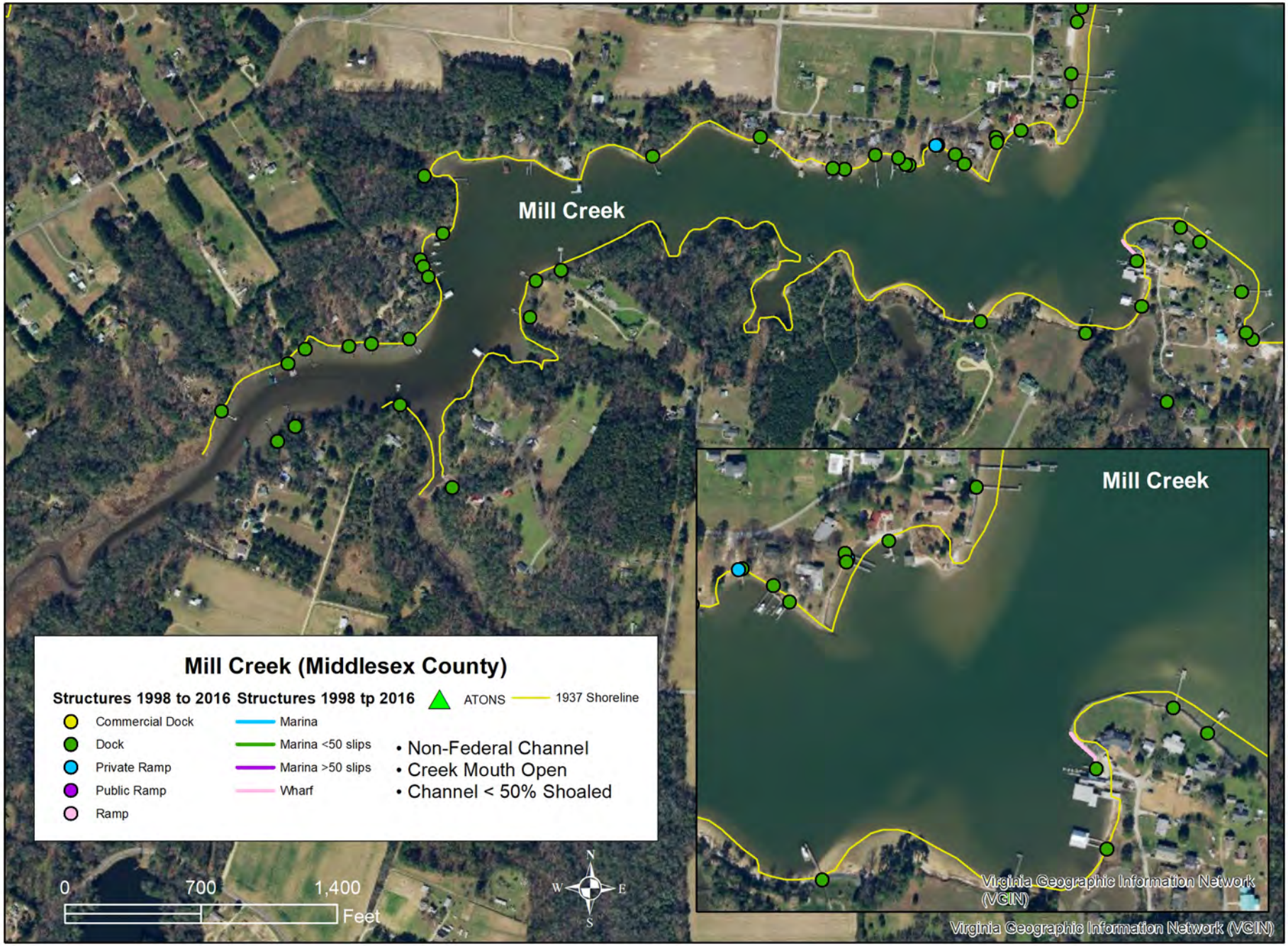
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mill Creek
Mill Creek
Mill Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
0
700
1,400
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)
Virginia Geographic Information Network (VGIN)

Data Sheet for **Bush Park Creek**

Creek ID Number: 17	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5734	**Longitude:** -76.3849
Number of Marinas: 5	
Number of Boat Ramps: 4	
Number of Piers: 38	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.3	**Creek Area (acres):** 77
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

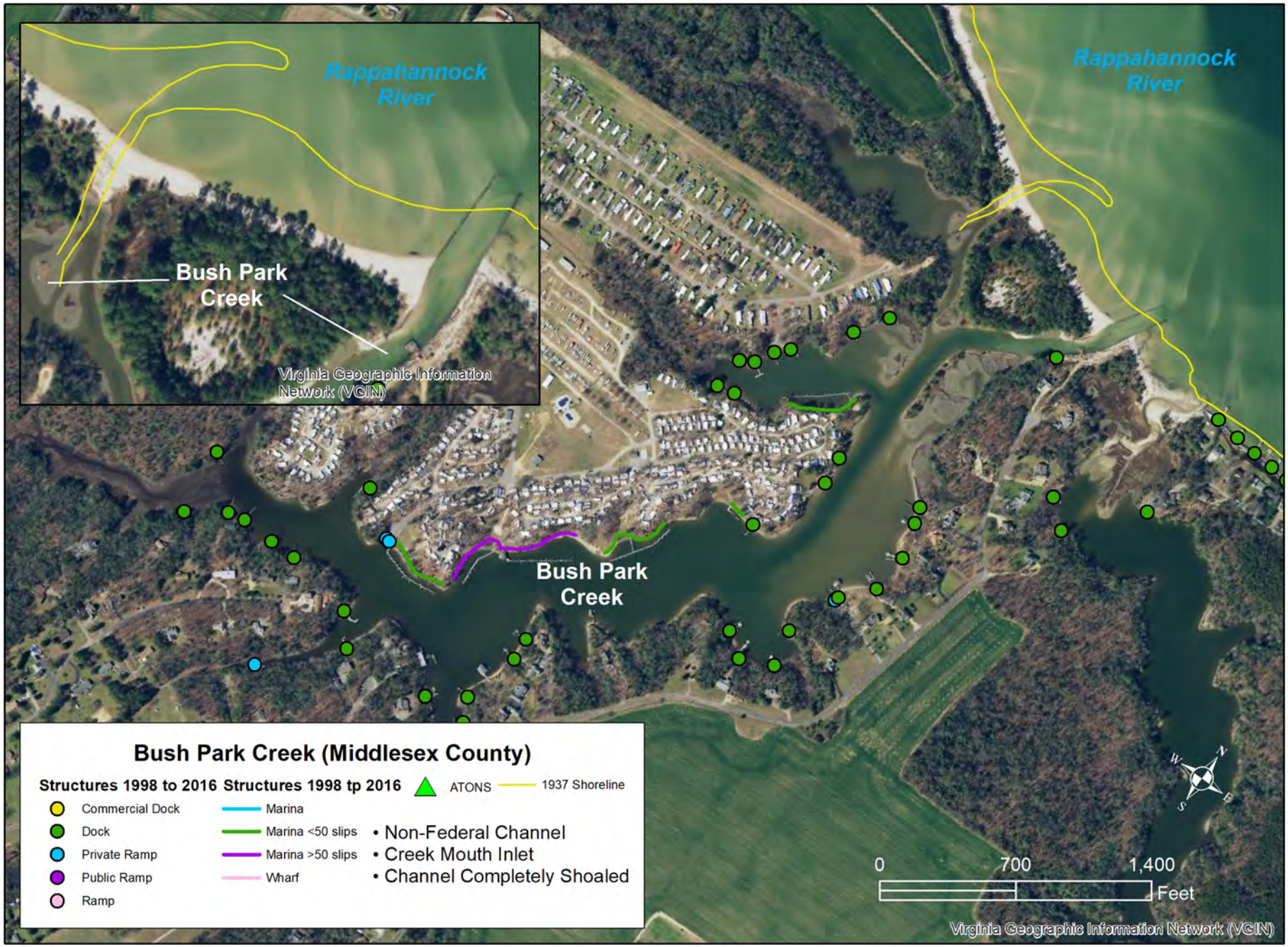
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Bush Park Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Bush Park Creek
Bush Park Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Inlet
• Channel Completely Shoaled
N
W
E
S
0
700
1,400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Hunting Creek**

Creek ID Number: 18	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5711	**Longitude:** -76.3433
Number of Marinas: 1	
Number of Boat Ramps: 2	
Number of Piers: 35	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 26
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

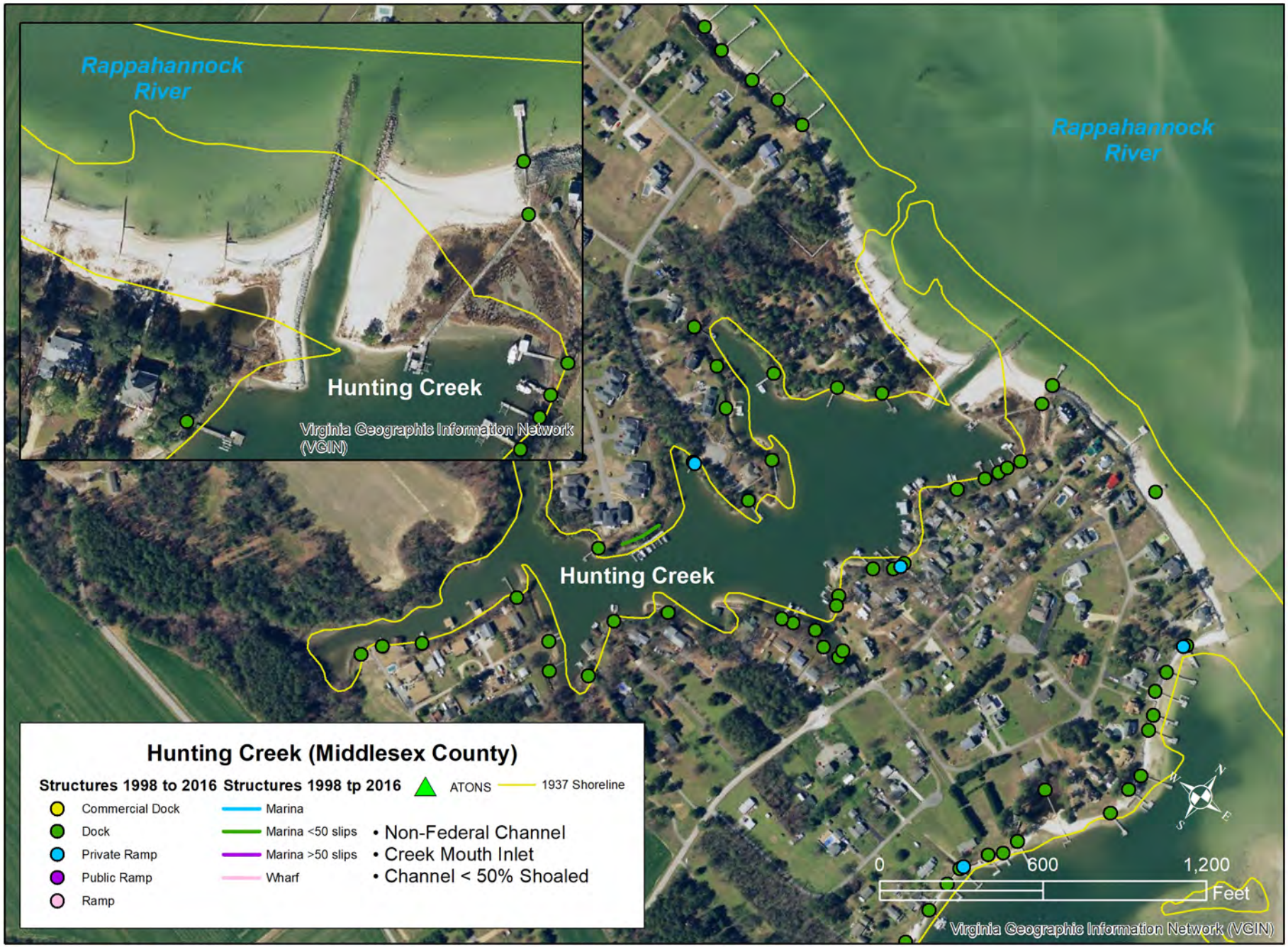
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Hunting Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Hunting Creek
Hunting Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Inlet
• Channel < 50% Shoaled
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Sturgeon Creek

Creek ID Number: 19	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5704	**Longitude:** -76.3375
Number of Marinas: 2	
Number of Boat Ramps: 9	
Number of Piers: 121	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.3	**Creek Area (acres):** 185
Average Depth of Creek Mouth (ft): -1.1	**Maximum Depth of Creek Mouth (ft):** -2.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

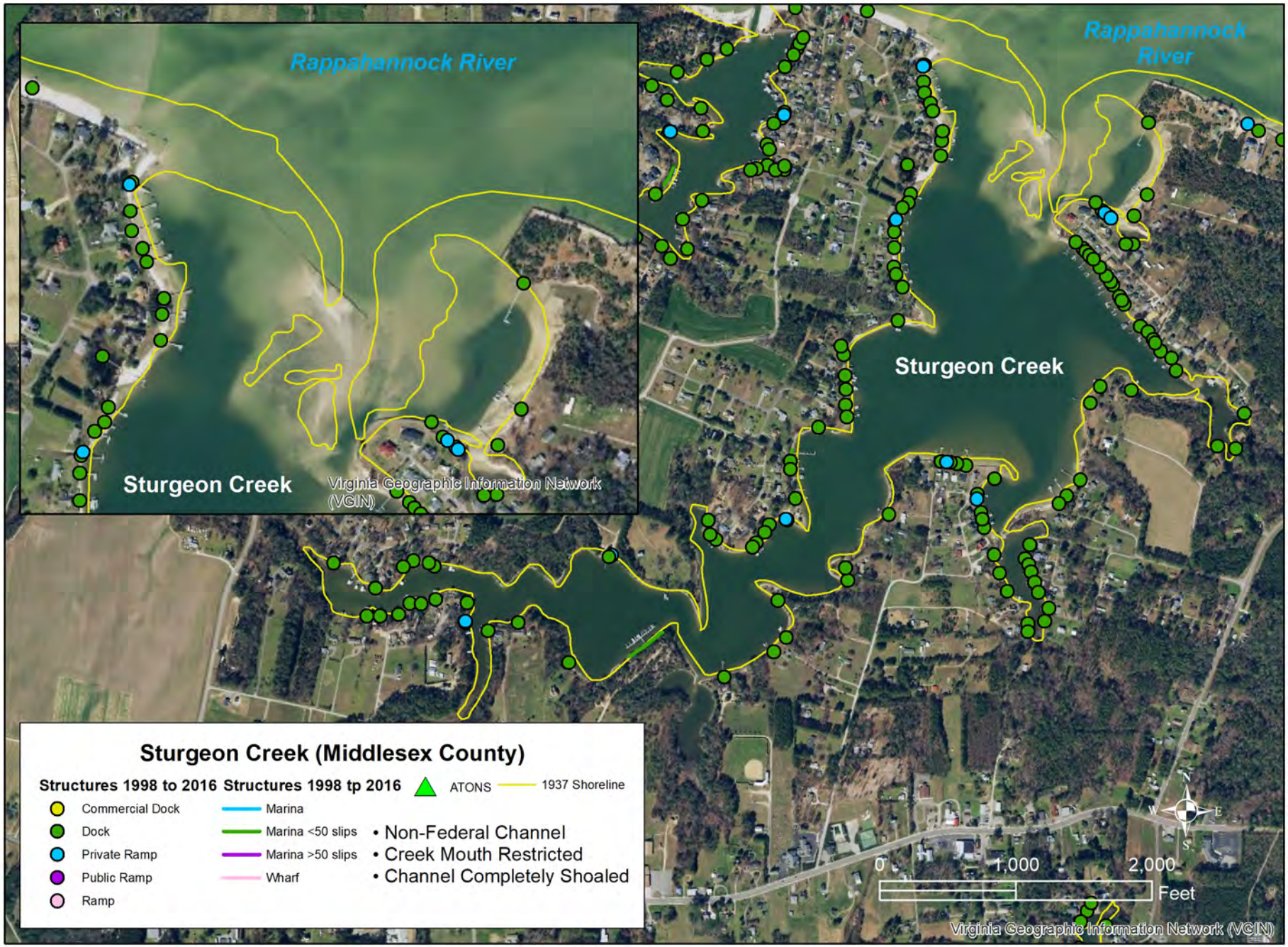
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Sturgeon Creek
Virginia Geographic Information Network (VGIN)
Rappahannock River
Sturgeon Creek
Sturgeon Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Restricted
• Channel Completely Shoaled
N
W
E
S
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Unnamed Cove

Creek ID Number: 20	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Non-Federal
Latitude: 37.5640	**Longitude:** -76.3206
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 18	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.3	**Creek Area (acres):** 12
Average Depth of Creek Mouth (ft): -3.3	**Maximum Depth of Creek Mouth (ft):** -4.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

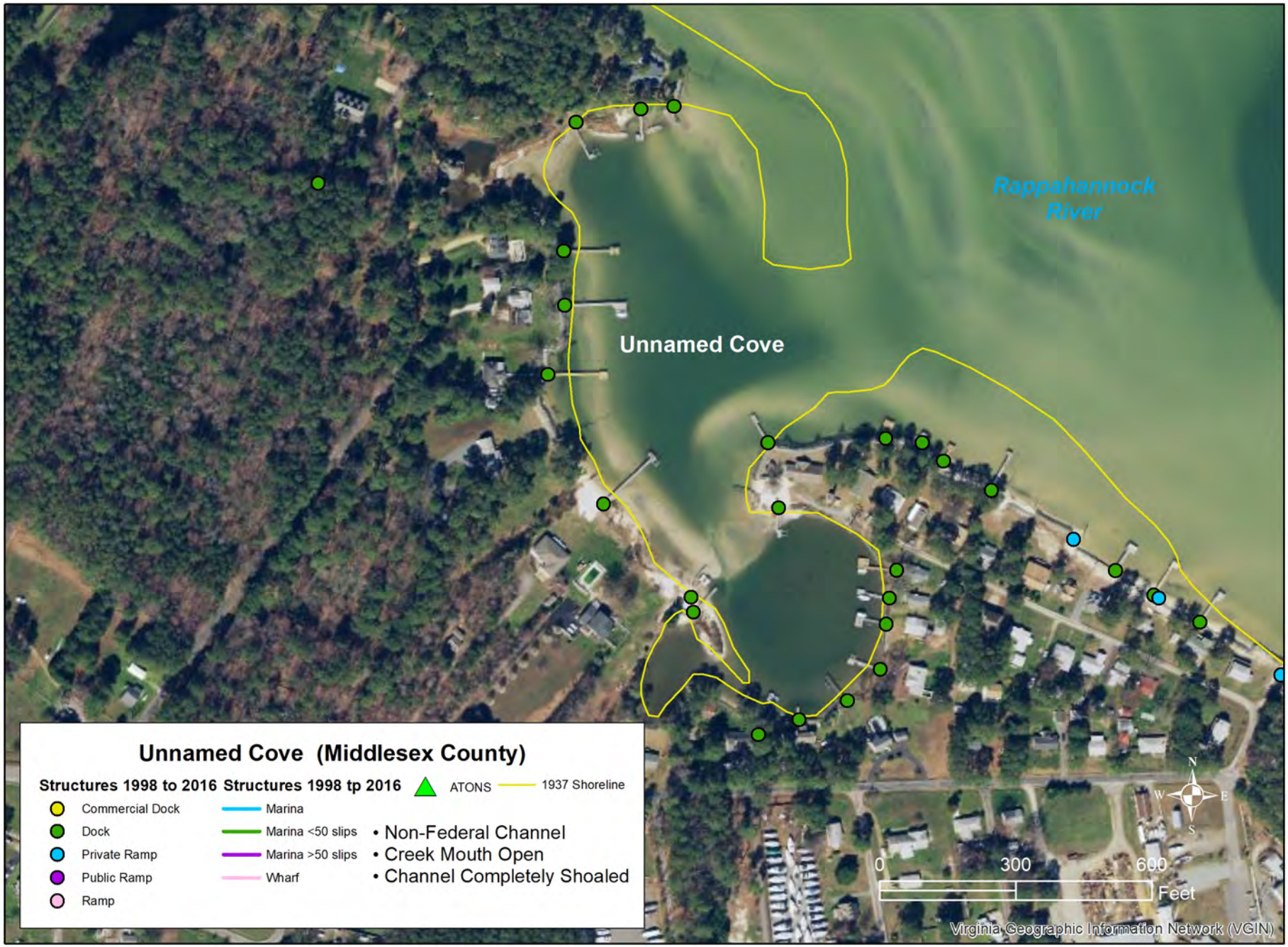
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Unnamed Cove
Unnamed Cove (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• Channel Completely Shoaled
N
W
E
S
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Broad Creek**

Creek ID Number: 21	**Locality:** Middlesex
Water Body: Rappahannock River	**Channel Type:** Federal
Latitude: 37.5604	**Longitude:** -76.3134
Number of Marinas: 8	
Number of Boat Ramps: 7	
Number of Piers: 50	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 79
Average Depth of Creek Mouth (ft): -6.2	**Maximum Depth of Creek Mouth (ft):** -7.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

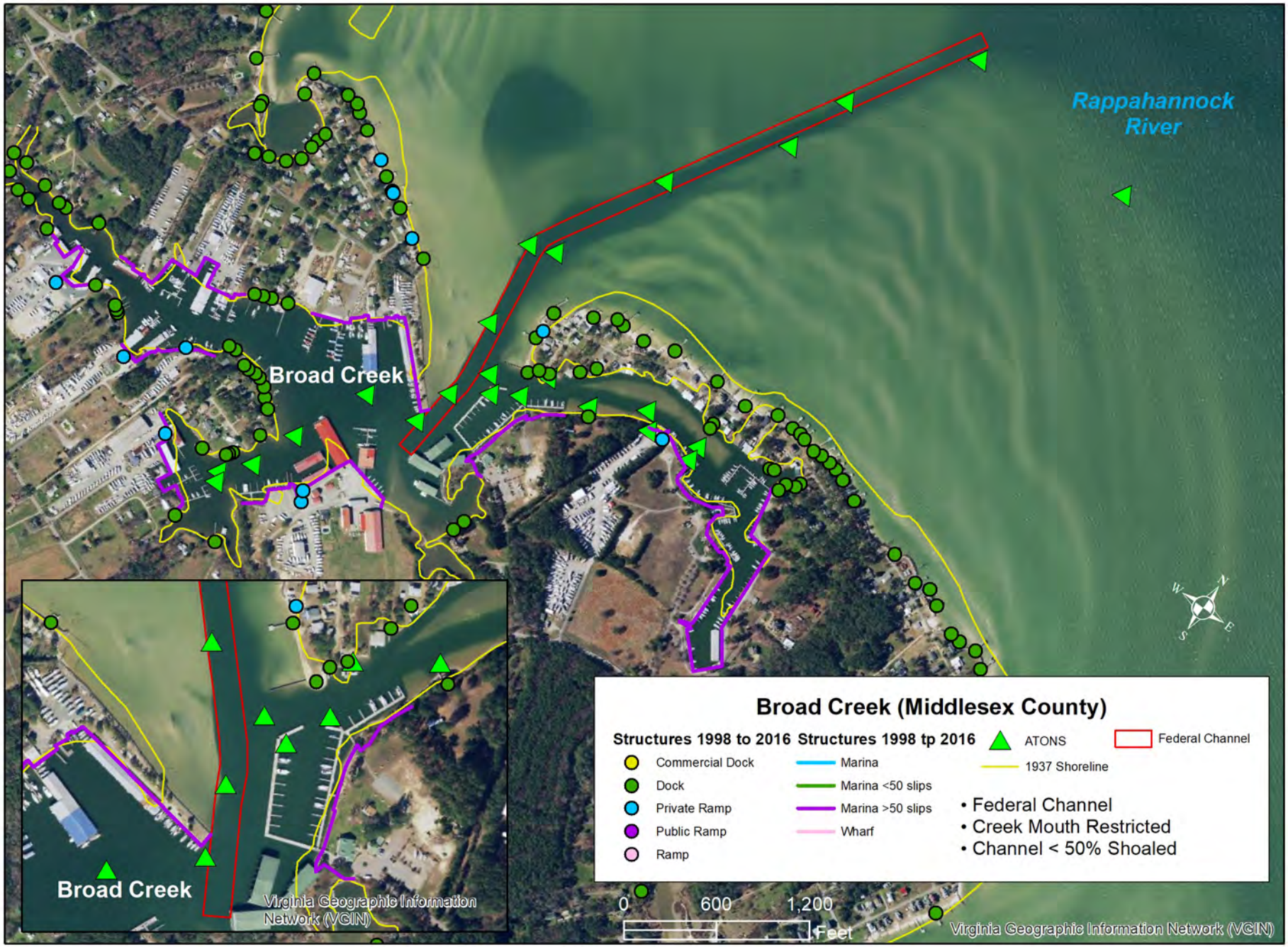
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Rappahannock River
Broad Creek
Broad Creek
Virginia Geographic Information Network (VGIN)
Broad Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Jackson Creek

Creek ID Number: 22	**Locality:** Middlesex
Water Body: Piankatank River	**Channel Type:** Federal
Latitude: 37.5464	**Longitude:** -76.3265
Number of Marinas: 5	
Number of Boat Ramps: 6	
Number of Piers: 103	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 156
Average Depth of Creek Mouth (ft): -2.9	**Maximum Depth of Creek Mouth (ft):** -10.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Jackson Creek (Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Restricted
• No Visible Shoaling
Jackson Creek
Piankatank
Virginia Geographic Information Network (VGIN)
Jackson Creek
Piankatank River
N
W
E
S
0
800
1,600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Moore East**

Creek ID Number: 23	**Locality:** Middlesex
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5371	**Longitude:** -76.3530
Number of Marinas: 1	
Number of Boat Ramps: 1	
Number of Piers: 14	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 11
Average Depth of Creek Mouth (ft): -0.4	**Maximum Depth of Creek Mouth (ft):** -0.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Moore East Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel < 50% Shoaled
Moore East Creek
PiankatankRiver
N
W
E
S
0
200
400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Moore Creek**

Creek ID Number: 24	**Locality:** Middlesex
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5369	**Longitude:** -76.3573
Number of Marinas: 0	
Number of Boat Ramps: 3	
Number of Piers: 53	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 50
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Pinakatank River
Moore Creek
Virginia Geographic Information Network (VGIN)
Pianaktank River
Moore Creek
Moore Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
• Non-Federal Channel
• Creek Mouth Inlet
• Channel < 50% Shoaled
1937 Shoreline
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Cores Creek

Creek ID Number: 25	**Locality:** Middlesex
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5396	**Longitude:** -76.3718
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 8	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 17
Average Depth of Creek Mouth (ft): -0.7	**Maximum Depth of Creek Mouth (ft):** -0.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Cores Creek
Pianaktank River
Cores Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel > 50% Shoaled
0
200
400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Healy Creek**

Creek ID Number: 26	**Locality:** Middlesex
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5386	**Longitude:** -76.3922
Number of Marinas: 1	
Number of Boat Ramps: 1	
Number of Piers: 21	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 56
Average Depth of Creek Mouth (ft): -5.4	**Maximum Depth of Creek Mouth (ft):** -9.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Piankatank River
Healy Creek
Virginia Geographic Information Network (VGIN)
Piankatank River
Healy Creek
Healy Creek Middlesex County)
Structures 1998 to 2016
Structures 1998 tp 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
N
E
S
W
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Wilton Creek**

Creek ID Number: 27	**Locality:** Middlesex
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5210	**Longitude:** -76.4162
Number of Marinas: 2	
Number of Boat Ramps: 1	
Number of Piers: 50	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 100
Average Depth of Creek Mouth (ft): -6.6	**Maximum Depth of Creek Mouth (ft):** -10.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

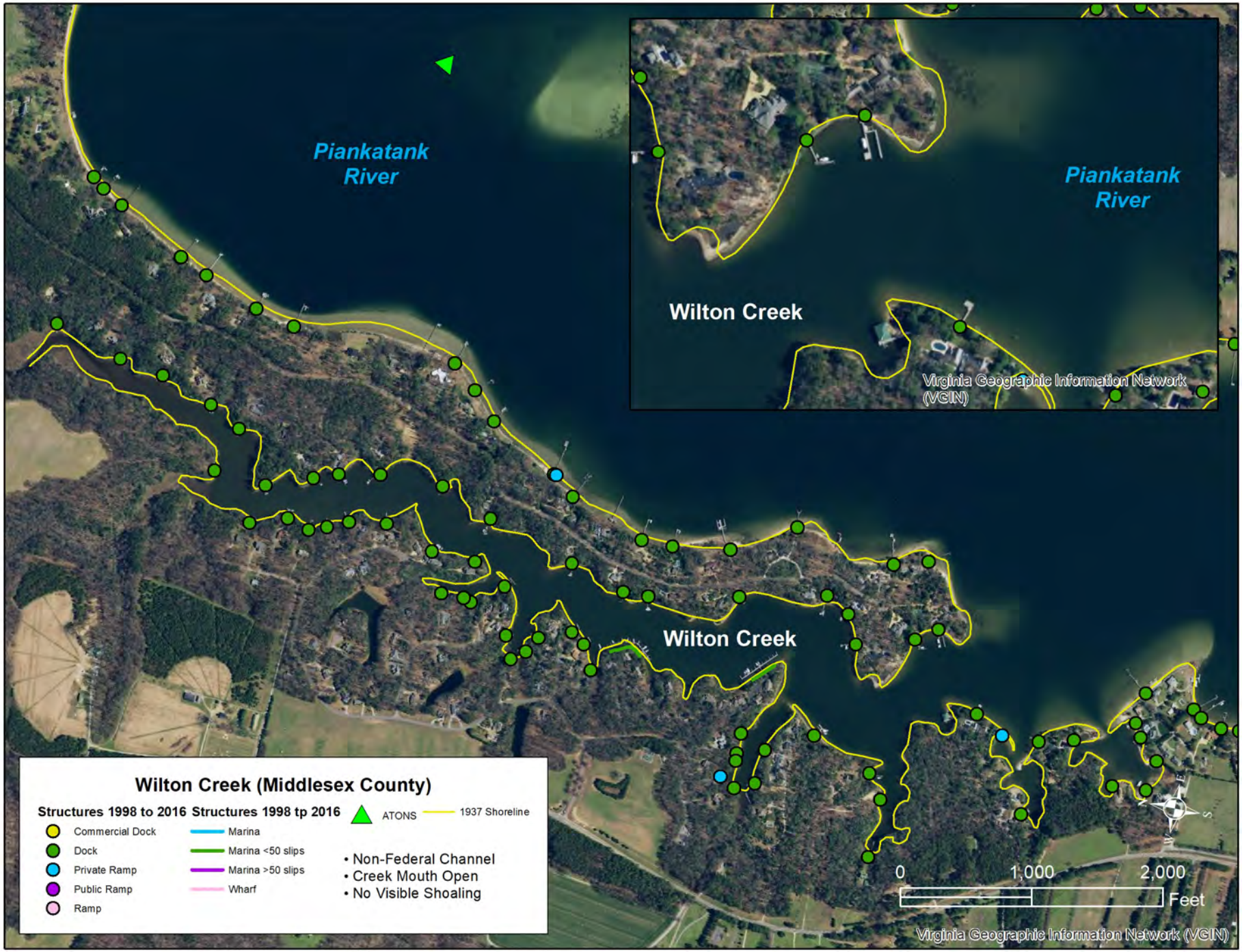
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Piankatank River
Wilton Creek
Piankatank River
Wilton Creek
Virginia Geographic Information Network (VGIN)
Wilton Creek (Middlesex County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Ferry Creek**

Creek ID Number: 28	**Locality:** Gloucester
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5175	**Longitude:** -76.4602
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 17	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.5	**Creek Area (acres):** 75
Average Depth of Creek Mouth (ft): -4.1	**Maximum Depth of Creek Mouth (ft):** -8.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

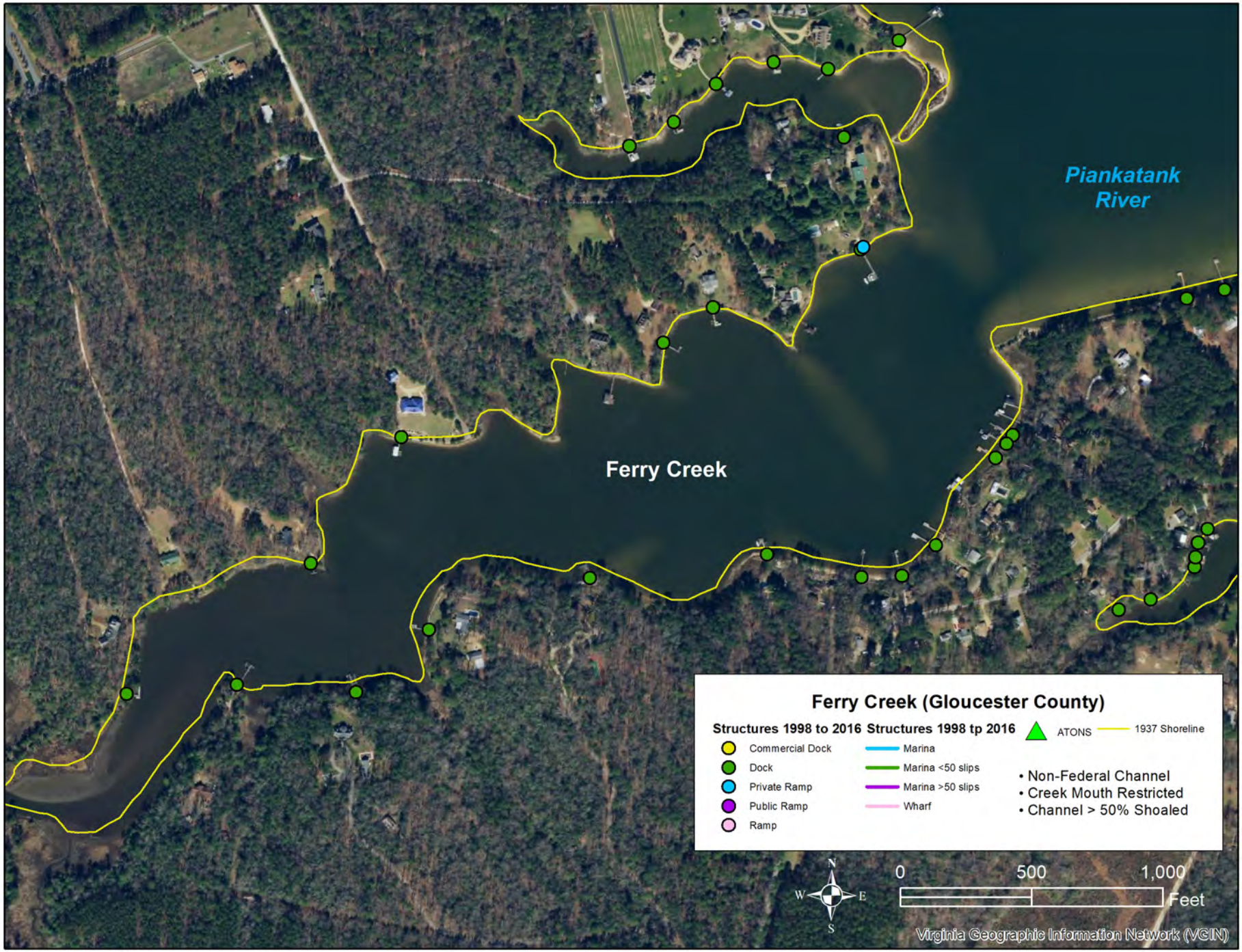
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Piankatank River
Ferry Creek
Ferry Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
W
E
S
0
500
1,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Dancing Creek

Creek ID Number: 29	**Locality:** Gloucester
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5149	**Longitude:** -76.4520
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 14	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.5	**Creek Area (acres):** 23
Average Depth of Creek Mouth (ft): -2.2	**Maximum Depth of Creek Mouth (ft):** -5.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Piankatank River
Dancing Creek
Dancing Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
W
E
S
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Cobbs Creek

Creek ID Number: 30	**Locality:** Mathews
Water Body: Piankatank River	**Channel Type:** Non-Federal ATON
Latitude: 37.5268	**Longitude:** -76.4027
Number of Marinas: 3	
Number of Boat Ramps: 1	
Number of Piers: 58	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 69
Average Depth of Creek Mouth (ft): -6.1	**Maximum Depth of Creek Mouth (ft):** -9.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

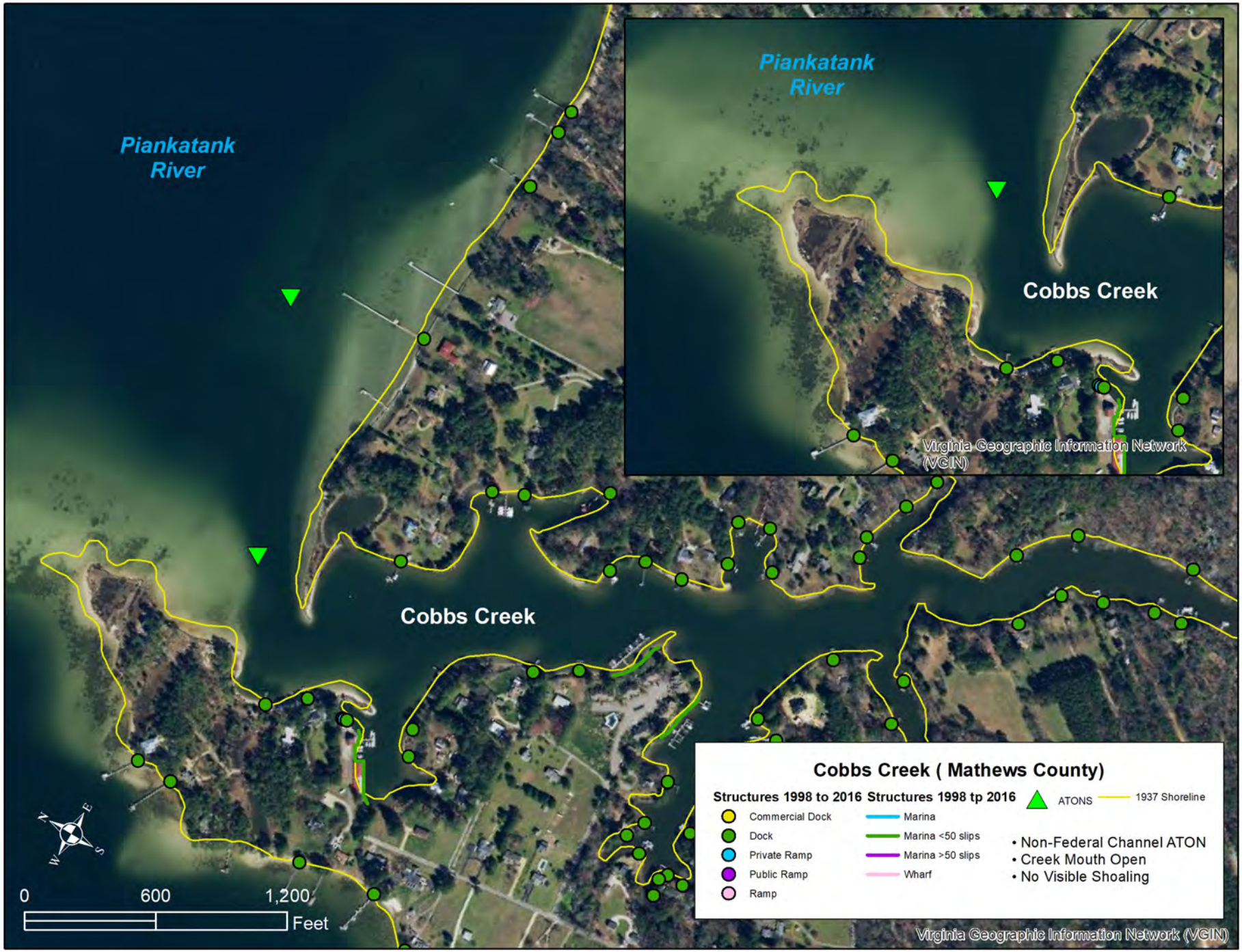
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Piankatank River
Piankatank River
Cobbs Creek
Cobbs Creek
Virginia Geographic Information Network (VGIN)
Cobbs Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Open
• No Visible Shoaling
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Roane Point Creek**

Creek ID Number: 31	**Locality:** Mathews
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5230	**Longitude:** -76.3750
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 4	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 8
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Roane Point
Virginia Geographic Information Network (VGIN)
Piankatank River
Roane Point Creek
Roane Point Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel < 50% Shoaled
N
W
E
S
0
250
500
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Warehouse Cove**

Creek ID Number: 32	**Locality:** Mathews
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5211	**Longitude:** -76.3694
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 4	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.3	**Creek Area (acres):** 4
Average Depth of Creek Mouth (ft): -0.4	**Maximum Depth of Creek Mouth (ft):** -0.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Piankatank River
Warehouse Cove
Warehouse Cove (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Completely Shoaled
N
E
S
W
0
125
250
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Chappel Creek

Creek ID Number: 33	**Locality:** Mathews
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.5108	**Longitude:** -76.3581
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 8	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.3	**Creek Area (acres):** 44
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

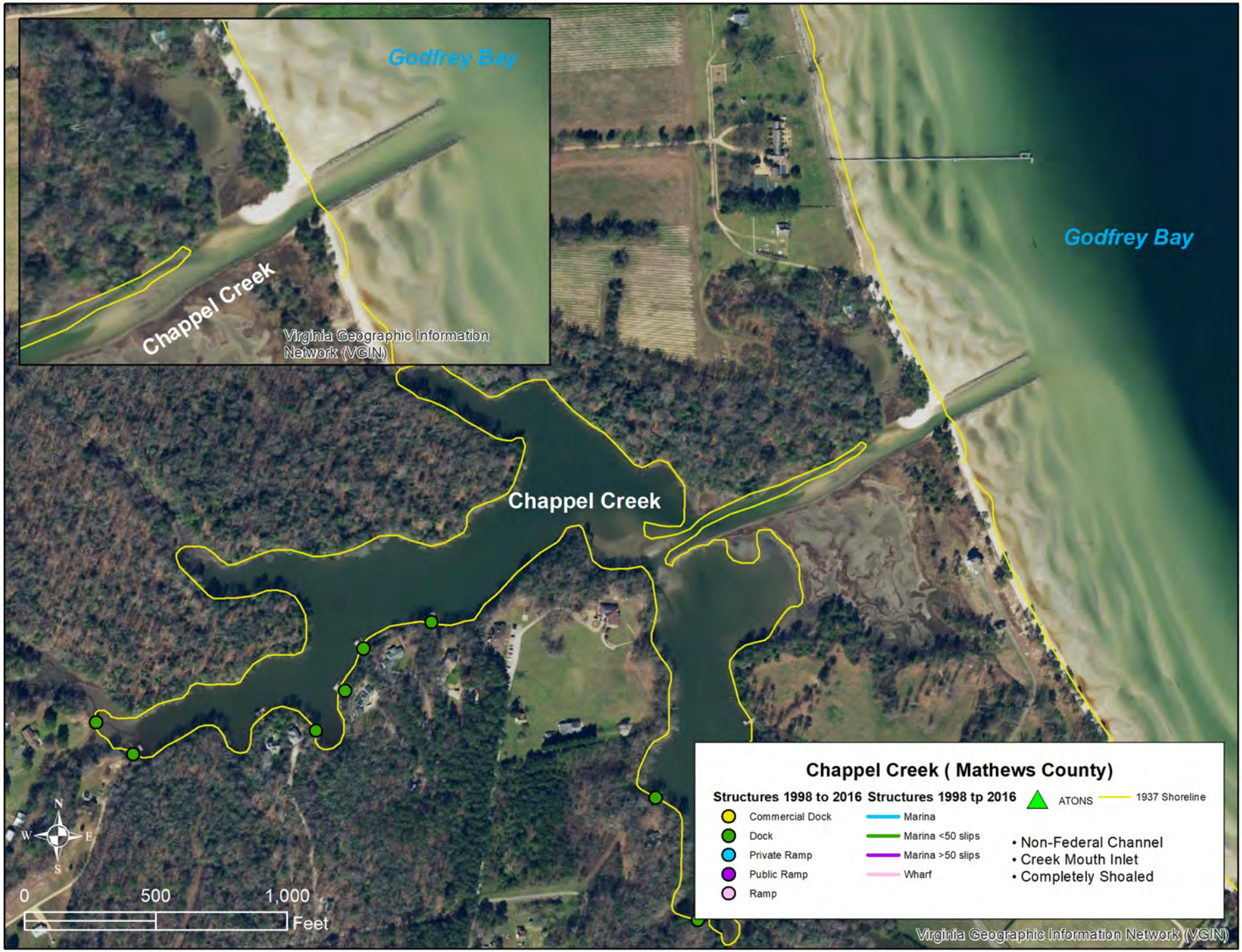
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Godfrey Bay
Chappel Creek
Virginia Geographic Information Network (VGIN)
Godfrey Bay
Chappel Creek
Chappel Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Completely Shoaled
N
W
E
S
0
500
1,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Queens Creek

Creek ID Number: 34	**Locality:** Mathews
Water Body: Piankatank River	**Channel Type:** Federal
Latitude: 37.4873	**Longitude:** -76.3289
Number of Marinas: 1	
Number of Boat Ramps: 4	
Number of Piers: 145	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 188
Average Depth of Creek Mouth (ft): -6.3	**Maximum Depth of Creek Mouth (ft):** -9.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

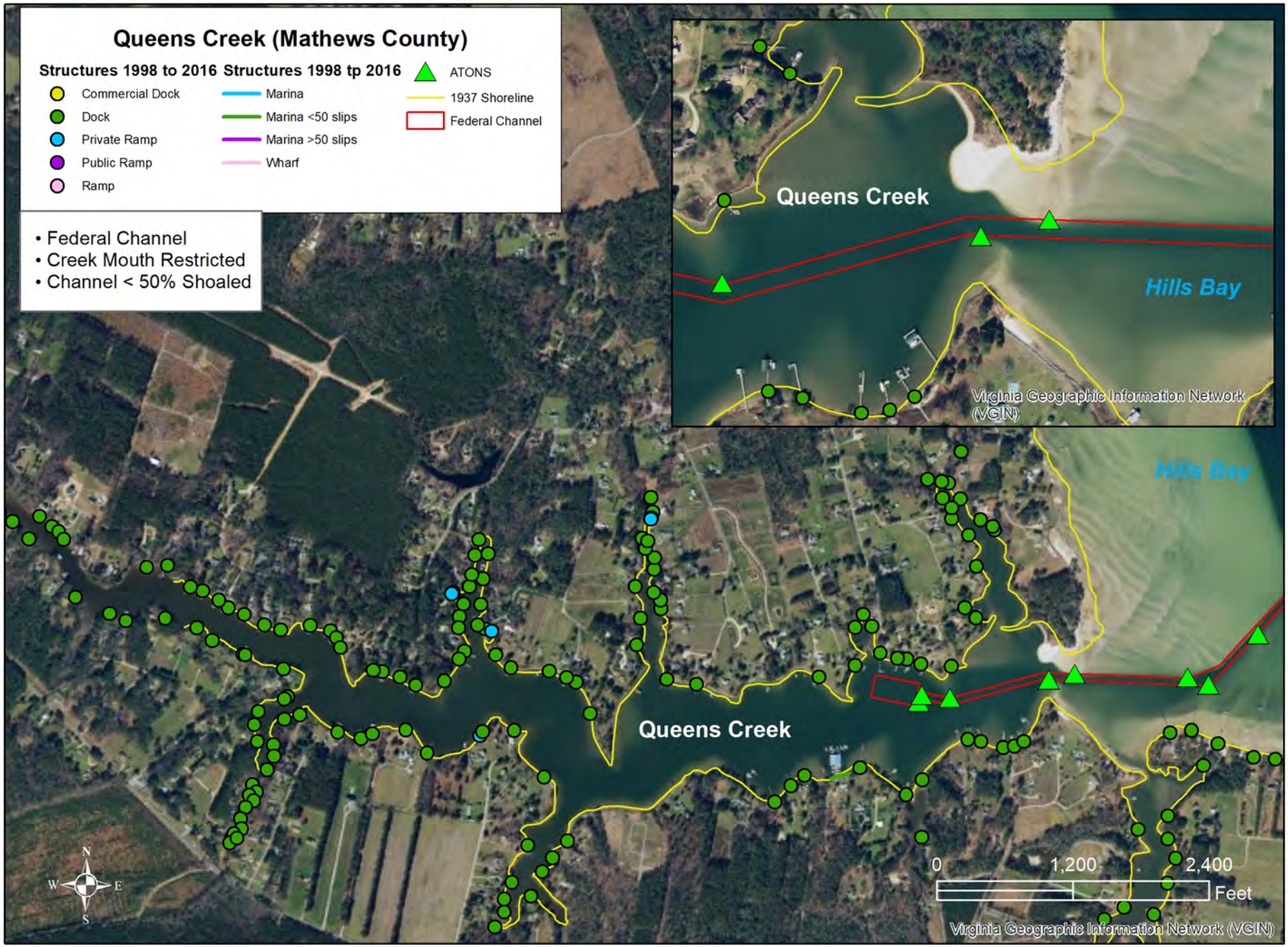
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Queens Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
Queens Creek
Hills Bay
Virginia Geographic Information Network (VGIN)
Hills Bay
Queens Creek
N
W
E
S
0
1,200
2,400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Winder Creek**

Creek ID Number: 35	**Locality:** Mathews
Water Body: Piankatank River	**Channel Type:** Non-Federal
Latitude: 37.4851	**Longitude:** -76.3258
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 9	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 16
Average Depth of Creek Mouth (ft): -0.9	**Maximum Depth of Creek Mouth (ft):** -1.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hills Bay
Winder Creek
Virginia Geographic Information Network (VGIN)
Winder Creek
Winder Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel > 50% Shoaled
N
E
S
W
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Milford Haven**

Creek ID Number: 36	**Locality:** Mathews
Water Body: Piankatank River/Milford Haven	**Channel Type:** Federal
Latitude: 37.4884	**Longitude:** -76.3117
Number of Marinas: 1	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 23
Average Depth of Creek Mouth (ft): N/A	**Maximum Depth of Creek Mouth (ft):** N/A

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

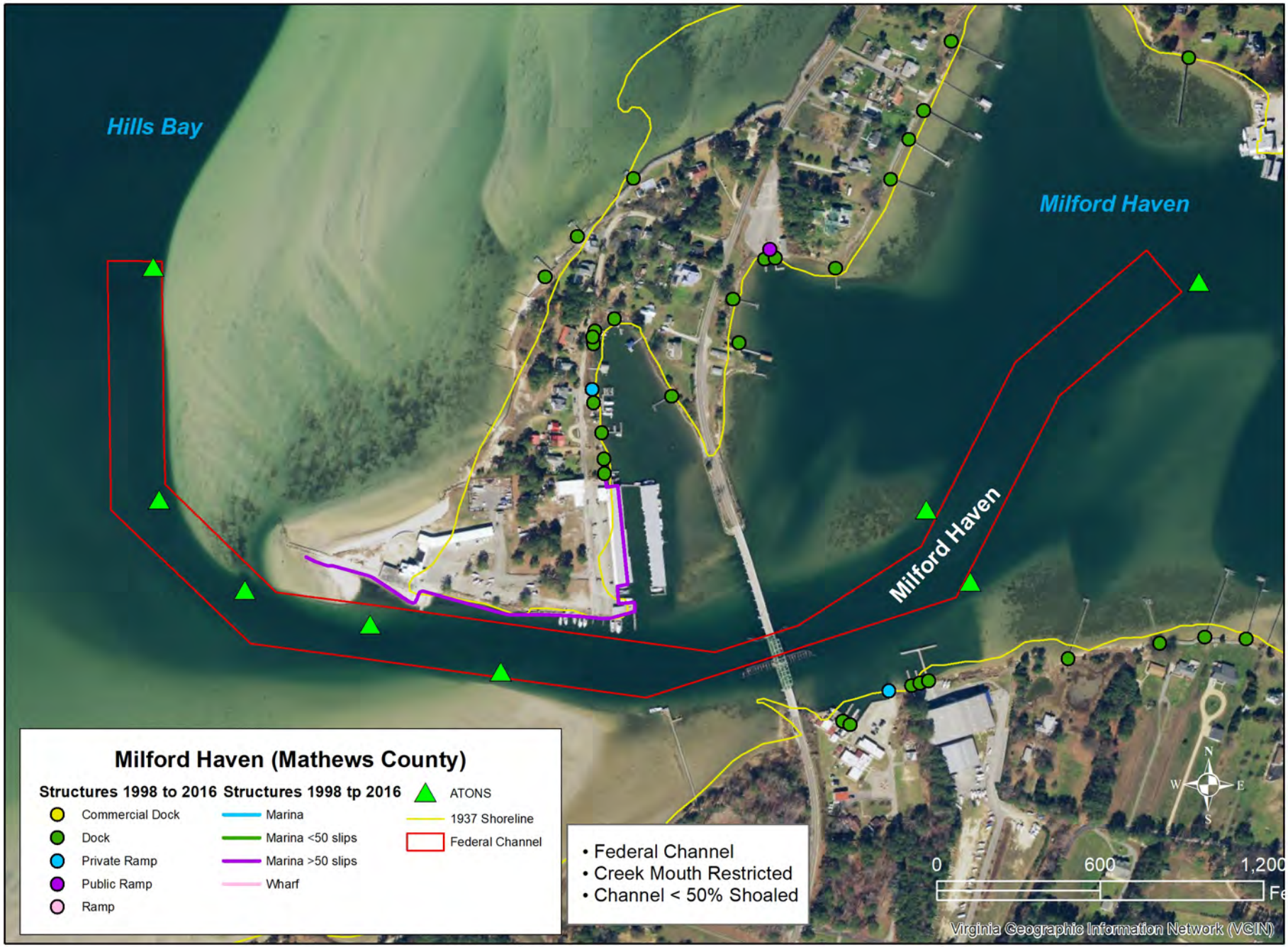
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hills Bay
Milford Haven
Milford Haven
Milford Haven (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
600
1,200
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for Lanes Creek

Creek ID Number: 37	**Locality:** Mathews
Water Body: Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4833	**Longitude:** -76.3023
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 26	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 50
Average Depth of Creek Mouth (ft): -4.7	**Maximum Depth of Creek Mouth (ft):** -7.8

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

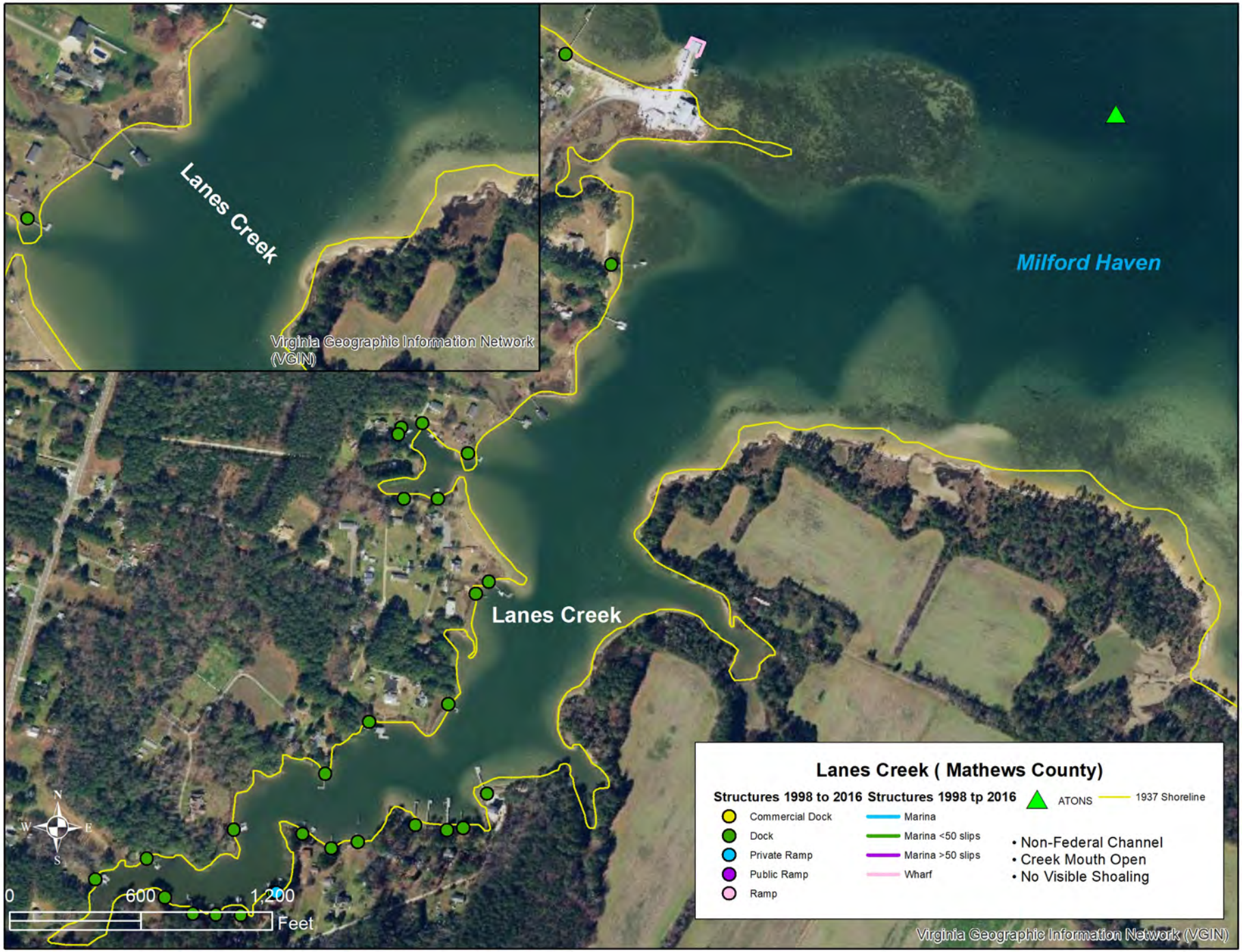
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Lanes Creek
Virginia Geographic Information Network (VGIN)
Milford Haven
Lanes Creek
Lanes Creek (Mathews County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Edwards Creek

Creek ID Number: 38	**Locality:** Mathews
Water Body: Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4931	**Longitude:** -76.2945
Number of Marinas: 1	
Number of Boat Ramps: 0	
Number of Piers: 29	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 45
Average Depth of Creek Mouth (ft): -6.1	**Maximum Depth of Creek Mouth (ft):** -9.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

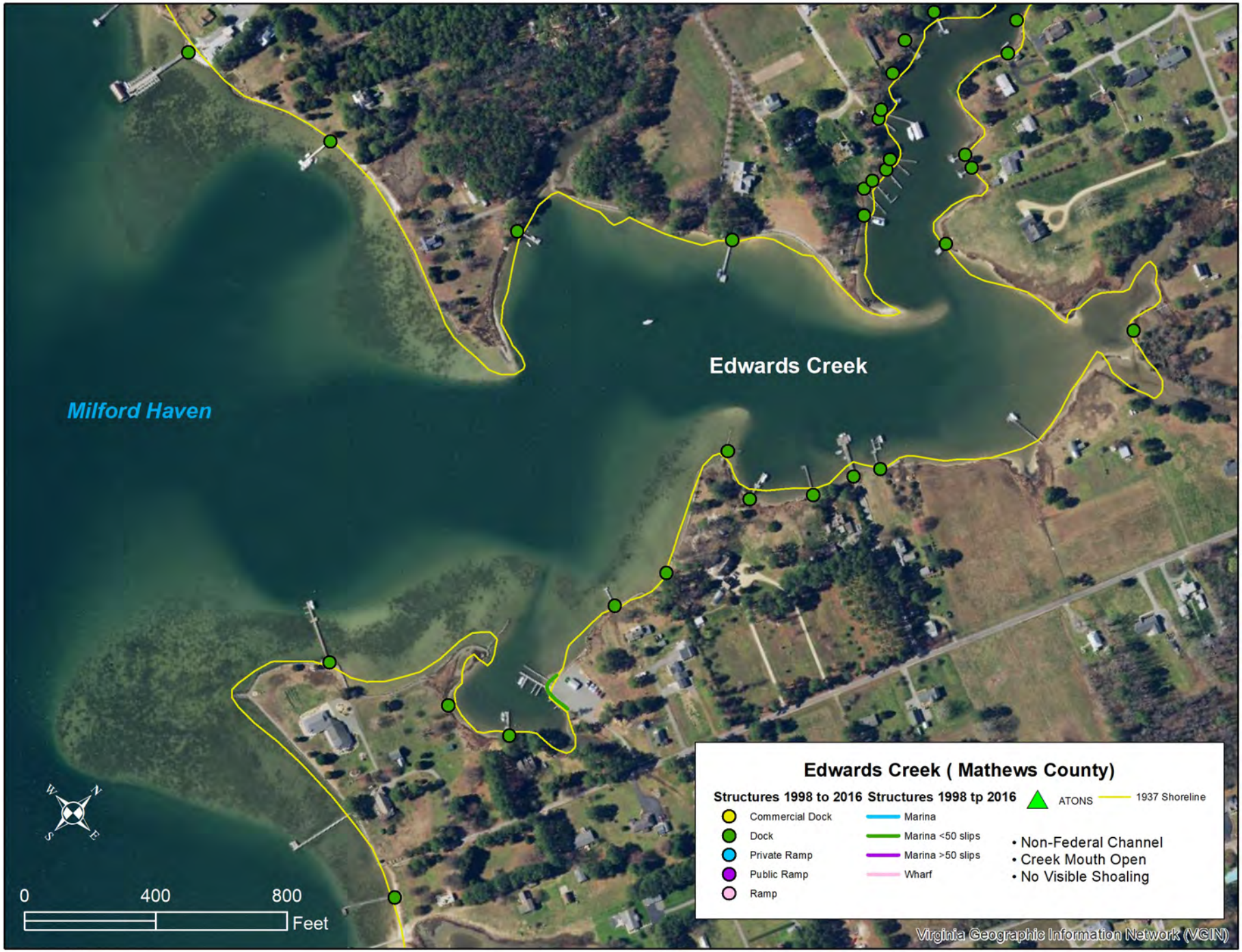
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Edwards Creek
Milford Haven
Edwards Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Barn Creek**

Creek ID Number: 39	**Locality:** Mathews
Water Body: Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4872	**Longitude:** -76.2841
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 32	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 33
Average Depth of Creek Mouth (ft): -3.6	**Maximum Depth of Creek Mouth (ft):** -6.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

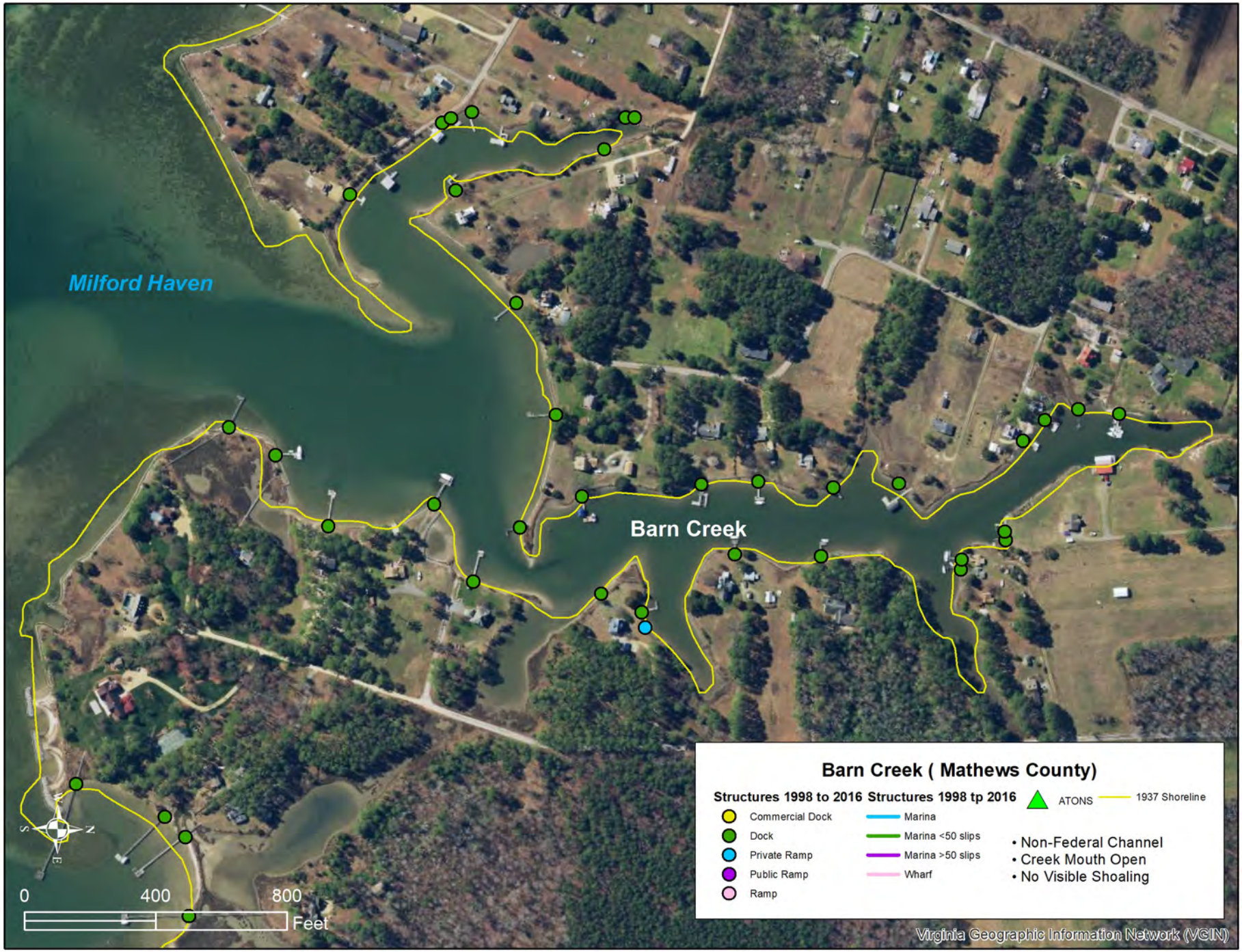
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Milford Haven
Barn Creek
Barn Creek (Mathews County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Whites Creek**

Creek ID Number: 40	**Locality:** Mathews
Water Body: Milford Haven/Chesapeake Bay	**Channel Type:** Non-Federal
Latitude: 37.4532	**Longitude:** -76.2609
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 15	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: #N/A
Tide Range (ft): 1.1	**Creek Area (acres):** 0
Average Depth of Creek Mouth (ft): N/A	**Maximum Depth of Creek Mouth (ft):** N/A

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

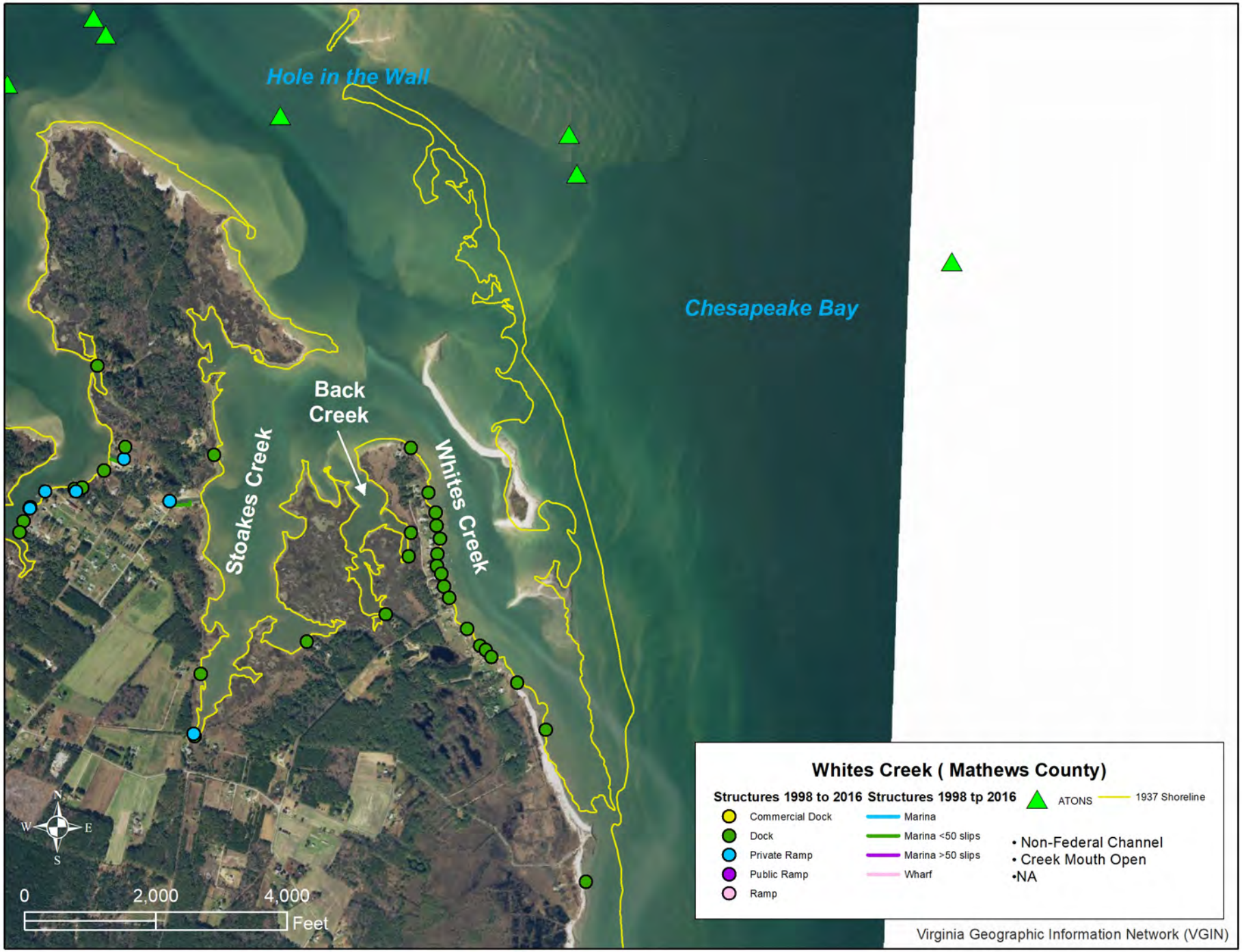
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hole in the Wall
Chesapeake Bay
Back Creek
Stoakes Creek
Whites Creek
N
W
E
S
0
2,000
4,000
Feet
Whites Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
•NA
Virginia Geographic Information Network (VGIN)

Data Sheet for **Stutts Creek**

Creek ID Number: 41	**Locality:** Mathews
Water Body: Milford Haven	**Channel Type:** Non-Federal ATON
Latitude: 37.4626	**Longitude:** -76.2909
Number of Marinas: 1	
Number of Boat Ramps: 5	
Number of Piers: 108	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 320
Average Depth of Creek Mouth (ft): -7.1	**Maximum Depth of Creek Mouth (ft):** -11.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

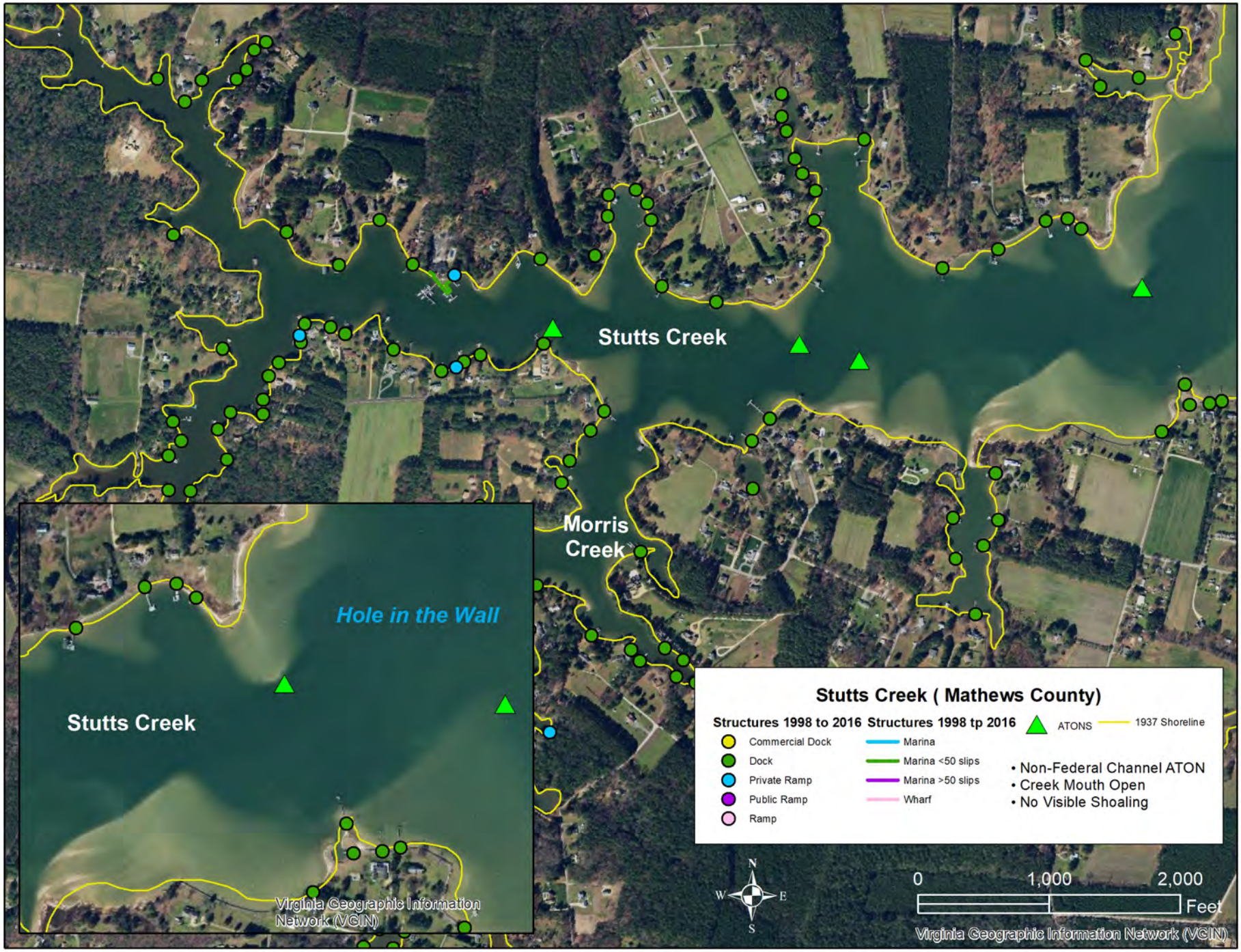
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Stutts Creek
Morris Creek
Hole in the Wall
Stutts Creek
Virginia Geographic Information Network (VGIN)
Stutts Creek (Mathews County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel ATON
• Creek Mouth Open
• No Visible Shoaling
N
W
E
S
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Billups Creek**

Creek ID Number: 42	**Locality:** Mathews
Water Body: Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4615	**Longitude:** -76.2850
Number of Marinas: 1	
Number of Boat Ramps: 5	
Number of Piers: 24	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 218
Average Depth of Creek Mouth (ft): -4.7	**Maximum Depth of Creek Mouth (ft):** -9.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Billups Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Billups Creek
Stutts Creek
Virginia Geographic Information Network (VGIN)
Stutts Creek
Billups Creek
Stutts Creek
N
W
E
S
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Hole in the Wall

Creek ID Number: 43	**Locality:** Mathews
Water Body: Chesapeake Bay/Milford Haven	**Channel Type:** Non-Federal ATON
Latitude: 37.4681	**Longitude:** -76.2648
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.1	**Creek Area (acres):** 0
Average Depth of Creek Mouth (ft): N/A	**Maximum Depth of Creek Mouth (ft):** N/A

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hole in the Wall (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Hole in the Wall Channel
• Non-Federal Channel ATON
• Creek Mouth Open
• Channel > 50% Shoaled
Milford Haven
Chesqpeake Bay
Hole in the Wall
Stutts Creek
Billups Creek
Stoakes Creek
N
W
E
S
0
2,000
4,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Stoakes**

Creek ID Number: 44	**Locality:** Mathews
Water Body: Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4517	**Longitude:** -76.2694
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 6	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 219
Average Depth of Creek Mouth (ft): -3.5	**Maximum Depth of Creek Mouth (ft):** -5.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

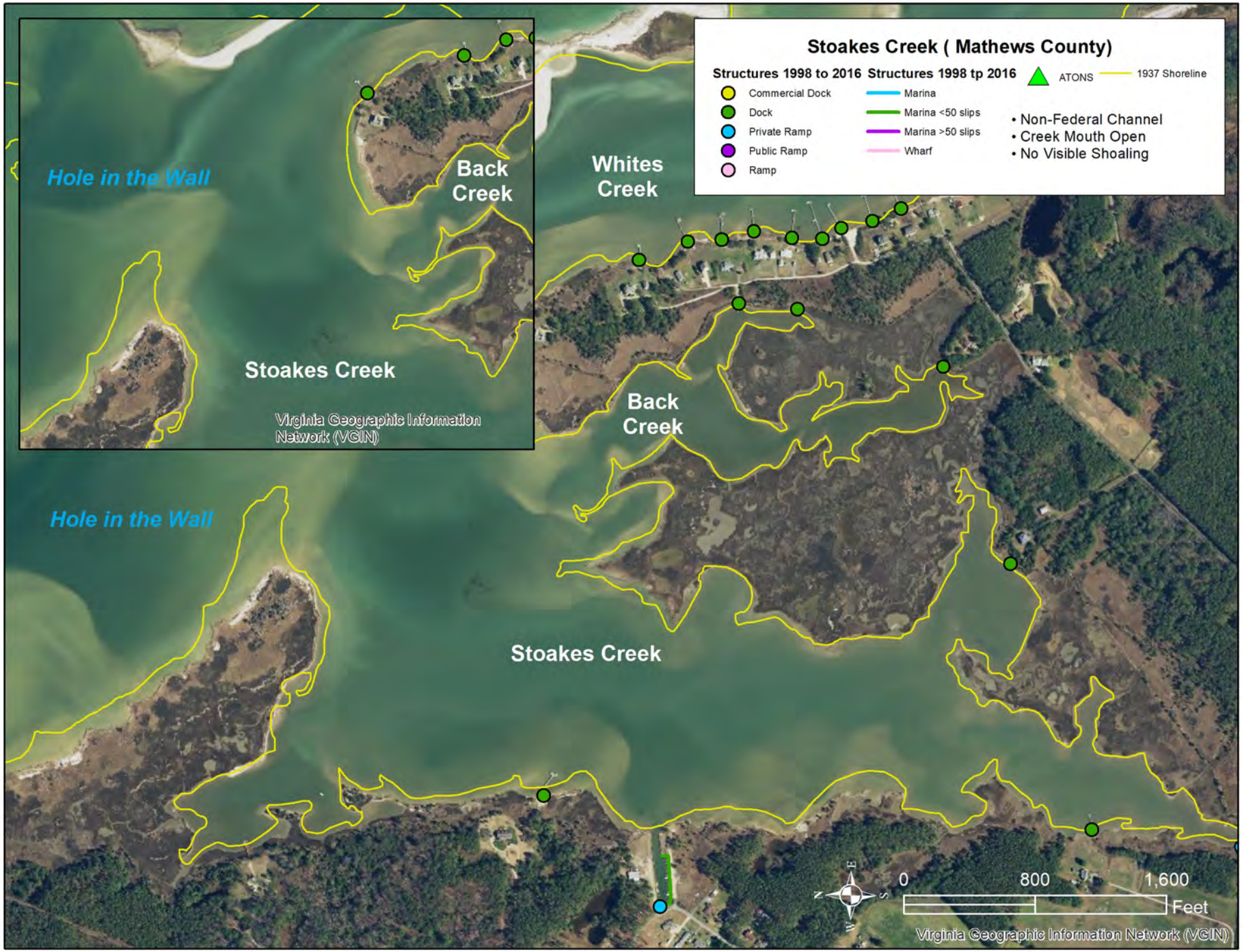
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Stoakes Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Hole in the Wall
Back Creek
Whites Creek
Stoakes Creek
Virginia Geographic Information Network (VGIN)
Back Creek
Hole in the Wall
Stoakes Creek
0
800
1,600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Morris Creek**

Creek ID Number: 45	**Locality:** Mathews
Water Body: Stutts Creek/Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4603	**Longitude:** -76.3047
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 37	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 72
Average Depth of Creek Mouth (ft): -6.2	**Maximum Depth of Creek Mouth (ft):** -8.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

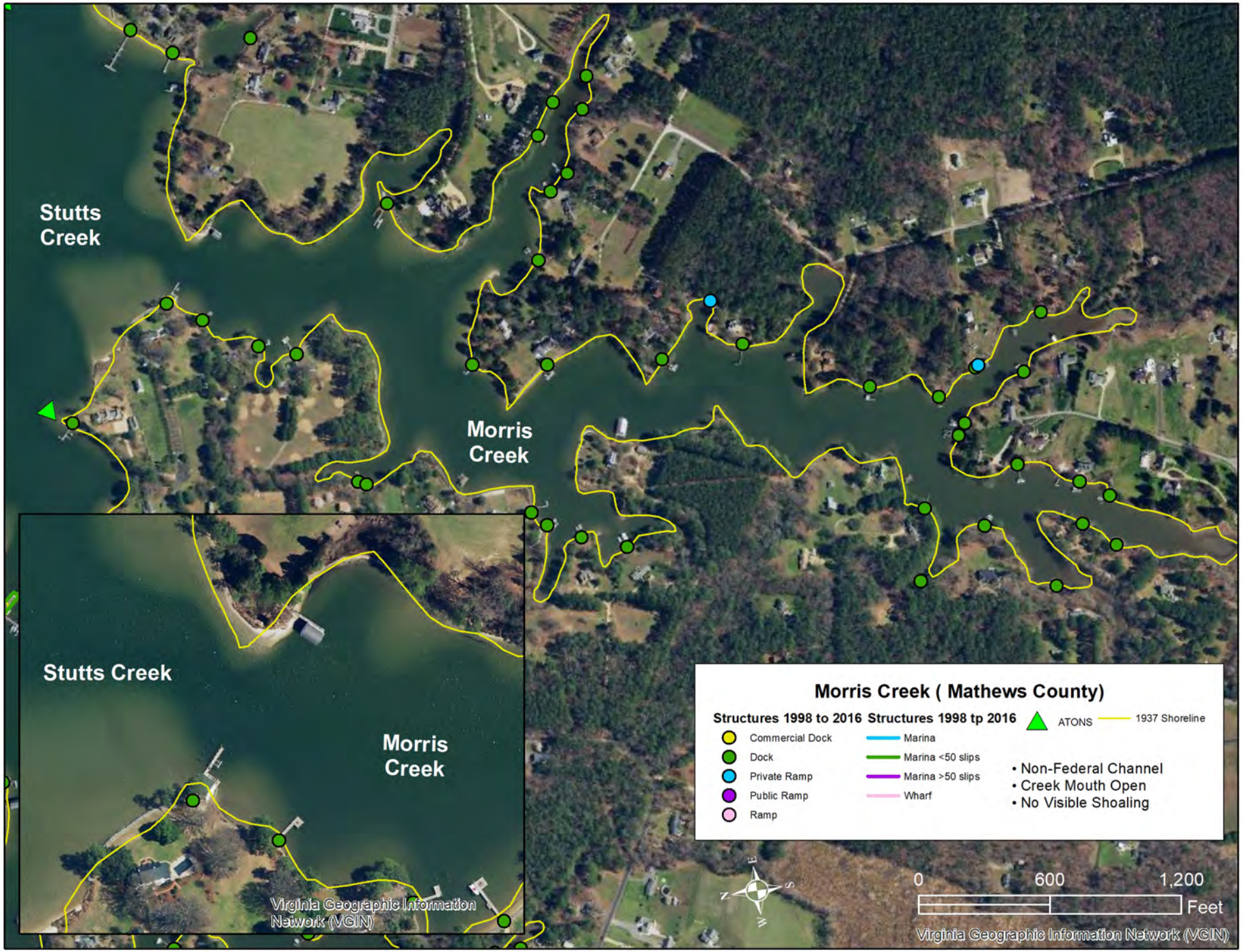
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Stutts Creek
Morris Creek
Stutts Creek
Morris Creek
Virginia Geographic Information Network (VGIN)
Morris Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Hudgins Creek**

Creek ID Number: 46	**Locality:** Mathews
Water Body: Stutts Creek/Milford Haven	**Channel Type:** Non-Federal
Latitude: 37.4596	**Longitude:** -76.2958
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 6	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.3	**Creek Area (acres):** 10
Average Depth of Creek Mouth (ft): -1.2	**Maximum Depth of Creek Mouth (ft):** -1.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

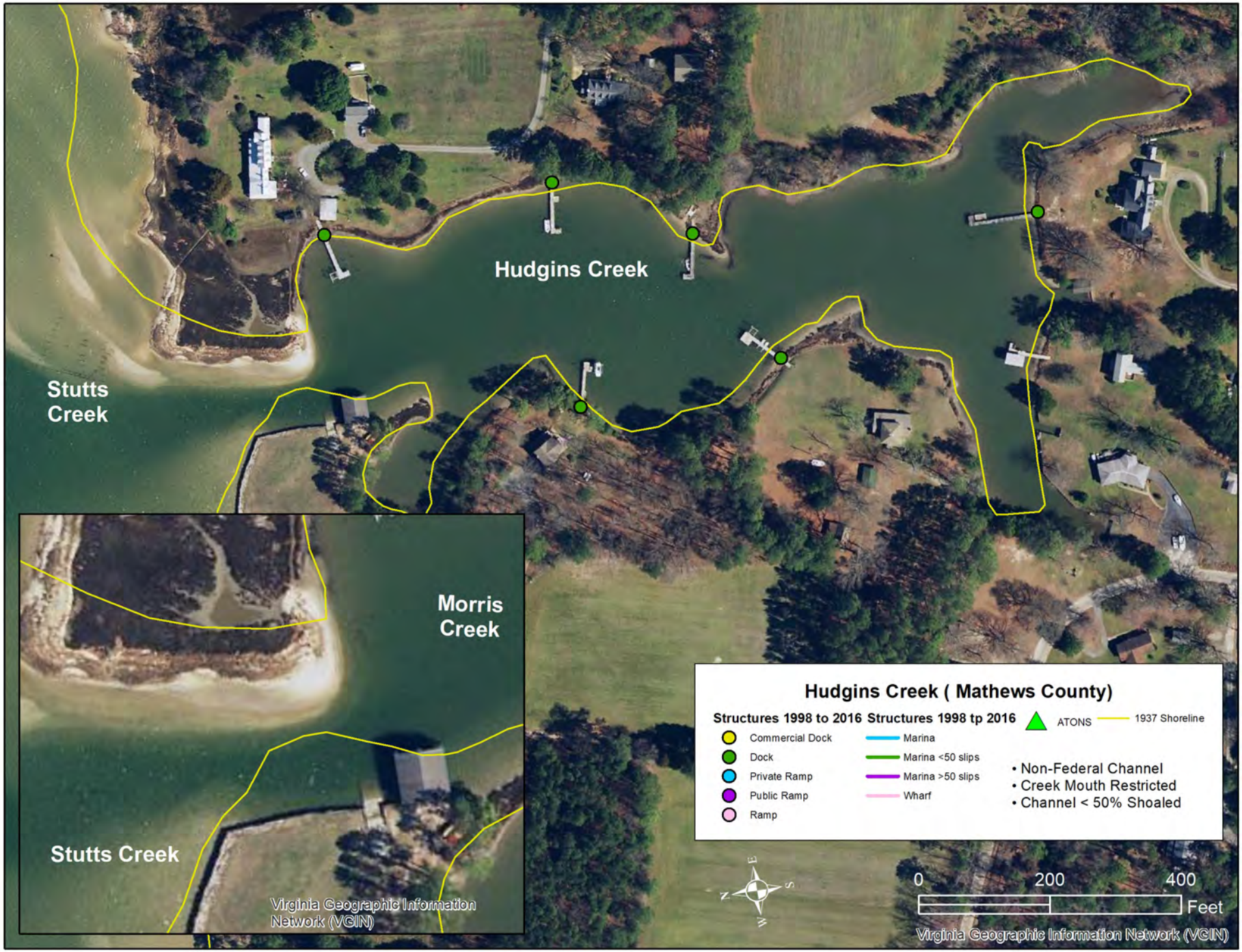
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hudgins Creek
Stutts Creek
Morris Creek
Stutts Creek
Virginia Geographic Information Network (VGIN)
Hudgins Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
N
E
S
W
0
200
400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Garden Creek

Creek ID Number: 47	**Locality:** Mathews
Water Body: Chesapeake Bay	**Channel Type:** Non-Federal
Latitude: 37.4230	**Longitude:** -76.2527
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 2	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: Completely shoaled
Tide Range (ft): 1.5	**Creek Area (acres):** 181
Average Depth of Creek Mouth (ft): -1.1	**Maximum Depth of Creek Mouth (ft):** -2.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Winter Harbor
Garden Creek
Virginia Geographic Information Network (VGIN)
Chesapeake Bay
Garden Creek
Virginia Geographic Information Network (VGIN)
Chesapeake Bay
Garden Creek
Winter Harbor
Garden Creek
Garden Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Completely Shoaled
0
2,000
4,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Winter Harbor**

Creek ID Number: 48	**Locality:** Mathews
Water Body: Chesapkeake Bay	**Channel Type:** Federal
Latitude: 37.3707	**Longitude:** -76.2559
Number of Marinas: 2	
Number of Boat Ramps: 2	
Number of Piers: 42	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 1.7	**Creek Area (acres):** 0
Average Depth of Creek Mouth (ft): N/A	**Maximum Depth of Creek Mouth (ft):** -2.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

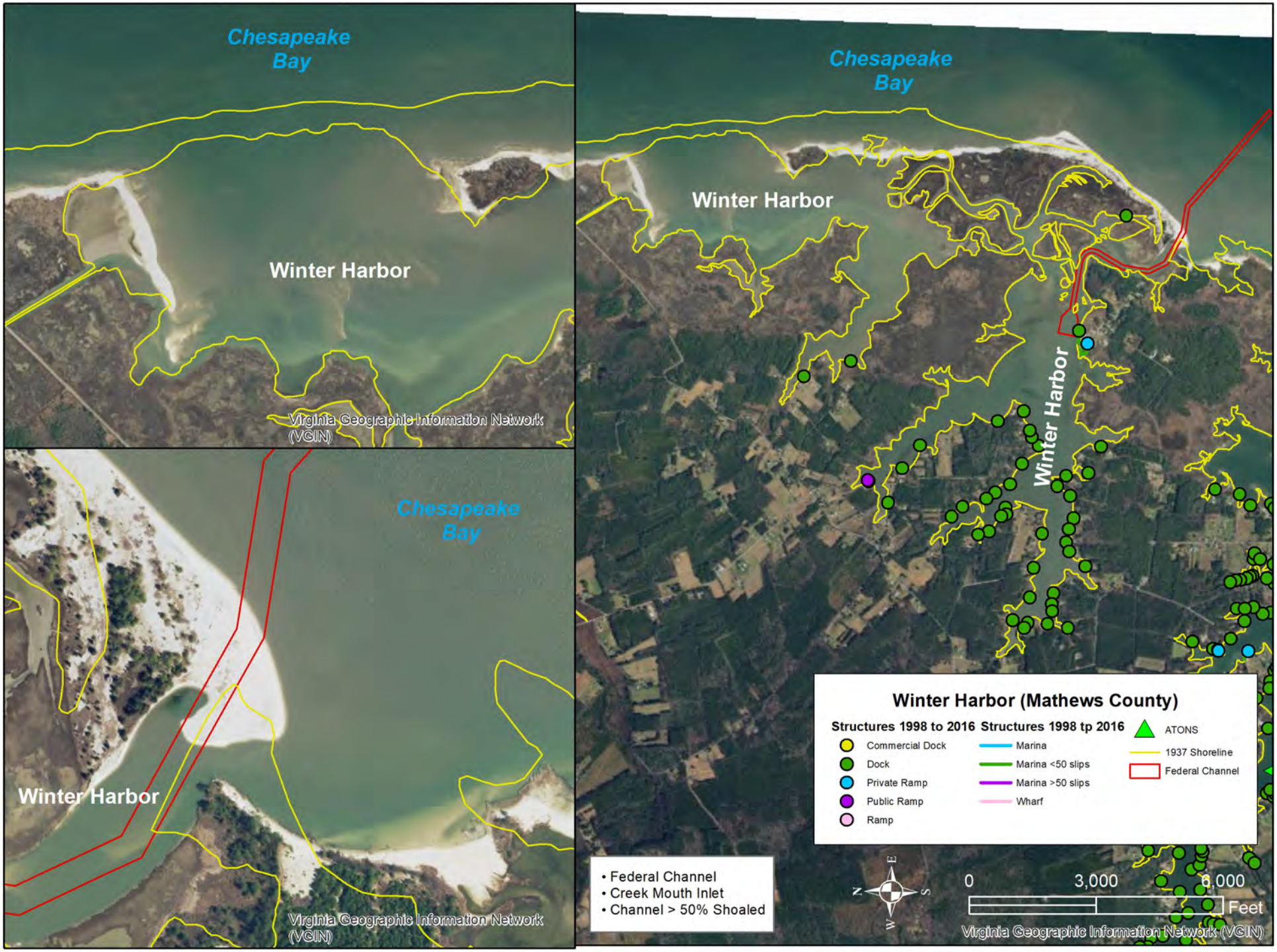
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Chesapeake Bay
Winter Harbor
Virginia Geographic Information Network (VGIN)
Chesapeake Bay
Winter Harbor
Virginia Geographic Information Network (VGIN)
Chesapeake Bay
Winter Harbor
Winter Harbor
Winter Harbor (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Inlet
• Channel > 50% Shoaled
N
E
S
W
0
3,000
6,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Horn Harbor**

Creek ID Number: 49	**Locality:** Mathews
Water Body: Chesapeake Bay	**Channel Type:** Federal
Latitude: 37.3486	**Longitude:** -76.2671
Number of Marinas: 3	
Number of Boat Ramps: 7	
Number of Piers: 113	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 1.8	**Creek Area (acres):** 745
Average Depth of Creek Mouth (ft): -5.2	**Maximum Depth of Creek Mouth (ft):** -8.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

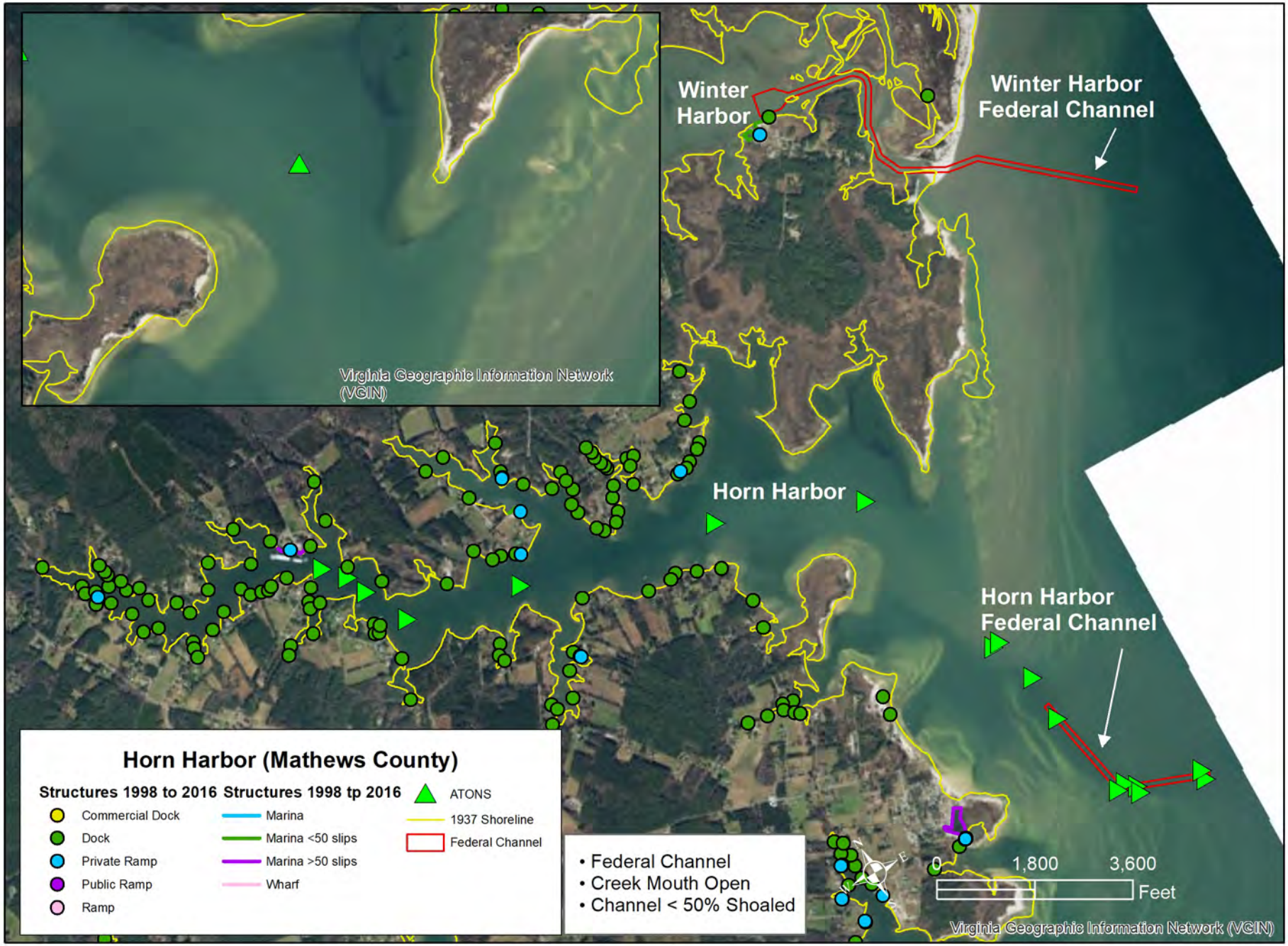
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Winter Harbor
Winter Harbor Federal Channel
Horn Harbor
Horn Harbor Federal Channel
Virginia Geographic Information Network (VGIN)
Horn Harbor (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
0
1,800
3,600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Dyer Creek**

Creek ID Number: 50	**Locality:** Mathews
Water Body: Chesapeake Bay	**Channel Type:** Non-Federal
Latitude: 37.3330	**Longitude:** -76.2743
Number of Marinas: 0	
Number of Boat Ramps: 4	
Number of Piers: 14	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.8	**Creek Area (acres):** 159
Average Depth of Creek Mouth (ft): -3.7	**Maximum Depth of Creek Mouth (ft):** -6.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

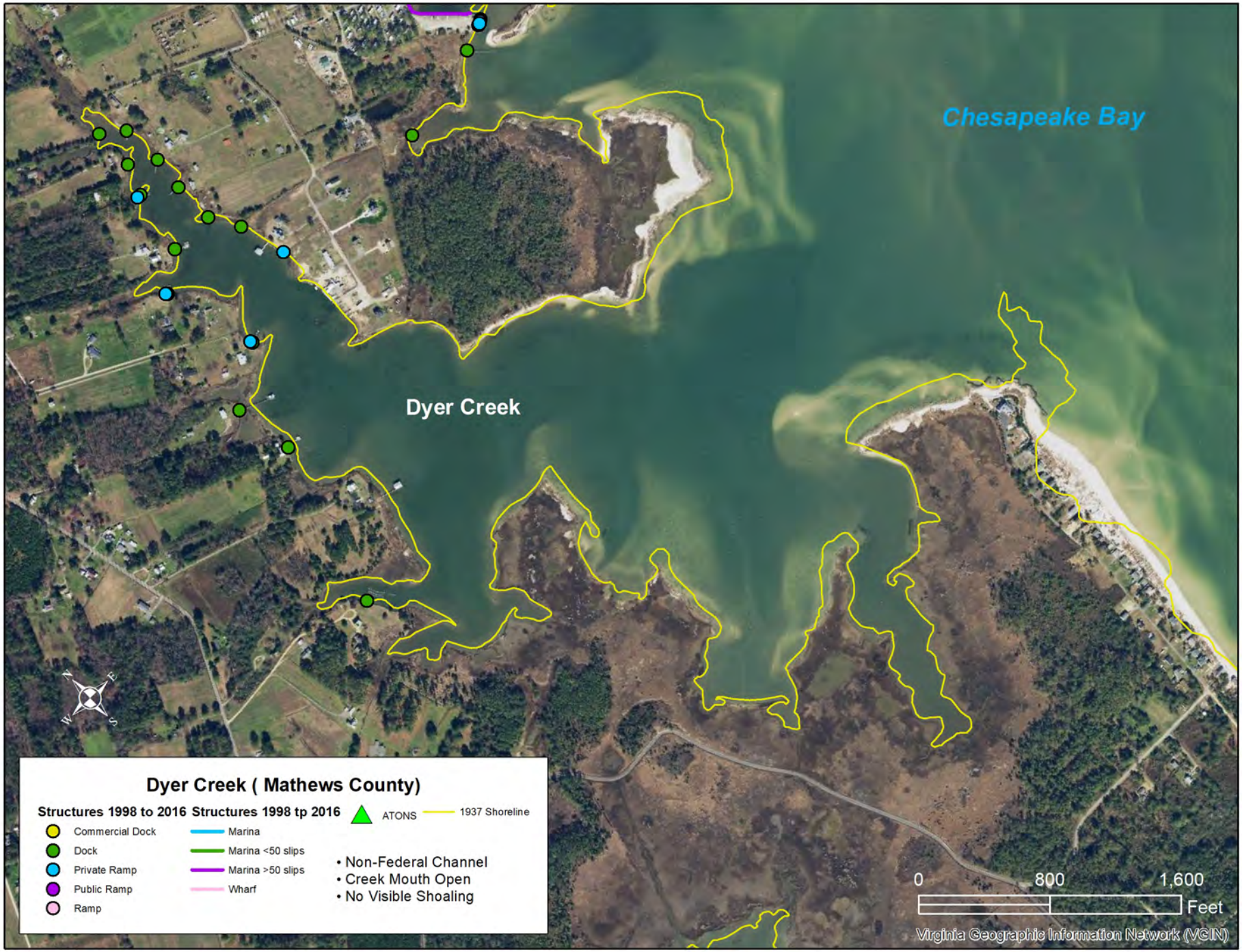
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Chesapeake Bay
Dyer Creek
Dyer Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
800
1,600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Harper Creek**

Creek ID Number: 51	**Locality:** Mathews
Water Body: Mobjack Bay	**Channel Type:** Non-Federal
Latitude: 37.3195	**Longitude:** -76.2838
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 2	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.3	**Creek Area (acres):** 69
Average Depth of Creek Mouth (ft): -2.0	**Maximum Depth of Creek Mouth (ft):** -4.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Harper Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• Channel > 50% Shoaled
Harper Creek
Mobjack Bay
N
W
E
S
0
500
1,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Davis Creek_MA

Creek ID Number: 52	**Locality:** Mathews
Water Body: Mobjack Bay	**Channel Type:** Federal
Latitude: 37.3276	**Longitude:** -76.2985
Number of Marinas: 2	
Number of Boat Ramps: 5	
Number of Piers: 13	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.3	**Creek Area (acres):** 49
Average Depth of Creek Mouth (ft): -2.6	**Maximum Depth of Creek Mouth (ft):** -3.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

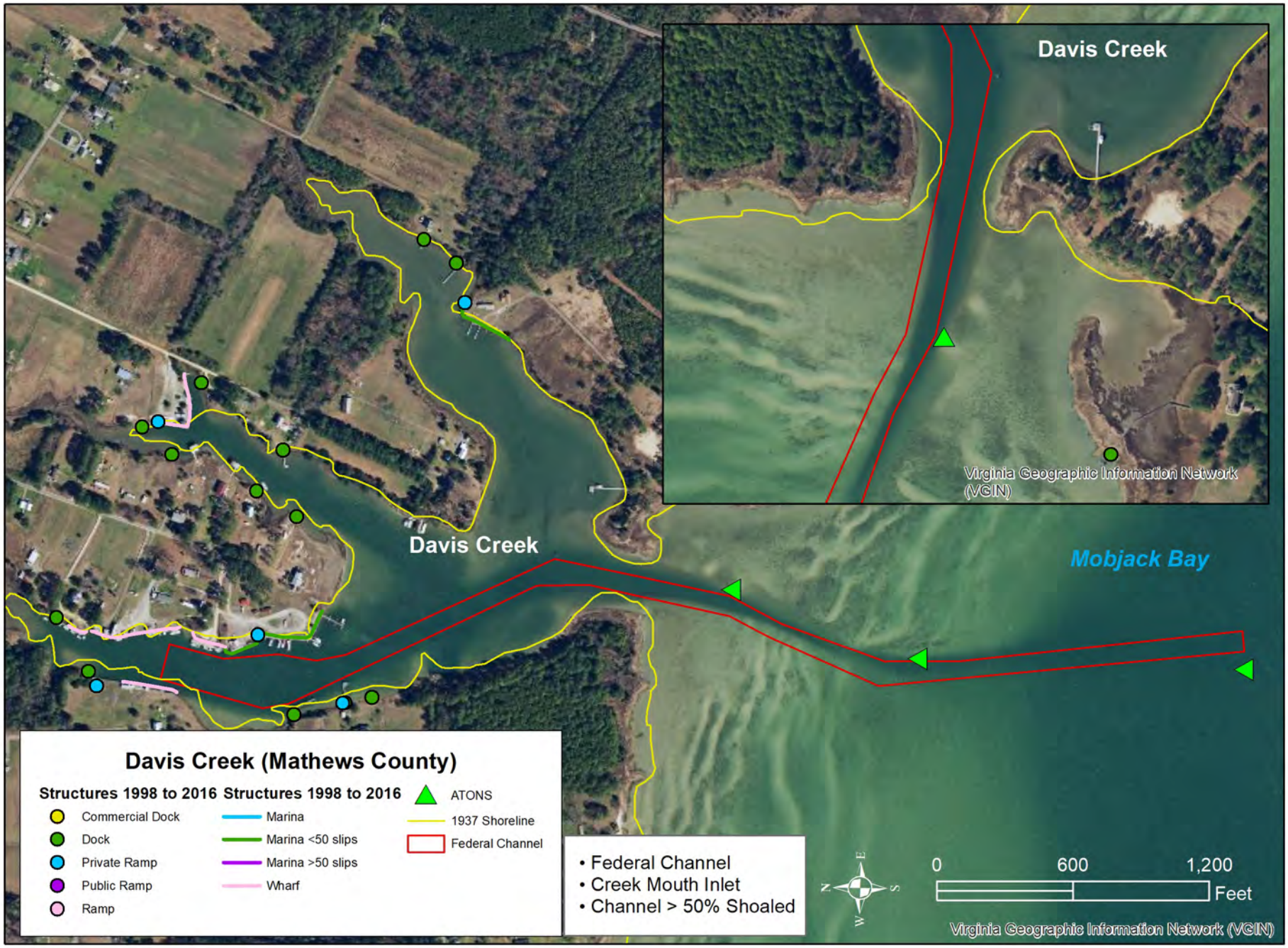
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Davis Creek
Virginia Geographic Information Network (VGIN)
Davis Creek
Mobjack Bay
Davis Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Inlet
• Channel > 50% Shoaled
N
E
S
W
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Pepper Creek**

Creek ID Number: 53	**Locality:** Mathews
Water Body: Mobjack Bay	**Channel Type:** Non-Federal ATON
Latitude: 37.3425	**Longitude:** -76.3161
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 16	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.5	**Creek Area (acres):** 214
Average Depth of Creek Mouth (ft): -4.0	**Maximum Depth of Creek Mouth (ft):** -9.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

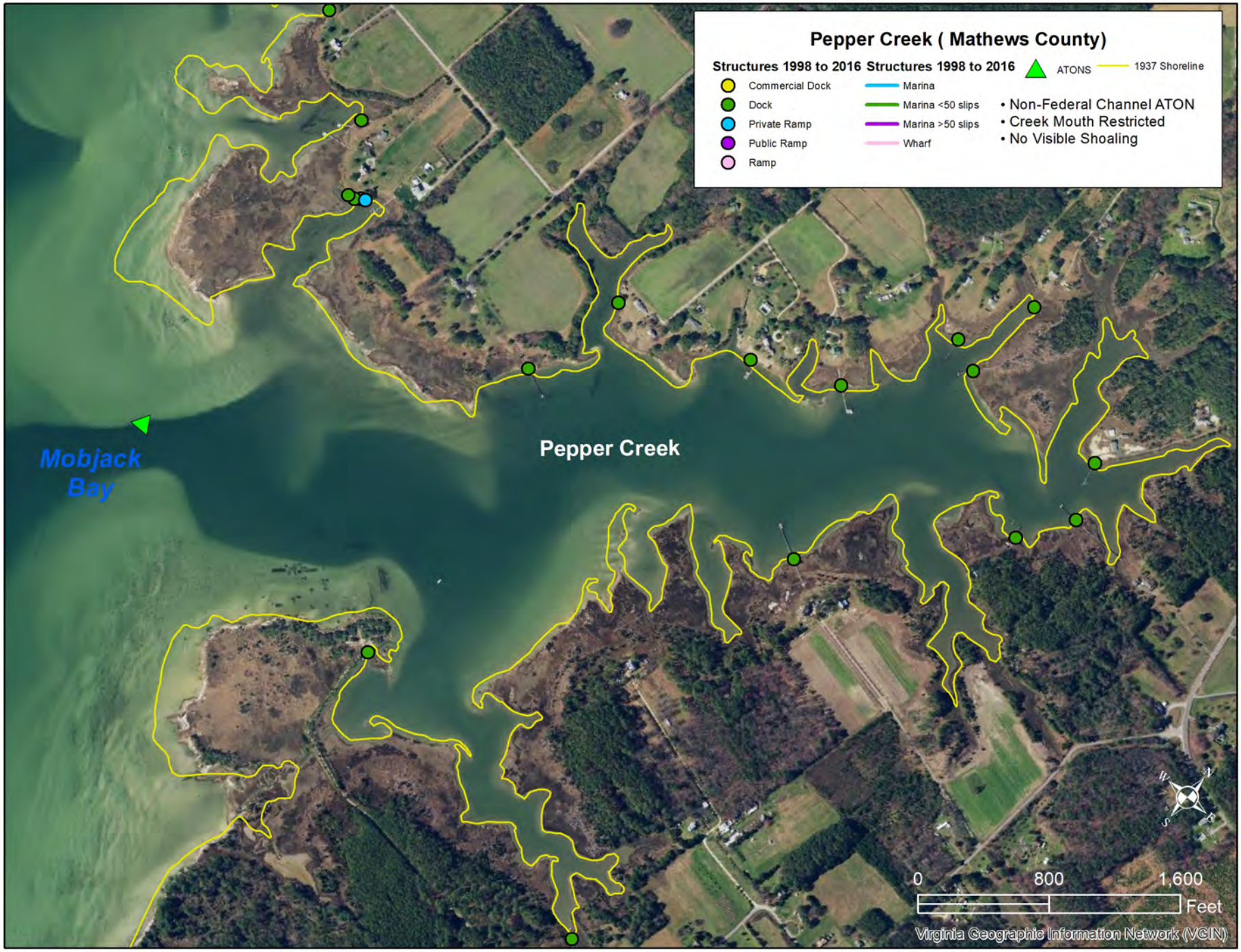
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Pepper Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Restricted
• No Visible Shoaling
Mobjack Bay
Pepper Creek
0
800
1,600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Sloop Creek

Creek ID Number: 54	**Locality:** Mathews
Water Body: Mobjack Bay	**Channel Type:** Non-Federal
Latitude: 37.3528	**Longitude:** -76.3256
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 13	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 17
Average Depth of Creek Mouth (ft): -0.7	**Maximum Depth of Creek Mouth (ft):** -1.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Sloop Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
Sloop Creek
Mobjack Bay
Sloop Creek
Mobjack Bay
Virginia Geographic Information Network (VGIN)
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for West Landing Creek

Creek ID Number: 55	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3683	**Longitude:** -76.3363
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 9	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 20
Average Depth of Creek Mouth (ft): -2.4	**Maximum Depth of Creek Mouth (ft):** -4.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


West Landing Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
West Landing Creek
East River
N
E
S
W
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Tabbs Creek

Creek ID Number: 56	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3837	**Longitude:** -76.3332
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 10	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 59
Average Depth of Creek Mouth (ft): -4.7	**Maximum Depth of Creek Mouth (ft):** -8.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Tabbs Creek
East River
Tabbs Creek
Tabbs Creek (Mathews County)
Structures 1998 to 2016
Structures 1998 tp 2016
ATONS
1937 Shoreline
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Marina
Marina <50 slips
Marina >50 slips
Wharf
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
N
W
E
S
0
500
1,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Weston Creek**

Creek ID Number: 57	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3924	**Longitude:** -76.3332
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 9	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 23
Average Depth of Creek Mouth (ft): -2.6	**Maximum Depth of Creek Mouth (ft):** -4.7

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

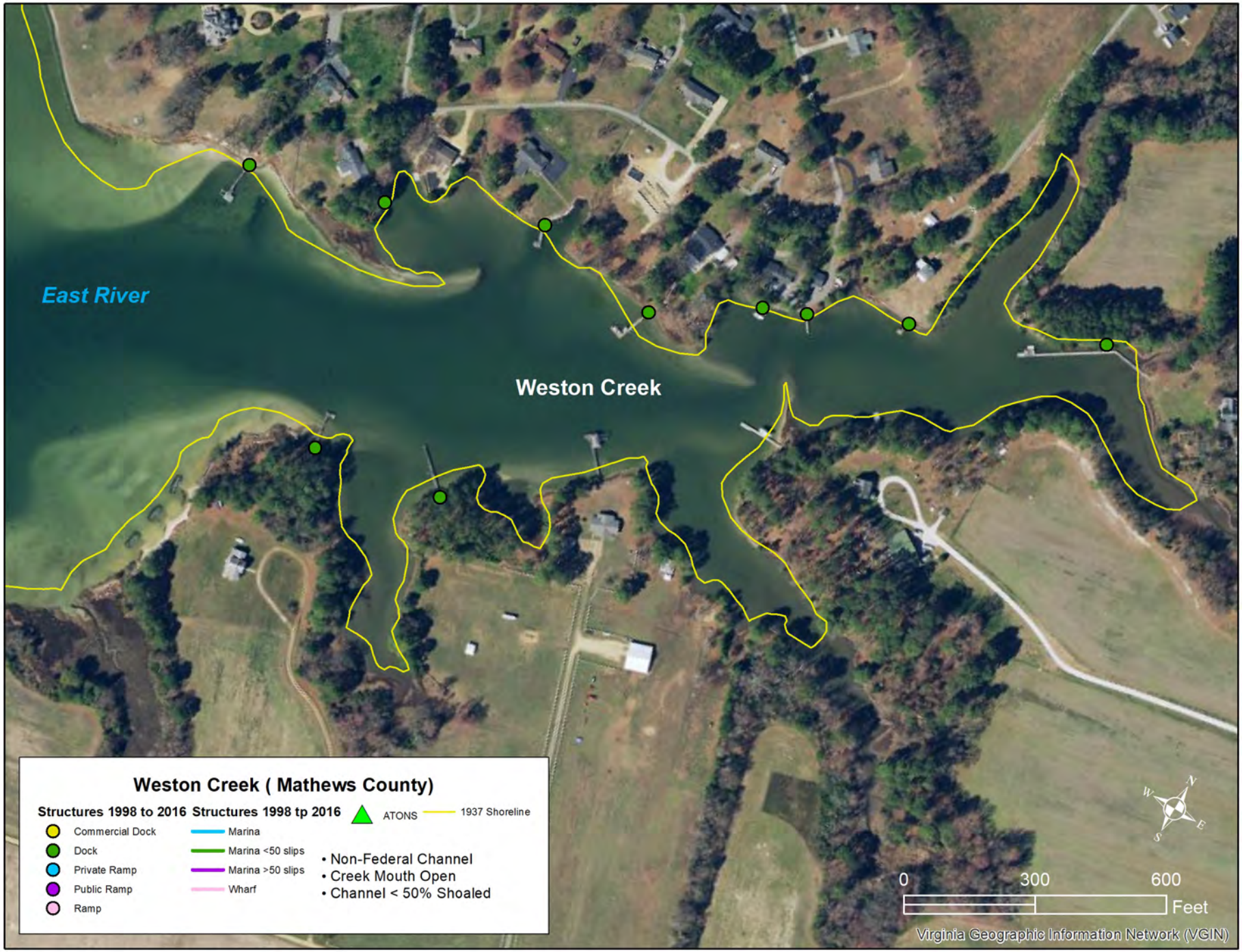
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


East River
Weston Creek
Weston Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
N
W
E
S
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Mill Creek_MA

Creek ID Number: 58	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3965	**Longitude:** -76.3346
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 15	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 19
Average Depth of Creek Mouth (ft): -1.0	**Maximum Depth of Creek Mouth (ft):** -1.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mill Creek
East River
Mill Creek
East River
Mill Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
300
600
Feet
N
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Todds Creek**

Creek ID Number: 59	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.4018	**Longitude:** -76.3413
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 13	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 18
Average Depth of Creek Mouth (ft): -3.8	**Maximum Depth of Creek Mouth (ft):** -5.8

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

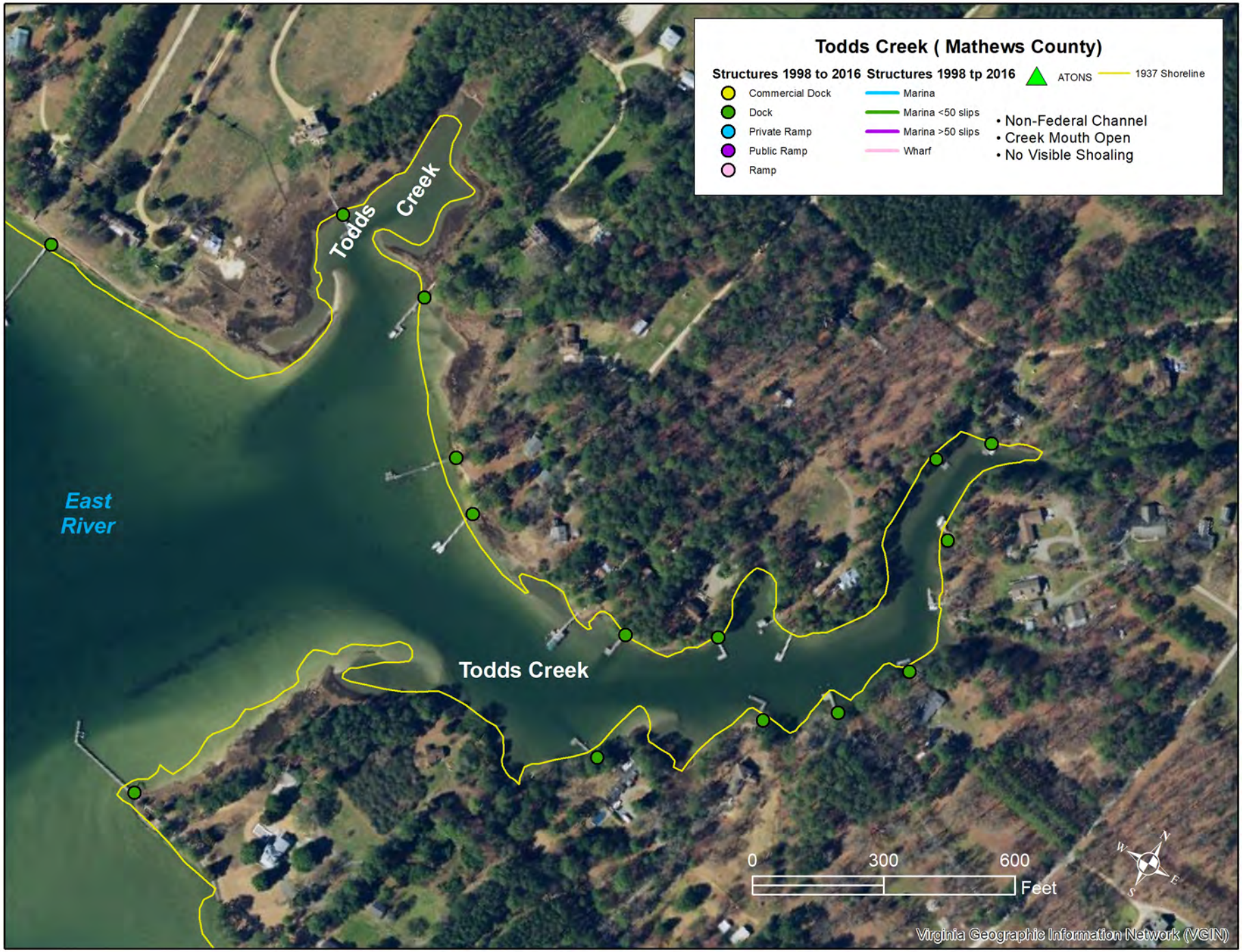
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Todds Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Todds Creek
East River
Todds Creek
0
300
600
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Put In Creek**

Creek ID Number: 60	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.4140	**Longitude:** -76.3412
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 48	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 130
Average Depth of Creek Mouth (ft): -6.3	**Maximum Depth of Creek Mouth (ft):** -11.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

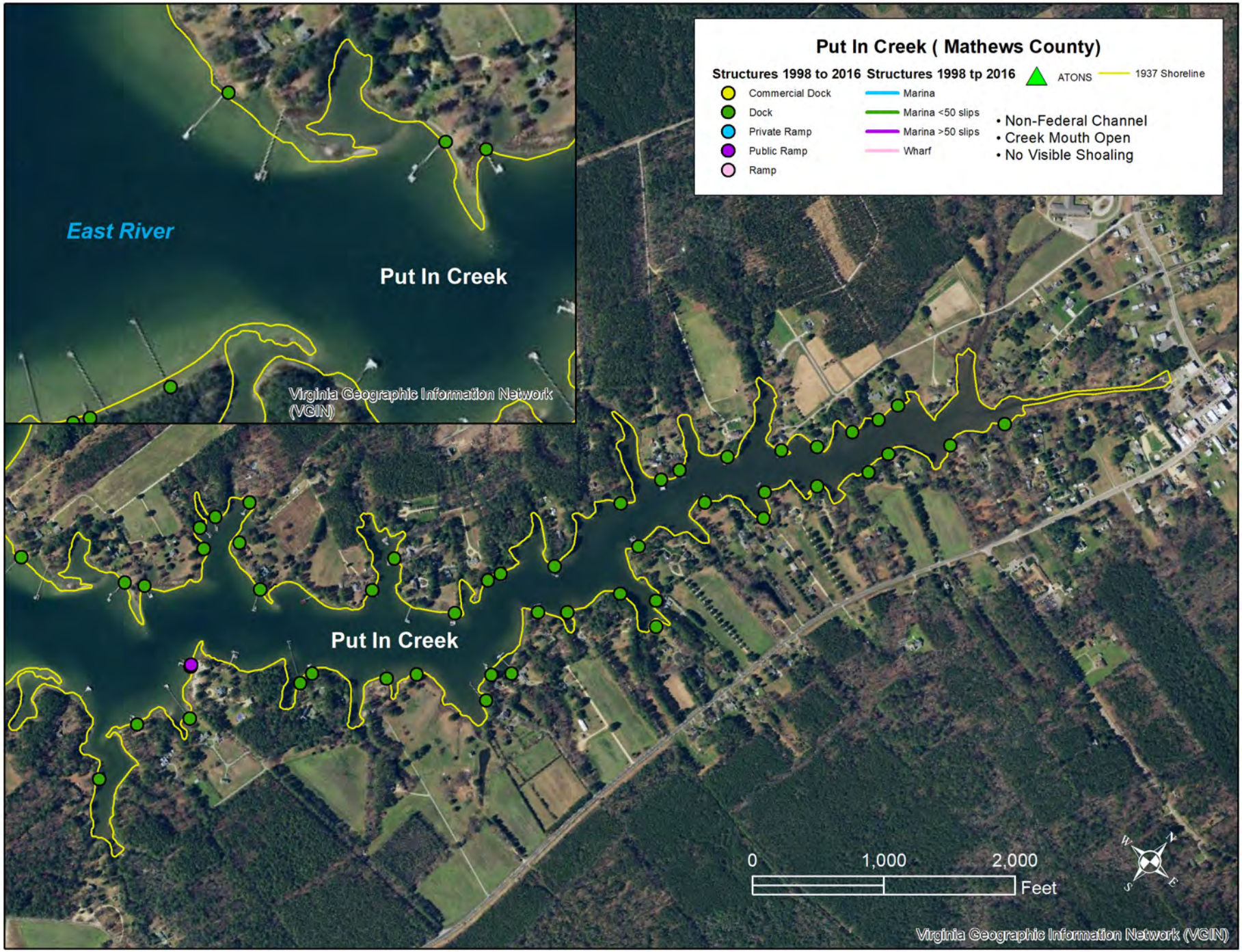
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Put In Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
East River
Put In Creek
Virginia Geographic Information Network (VGIN)
Put In Creek
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Woodas Creek**

Creek ID Number: 61	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.4209	**Longitude:** -76.3509
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 23	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 33
Average Depth of Creek Mouth (ft): -3.1	**Maximum Depth of Creek Mouth (ft):** -6.8

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

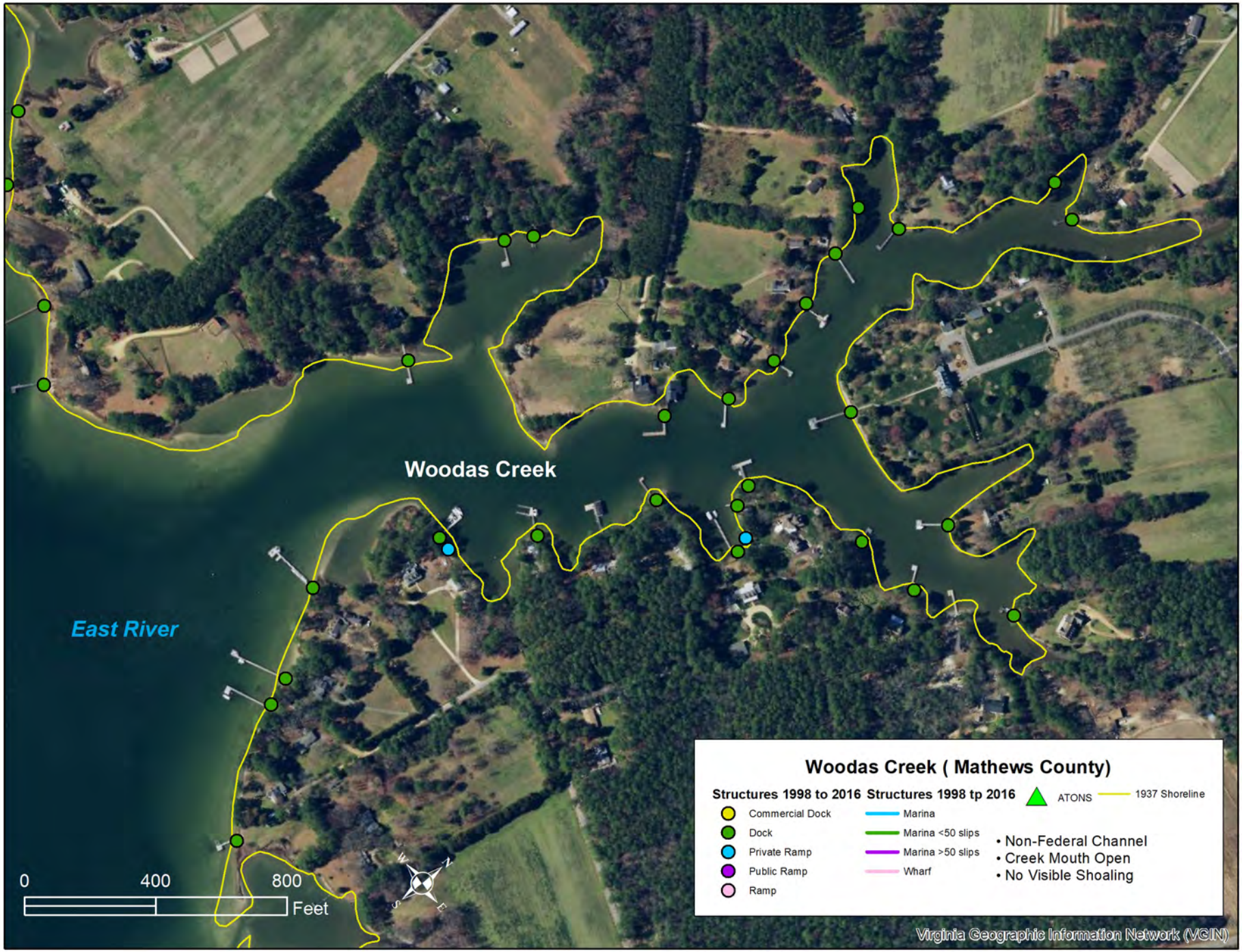
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Woodas Creek
East River
0
400
800
Feet
Woodas Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Virginia Geographic Information Network (VGIN)

Data Sheet for Miles Creek

Creek ID Number: 62	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.4035	**Longitude:** -76.3525
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 19	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 29
Average Depth of Creek Mouth (ft): -4.6	**Maximum Depth of Creek Mouth (ft):** -7.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

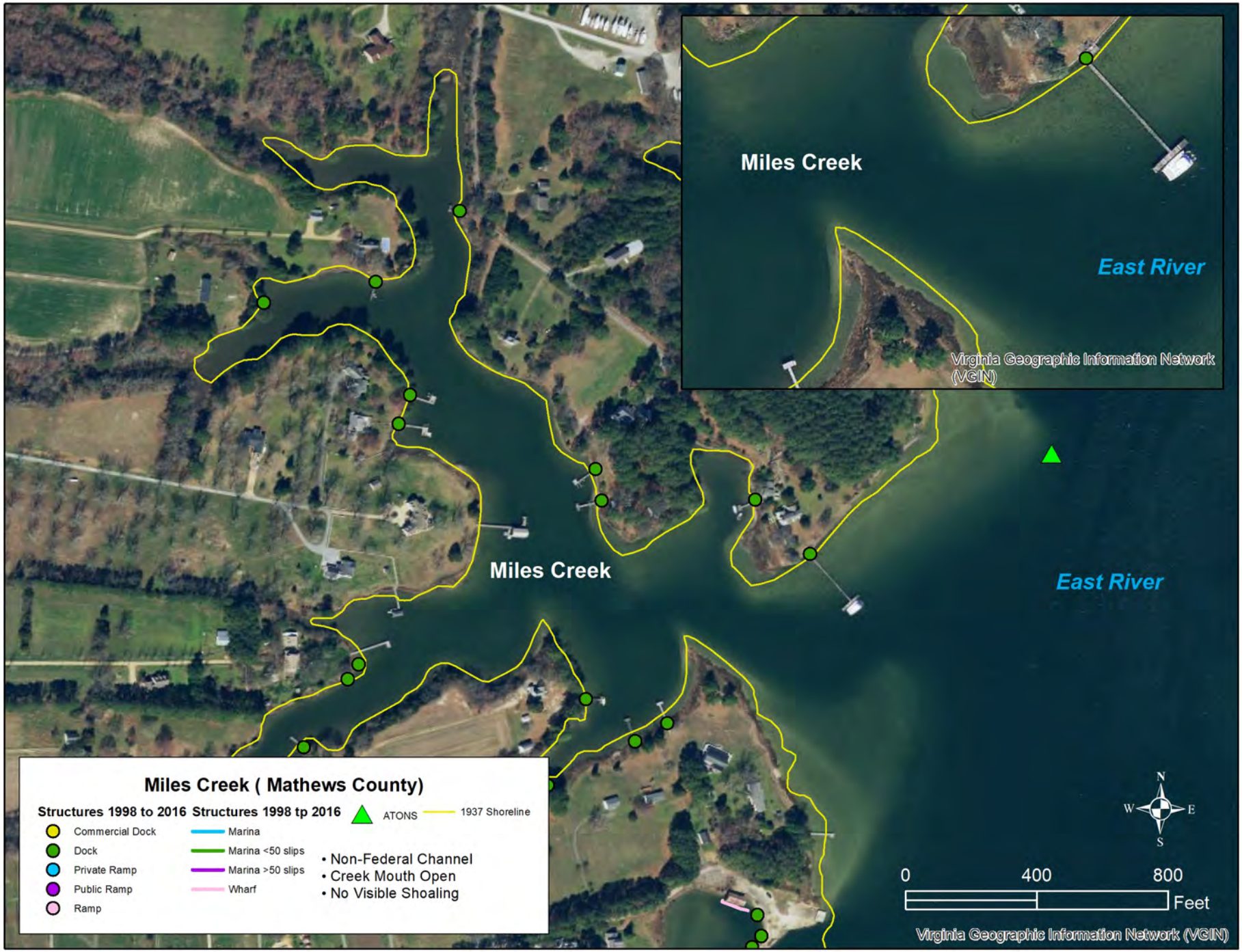
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Miles Creek
East River
Virginia Geographic Information Network (VGIN)
Miles Creek
East River
Miles Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
N
W
E
S
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Mill Creek 2

Creek ID Number: 63	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.4006	**Longitude:** -76.3522
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 8	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 14
Average Depth of Creek Mouth (ft): -0.7	**Maximum Depth of Creek Mouth (ft):** -1.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mill Creek
East River
Virginia Geographic Information Network (VGIN)
East River
Mill Creek
Mill Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel < 50% Shoaled
N
W
E
S
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Raines**

Creek ID Number: 64	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3961	**Longitude:** -76.3468
Number of Marinas: 0	
Number of Boat Ramps: 3	
Number of Piers: 8	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 20
Average Depth of Creek Mouth (ft): -4.5	**Maximum Depth of Creek Mouth (ft):** -6.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

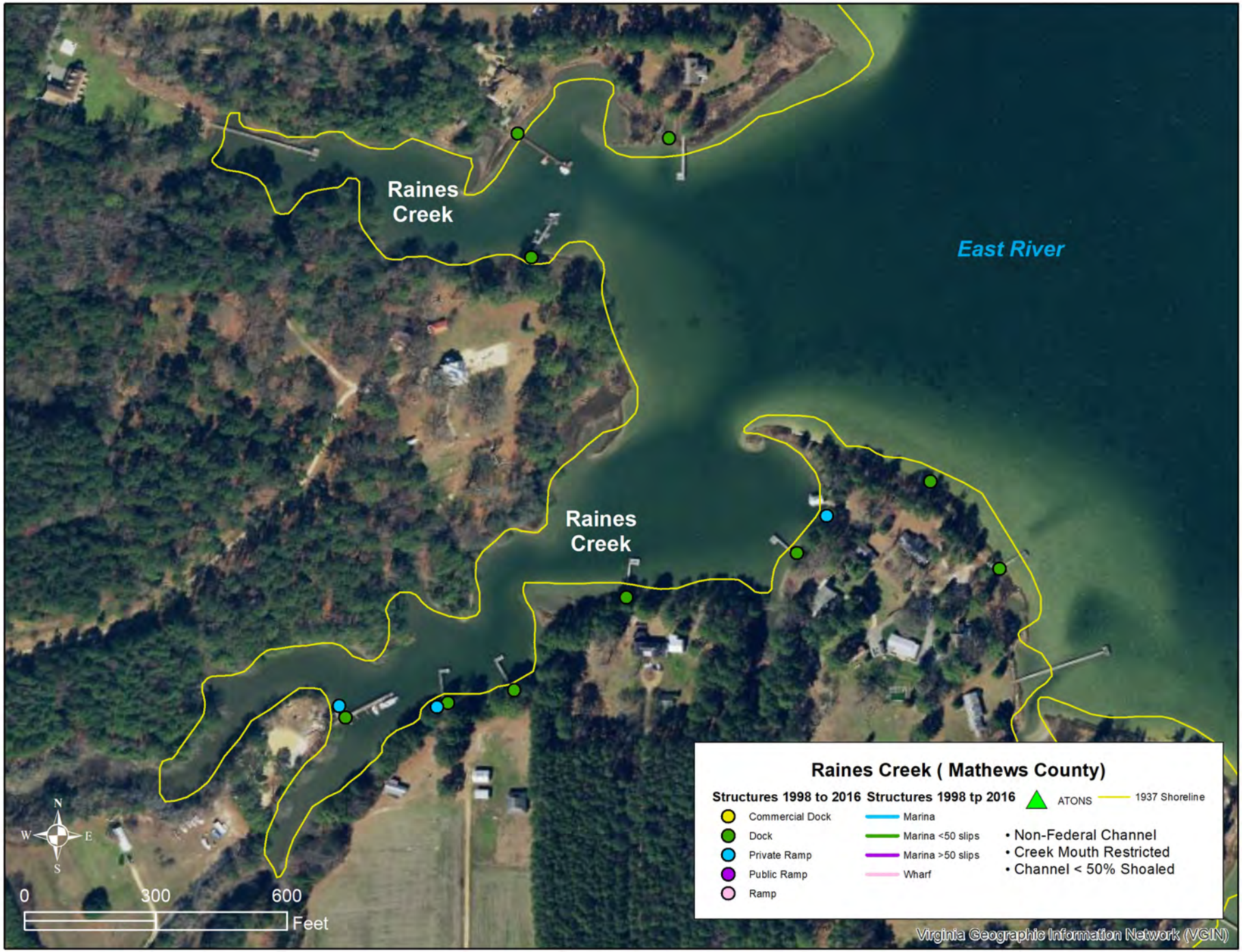
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Raines Creek
East River
Raines Creek
Raines Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
N
W
E
S
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Thomas Creek_MA

Creek ID Number: 65	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3901	**Longitude:** -76.3440
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 4	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 11
Average Depth of Creek Mouth (ft): -1.8	**Maximum Depth of Creek Mouth (ft):** -2.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

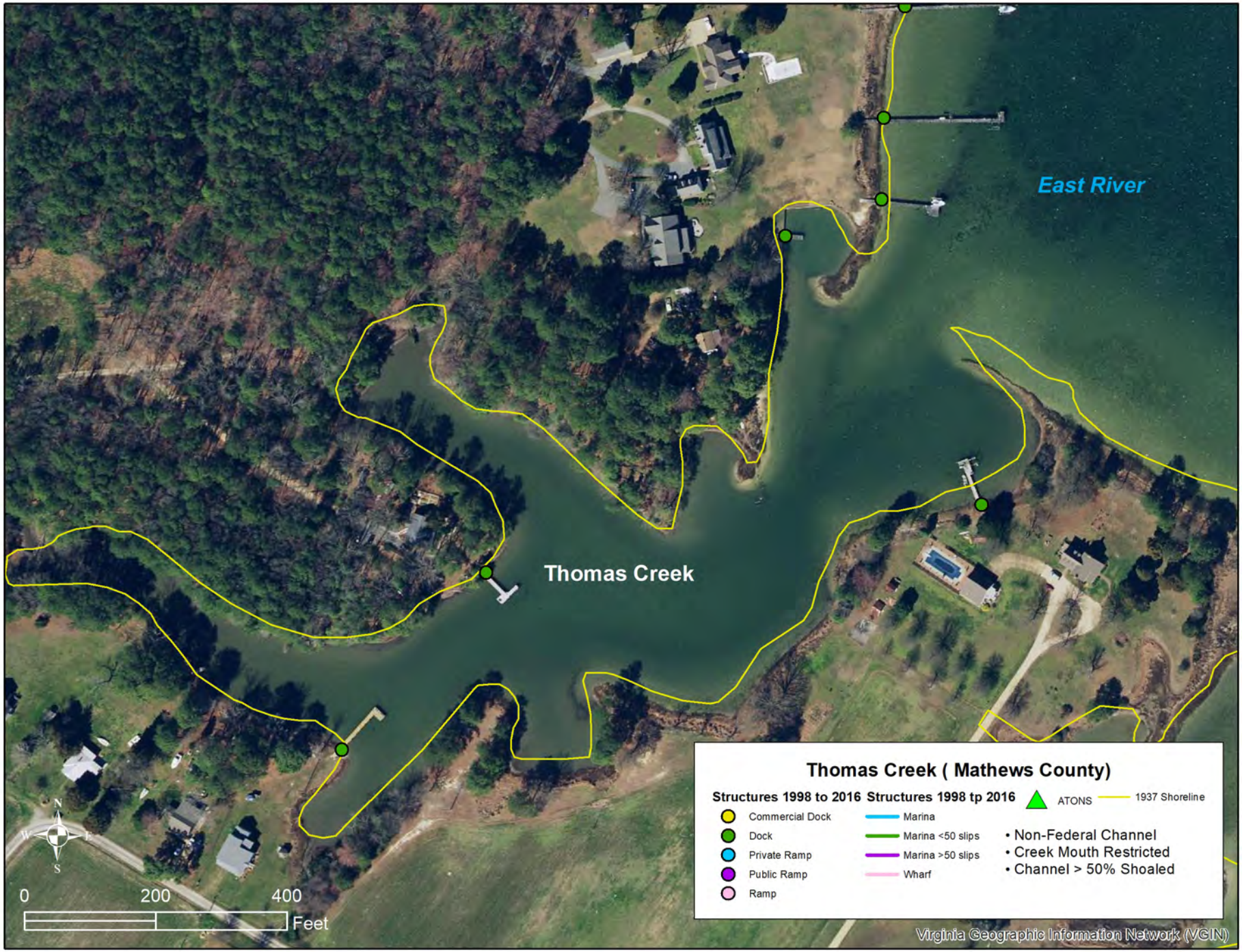
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


East River
Thomas Creek
Thomas Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
W
E
S
0
200
400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Sharp Point Creek**

Creek ID Number: 66	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3837	**Longitude:** -76.3450
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 2	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 14
Average Depth of Creek Mouth (ft): -2.3	**Maximum Depth of Creek Mouth (ft):** -4.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Sharp Point Creek
East River
Sharp Point Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
200
400
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Whites Creek**

Creek ID Number: 67	**Locality:** Mathews
Water Body: East River	**Channel Type:** Non-Federal
Latitude: 37.3738	**Longitude:** -76.3489
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 11	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 12
Average Depth of Creek Mouth (ft): -1.1	**Maximum Depth of Creek Mouth (ft):** -2.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


East River
Whites Creek
Virginia Geographic Information Network (VGIN)
East River
Whites Creek
Whites Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
0
300
600
Feet
N
E
S
W
Virginia Geographic Information Network (VGIN)

Data Sheet for Godsey Creek

Creek ID Number: 68	**Locality:** Mathews
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.3808	**Longitude:** -76.3713
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 6	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 41
Average Depth of Creek Mouth (ft): -1.9	**Maximum Depth of Creek Mouth (ft):** -5.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

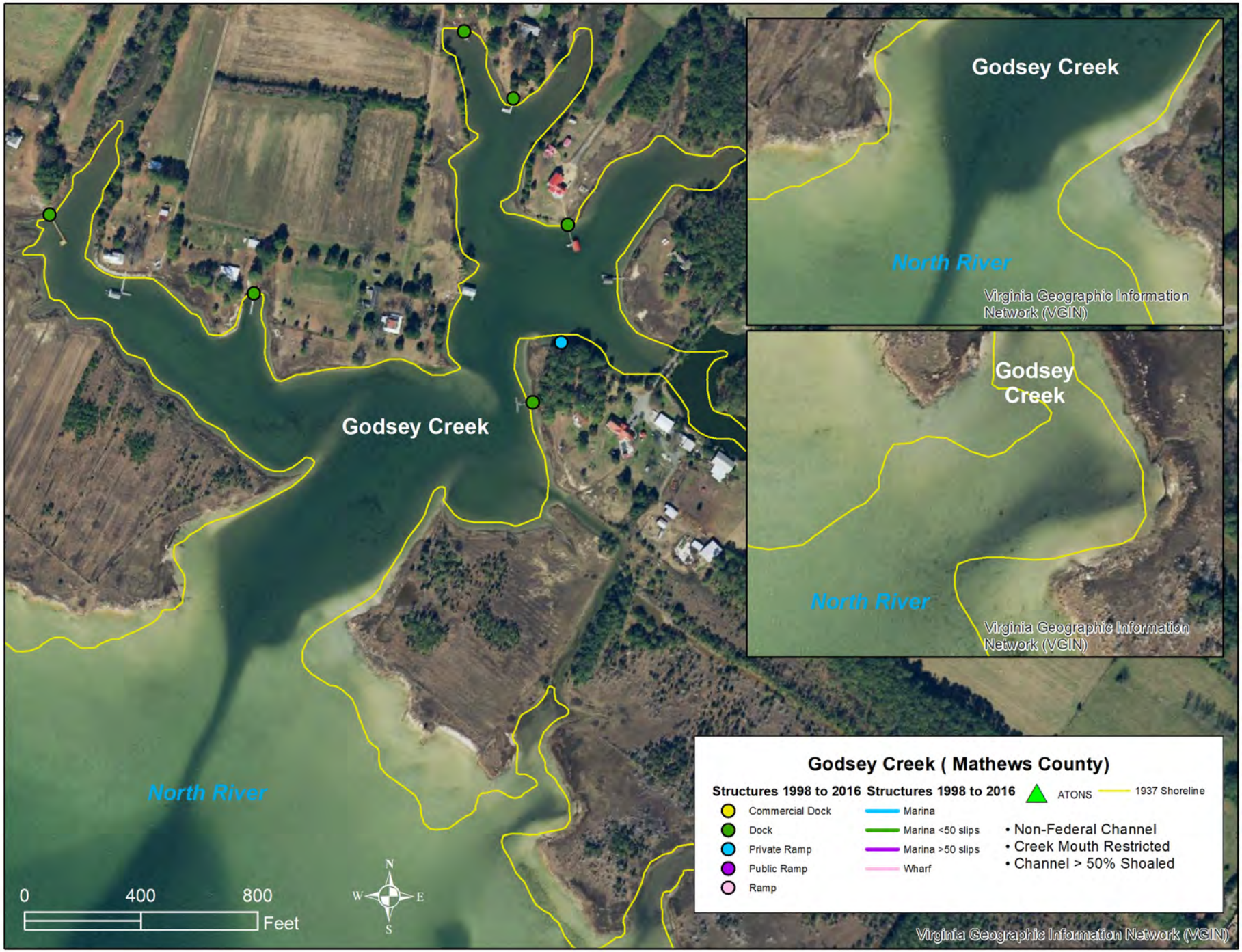
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Godsey Creek
North River
Virginia Geographic Information Network (VGIN)
Godsey Creek
North River
Virginia Geographic Information Network (VGIN)
Godsey Creek
North River
0
400
800
Feet
N
W
E
S
Godsey Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
Virginia Geographic Information Network (VGIN)

Data Sheet for Diggs Creek

Creek ID Number: 69	**Locality:** Mathews
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.3831	**Longitude:** -76.3790
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 2	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 14
Average Depth of Creek Mouth (ft): -1.2	**Maximum Depth of Creek Mouth (ft):** -1.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


North River
Diggs Creek
Virginia Geographic Information Network (VGIN)
North River
Diggs Creek
Diggs Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
0
400
800
Feet
W
N
S
E
Virginia Geographic Information Network (VGIN)

Data Sheet for Cakes Creek

Creek ID Number: 70	**Locality:** Mathews
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.3861	**Longitude:** -76.3857
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 2	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 20
Average Depth of Creek Mouth (ft): -0.9	**Maximum Depth of Creek Mouth (ft):** -1.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

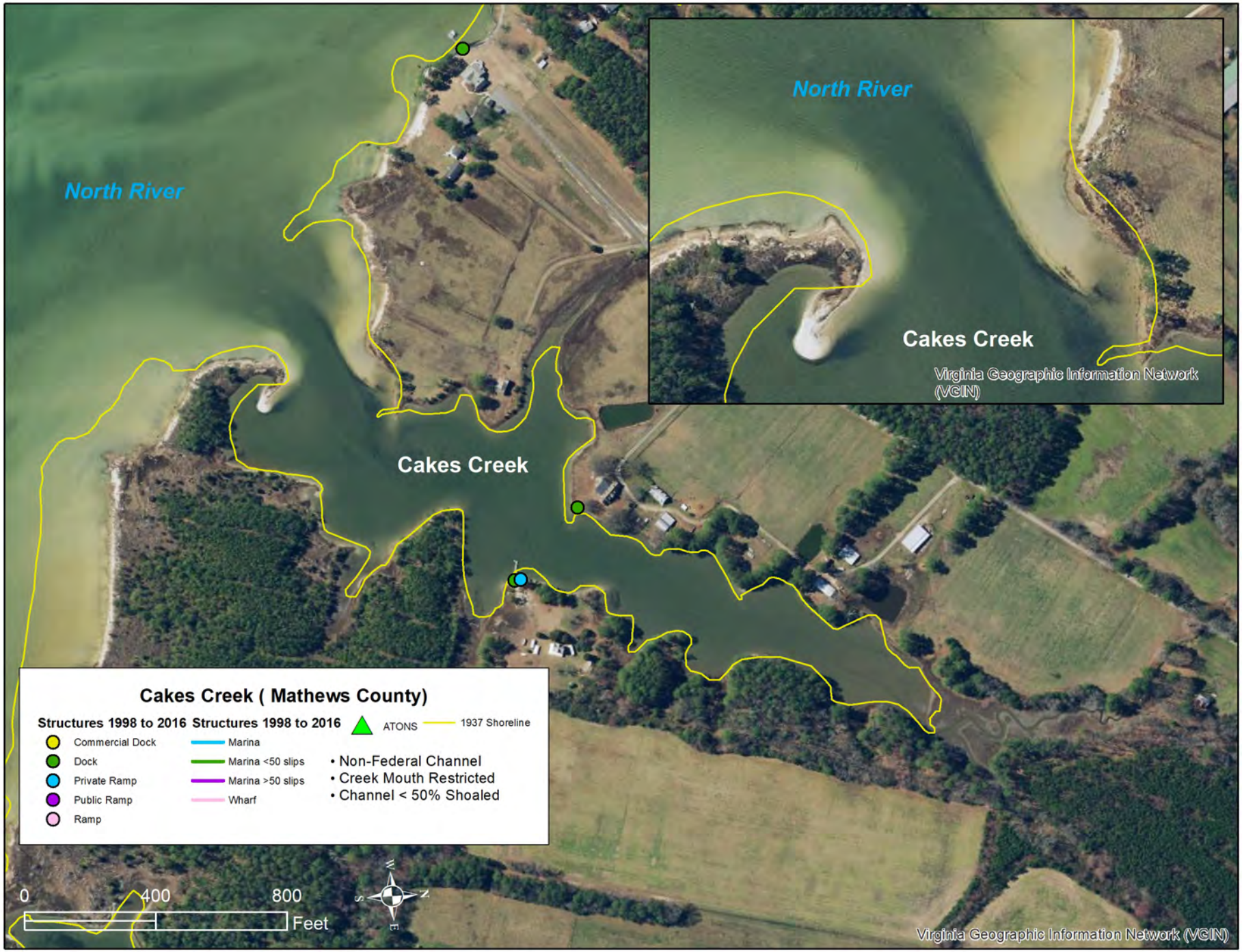
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


North River
North River
Cakes Creek
Cakes Creek
Virginia Geographic Information Network (VGIN)
Cakes Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
400
800
Feet
W
N
S
E
Virginia Geographic Information Network (VGIN)

Data Sheet for Raymond Creek

Creek ID Number: 71	**Locality:** Mathews
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4011	**Longitude:** -76.3954
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 1	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 14
Average Depth of Creek Mouth (ft): -1.5	**Maximum Depth of Creek Mouth (ft):** -2.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Raymond Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
North River
Raymond Creek
0
250
500
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Old Log School Creek**

Creek ID Number: 72	**Locality:** Mathews
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4091	**Longitude:** -76.3957
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 3	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 14
Average Depth of Creek Mouth (ft): -2.2	**Maximum Depth of Creek Mouth (ft):** -4.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

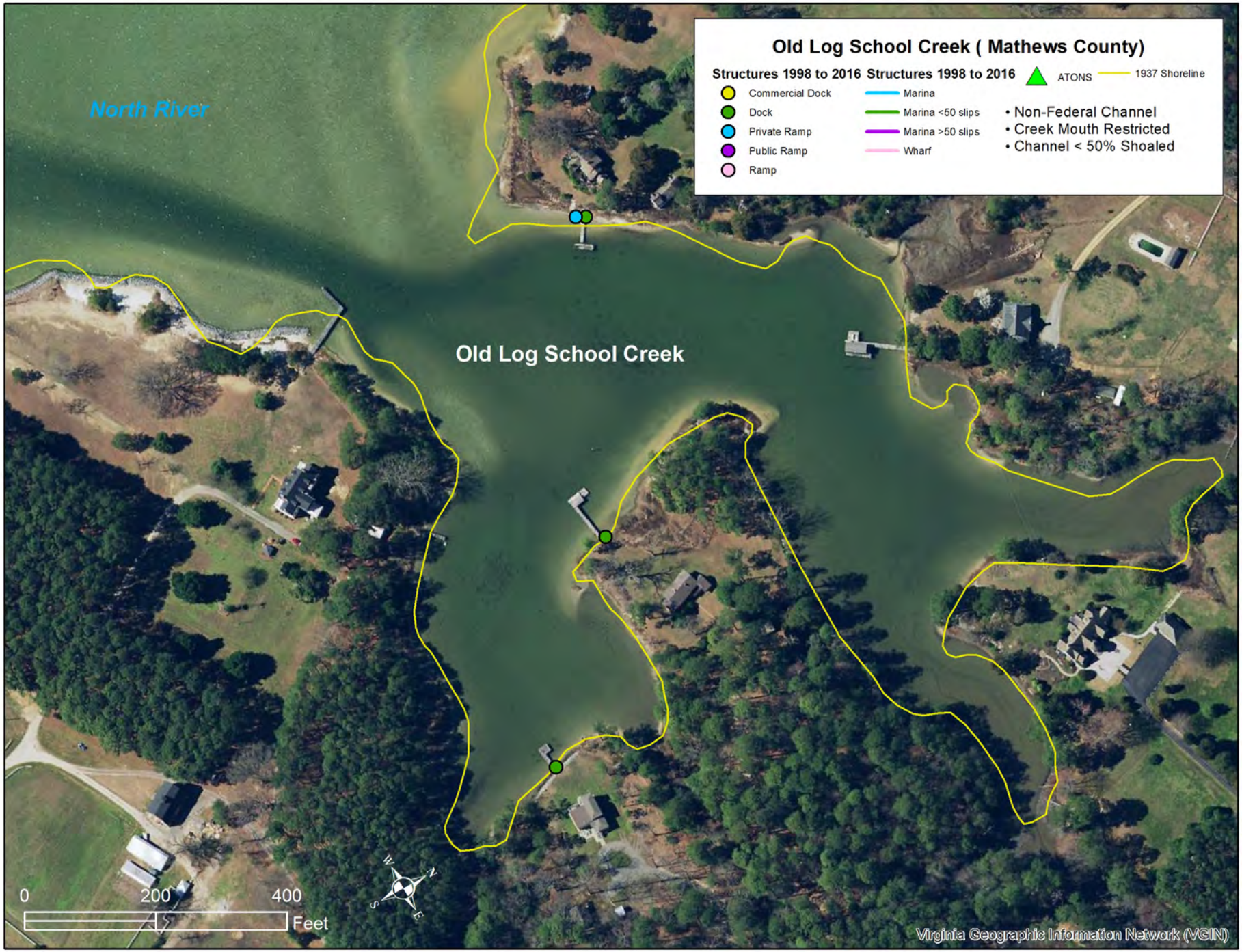
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Old Log School Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
North River
Old Log School Creek
0
200
400
Feet
N
S
E
Virginia Geographic Information Network (VGIN)

Data Sheet for Oakland Creek

Creek ID Number: 73	**Locality:** Mathews
Water Body: Blackwater Creek	**Channel Type:** Non-Federal
Latitude: 37.4238	**Longitude:** -76.3991
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 8	
Creek Mouth Morphology: Semi-Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 21
Average Depth of Creek Mouth (ft): -2.7	**Maximum Depth of Creek Mouth (ft):** -5.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

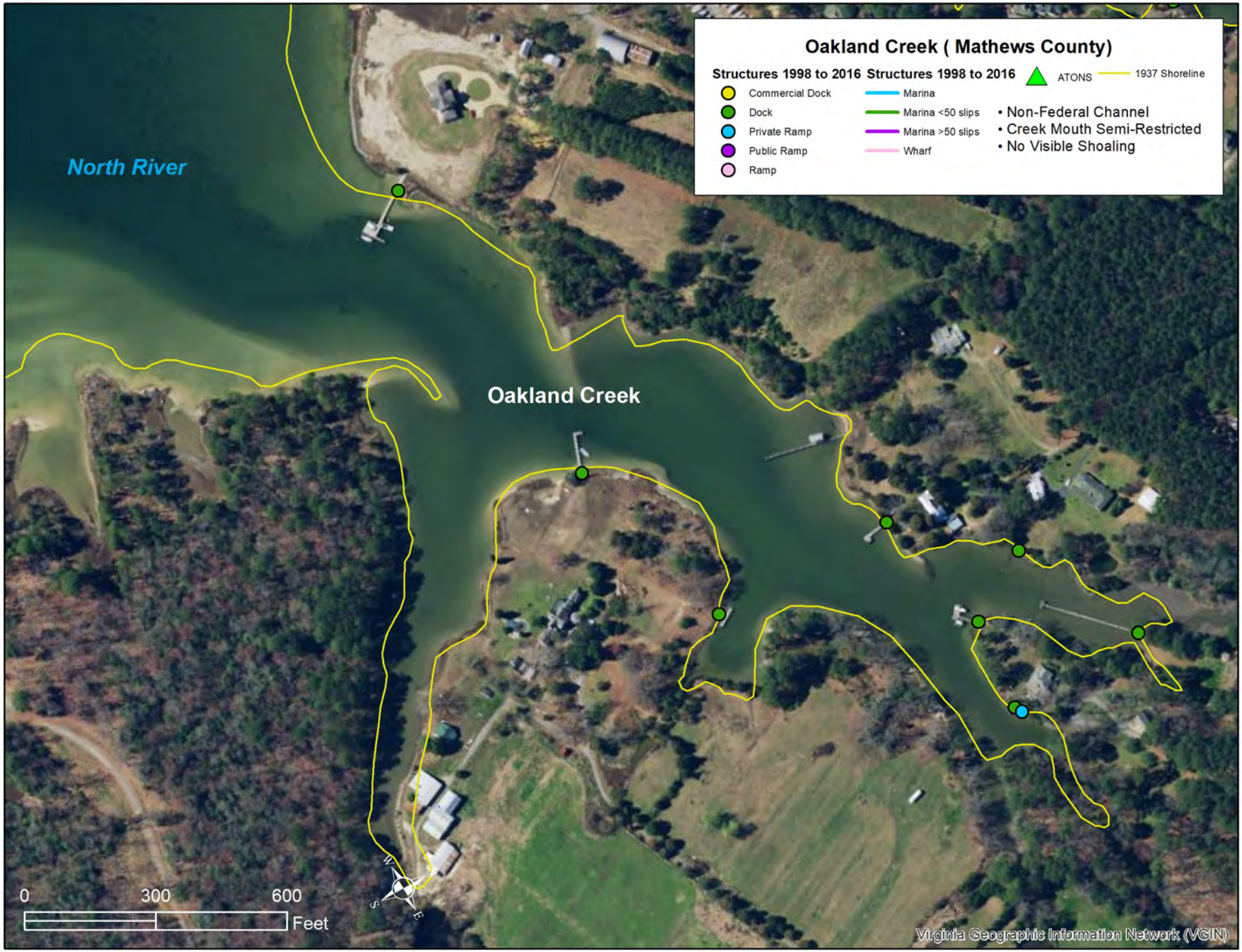
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Oakland Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Semi-Restricted
• No Visible Shoaling
North River
Oakland Creek
0
300
600
Feet
W
S
E
Virginia Geographic Information Network (VGIN)

Data Sheet for Greenmansion Creek

Creek ID Number: 74	**Locality:** Mathews
Water Body: Blackwater Creek	**Channel Type:** Non-Federal ATON
Latitude: 37.4255	**Longitude:** -76.4026
Number of Marinas: 1	
Number of Boat Ramps: 1	
Number of Piers: 10	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 37
Average Depth of Creek Mouth (ft): -3.9	**Maximum Depth of Creek Mouth (ft):** -7.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

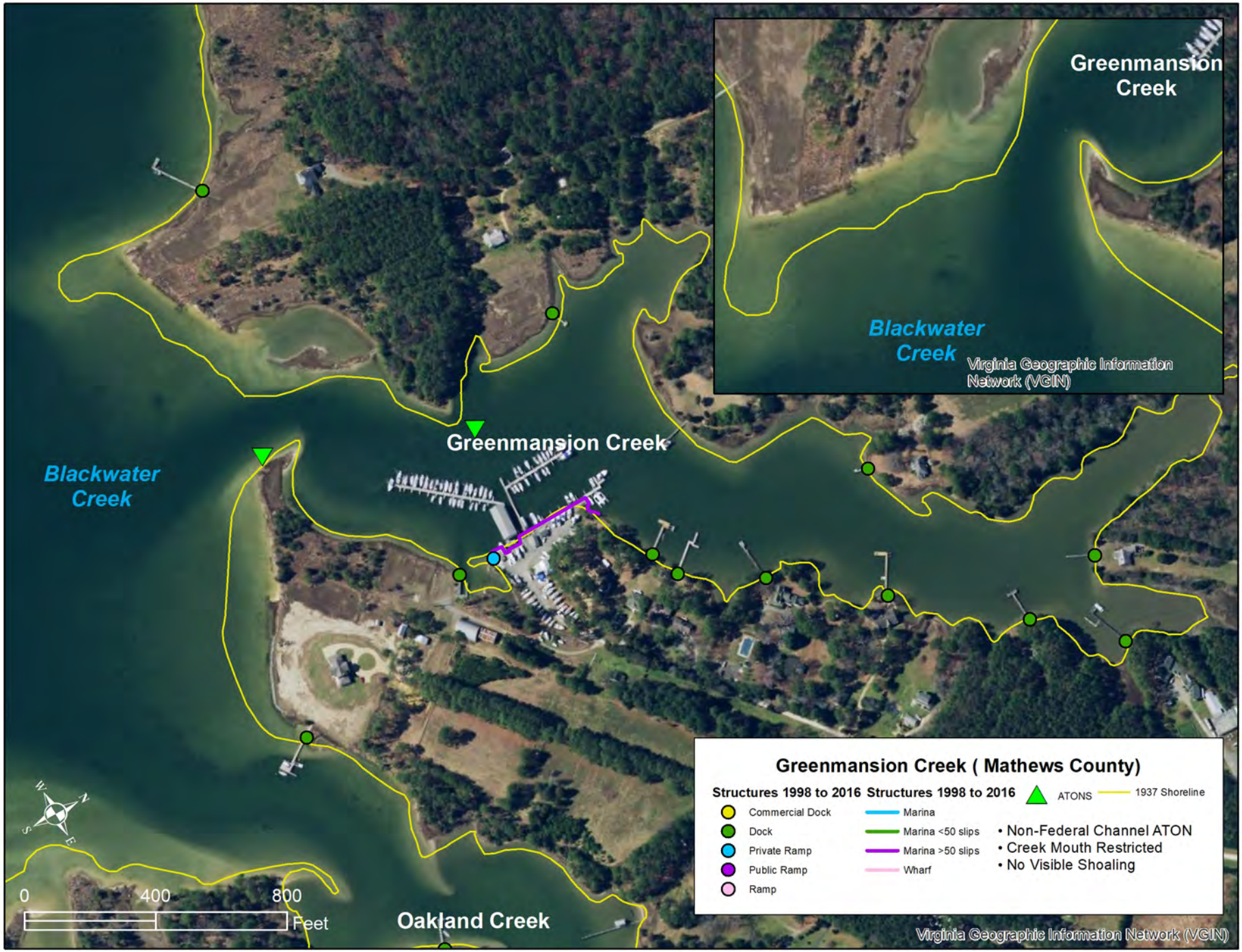
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Greenmansion Creek
Blackwater Creek
Virginia Geographic Information Network (VGIN)
Greenmansion Creek
Blackwater Creek
Oakland Creek
0
400
800
Feet
Greenmansion Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Restricted
• No Visible Shoaling
Virginia Geographic Information Network (VGIN)

Data Sheet for **Blackwater Creek**

Creek ID Number: 75	**Locality:** Mathews
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4187	**Longitude:** -76.4013
Number of Marinas: 1	
Number of Boat Ramps: 4	
Number of Piers: 51	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 343
Average Depth of Creek Mouth (ft): -6.9	**Maximum Depth of Creek Mouth (ft):** -16.7

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

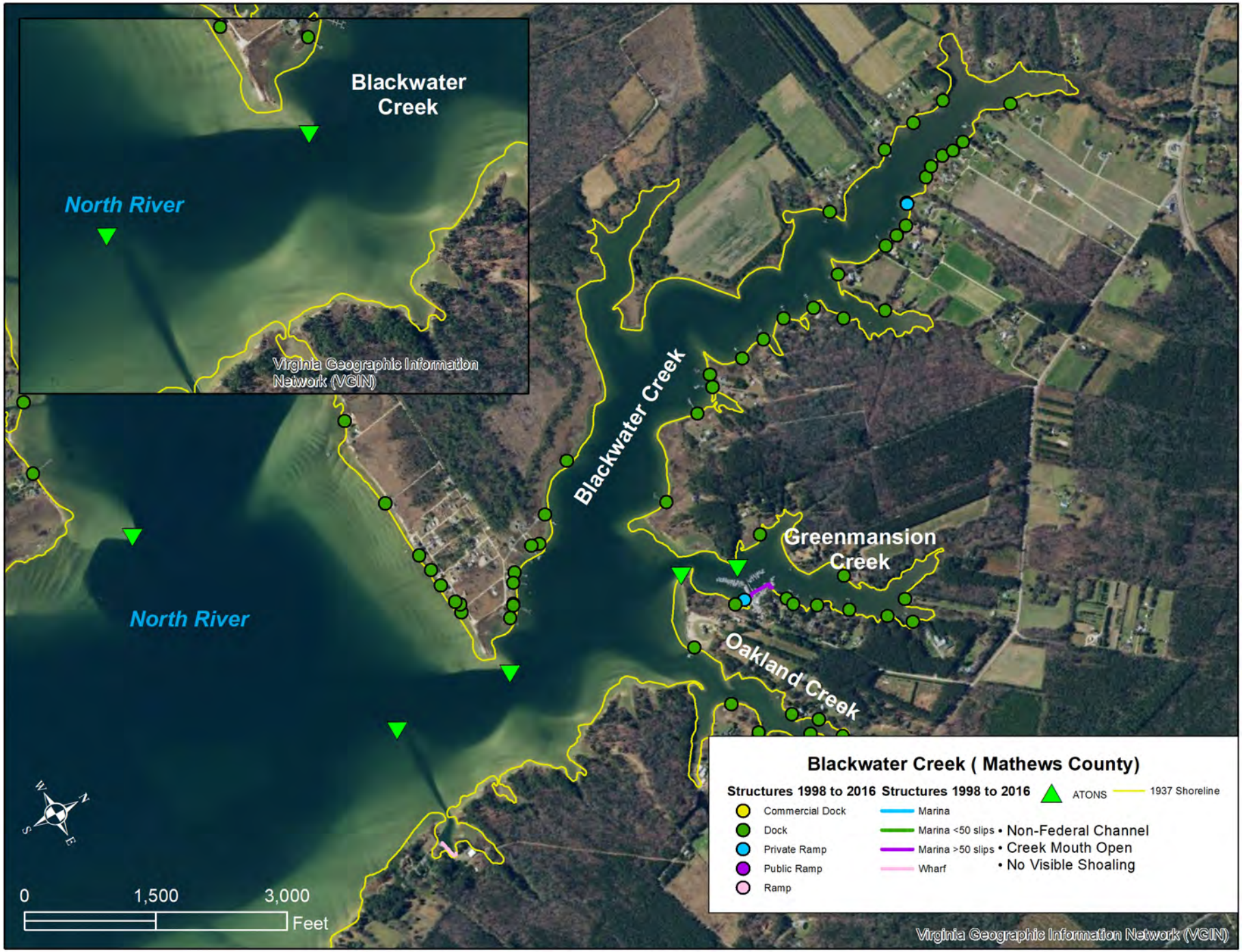
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Blackwater Creek
North River
Virginia Geographic Information Network (VGIN)
Blackwater Creek
Greenmansion Creek
Oakland Creek
North River
Blackwater Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
1,500
3,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Hampton Creek**

Creek ID Number: 76	**Locality:** Mathews
Water Body: Blackwater Creek	**Channel Type:** Non-Federal
Latitude: 37.4265	**Longitude:** -76.4118
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 1.3	**Creek Area (acres):** 19
Average Depth of Creek Mouth (ft): -3.2	**Maximum Depth of Creek Mouth (ft):** -5.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

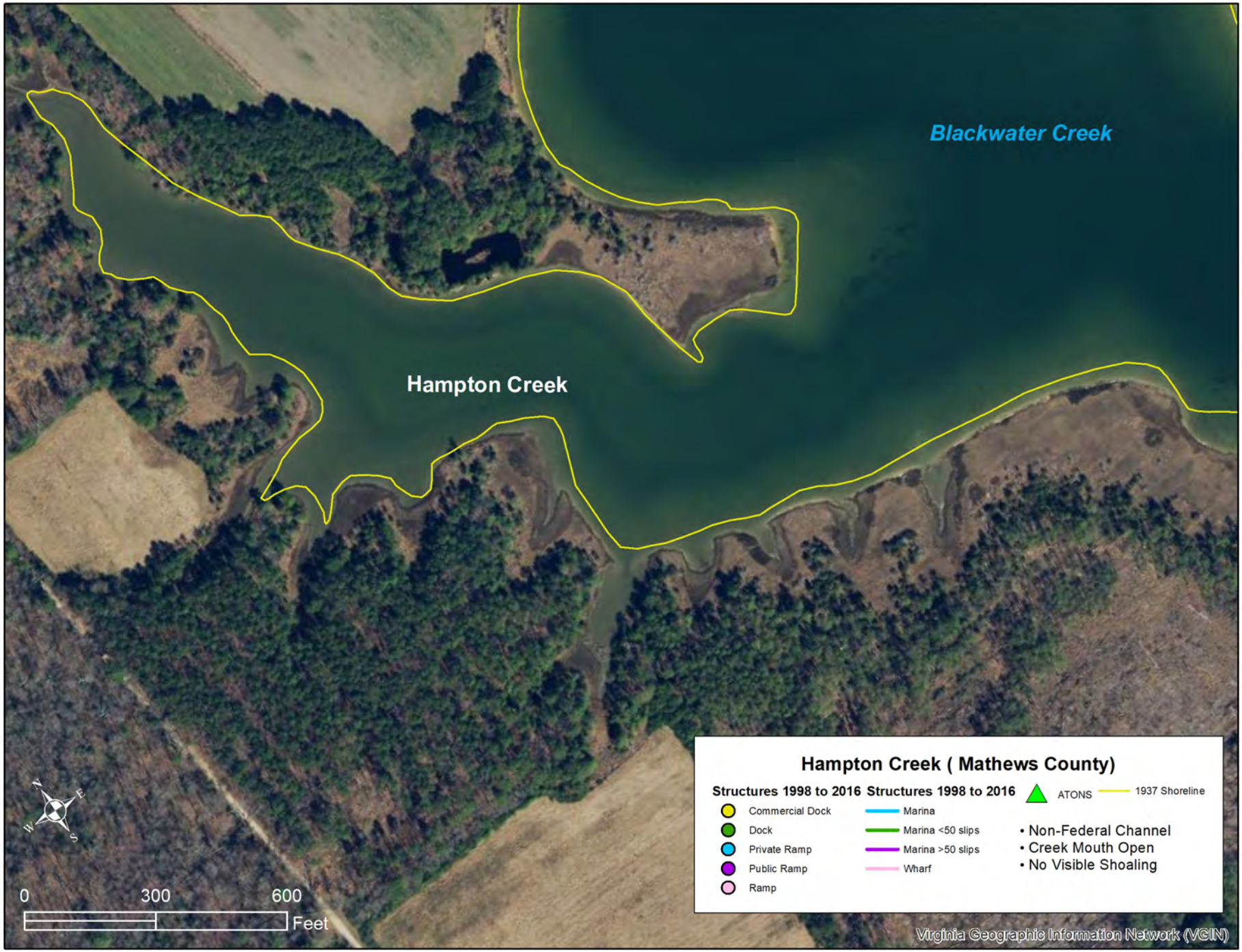
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Blackwater Creek
Hampton Creek
Hampton Creek (Mathews County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
N
E
S
W
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Toddsbury Creek

Creek ID Number: 77	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4321	**Longitude:** -76.4540
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 4	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 14
Average Depth of Creek Mouth (ft): -2.0	**Maximum Depth of Creek Mouth (ft):** -2.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


North River
Toddsbury Creek
Toddsbury Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• No Visible Shoaling
N
E
S
W
0
300
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Elmington Creek

Creek ID Number: 78	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4217	**Longitude:** -76.4532
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 8	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 22
Average Depth of Creek Mouth (ft): -0.4	**Maximum Depth of Creek Mouth (ft):** -0.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

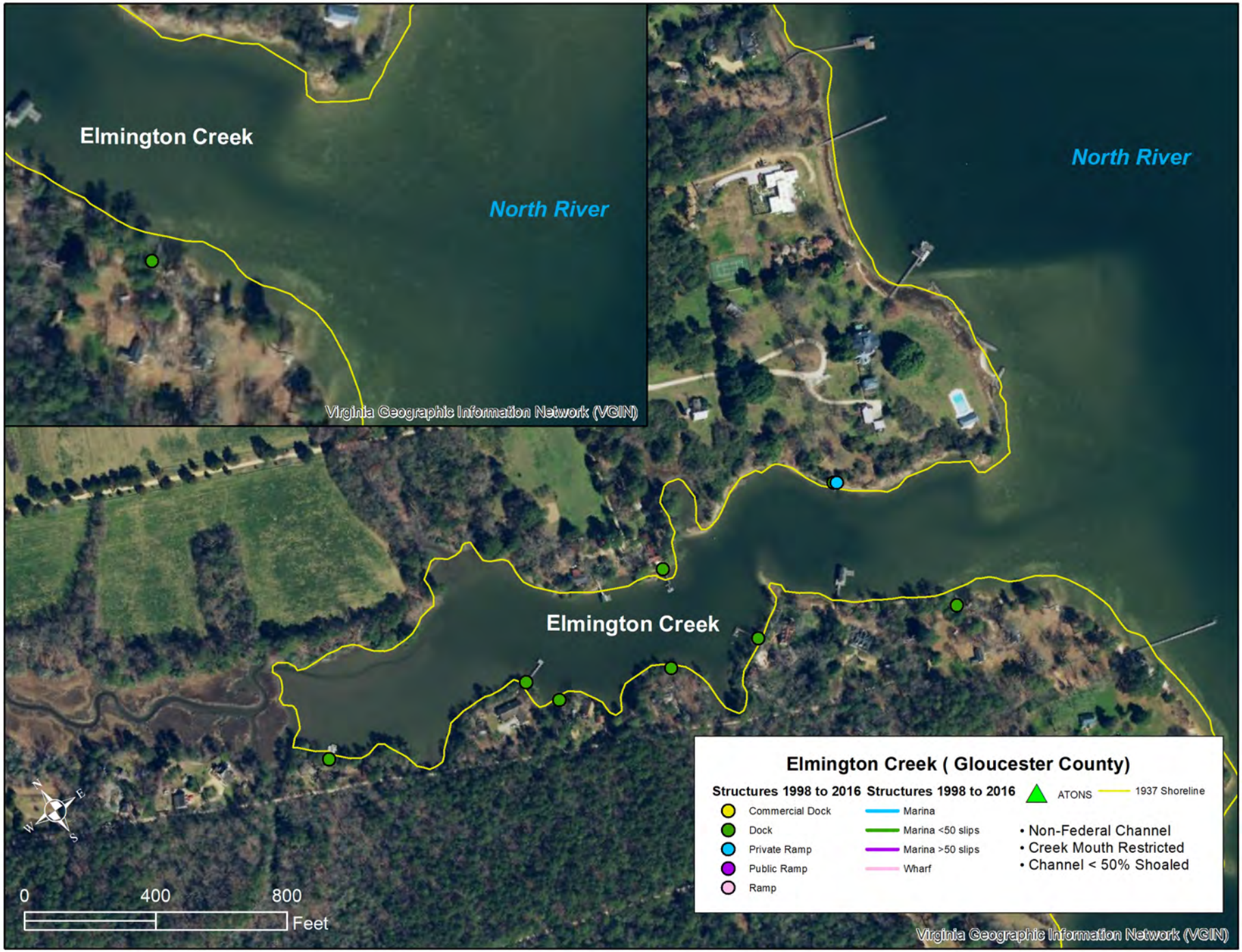
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Elmington Creek
North River
Virginia Geographic Information Network (VGIN)
North River
Elmington Creek
Elmington Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Back Creek**

Creek ID Number: 79	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4184	**Longitude:** -76.4523
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 22	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 58
Average Depth of Creek Mouth (ft): -3.3	**Maximum Depth of Creek Mouth (ft):** -6.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

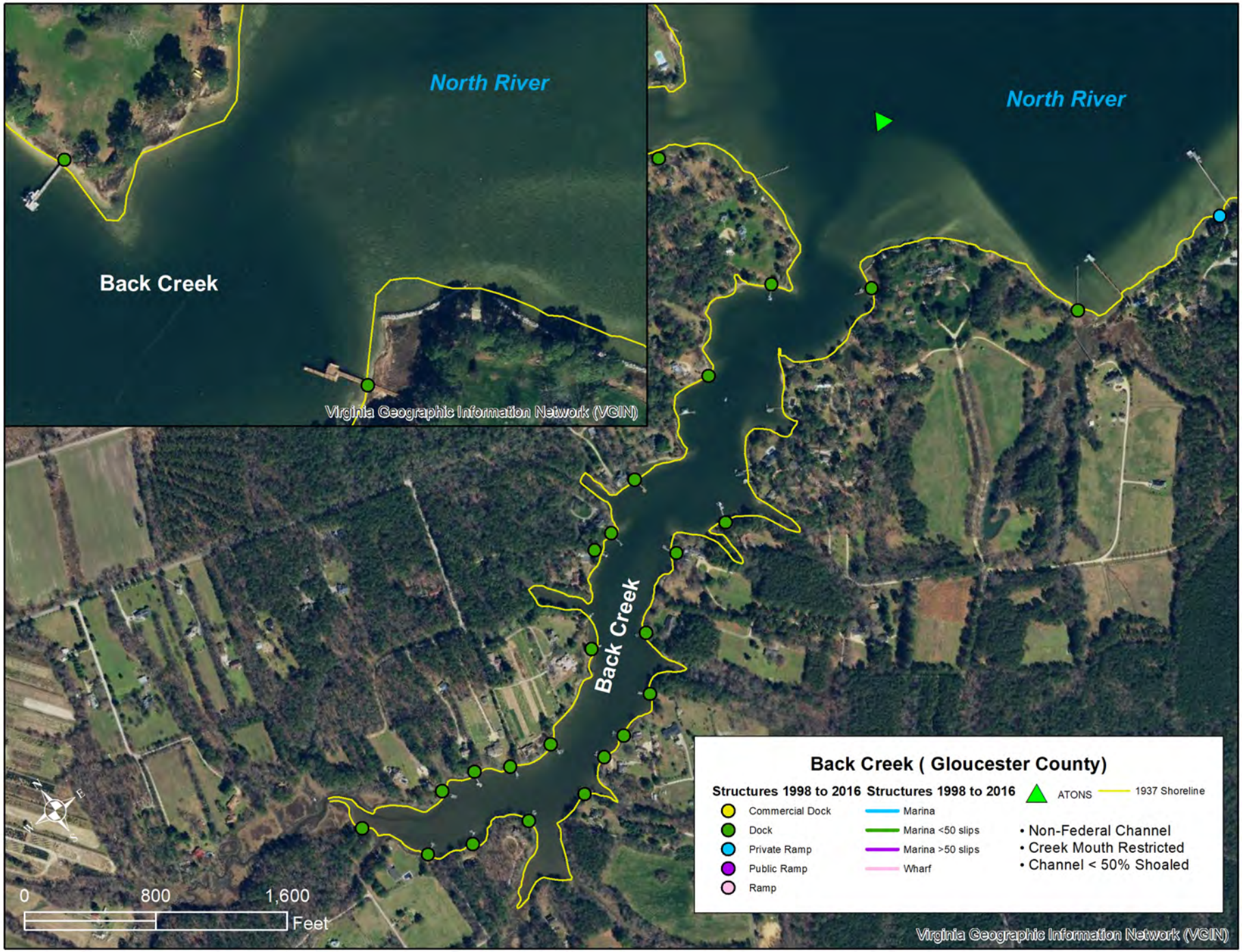
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


North River
Back Creek
Virginia Geographic Information Network (VGIN)
North River
Back Creek
Back Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
800
1,600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Belleville**

Creek ID Number: 80	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4118	**Longitude:** -76.4341
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 17	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 37
Average Depth of Creek Mouth (ft): -3.6	**Maximum Depth of Creek Mouth (ft):** -6.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

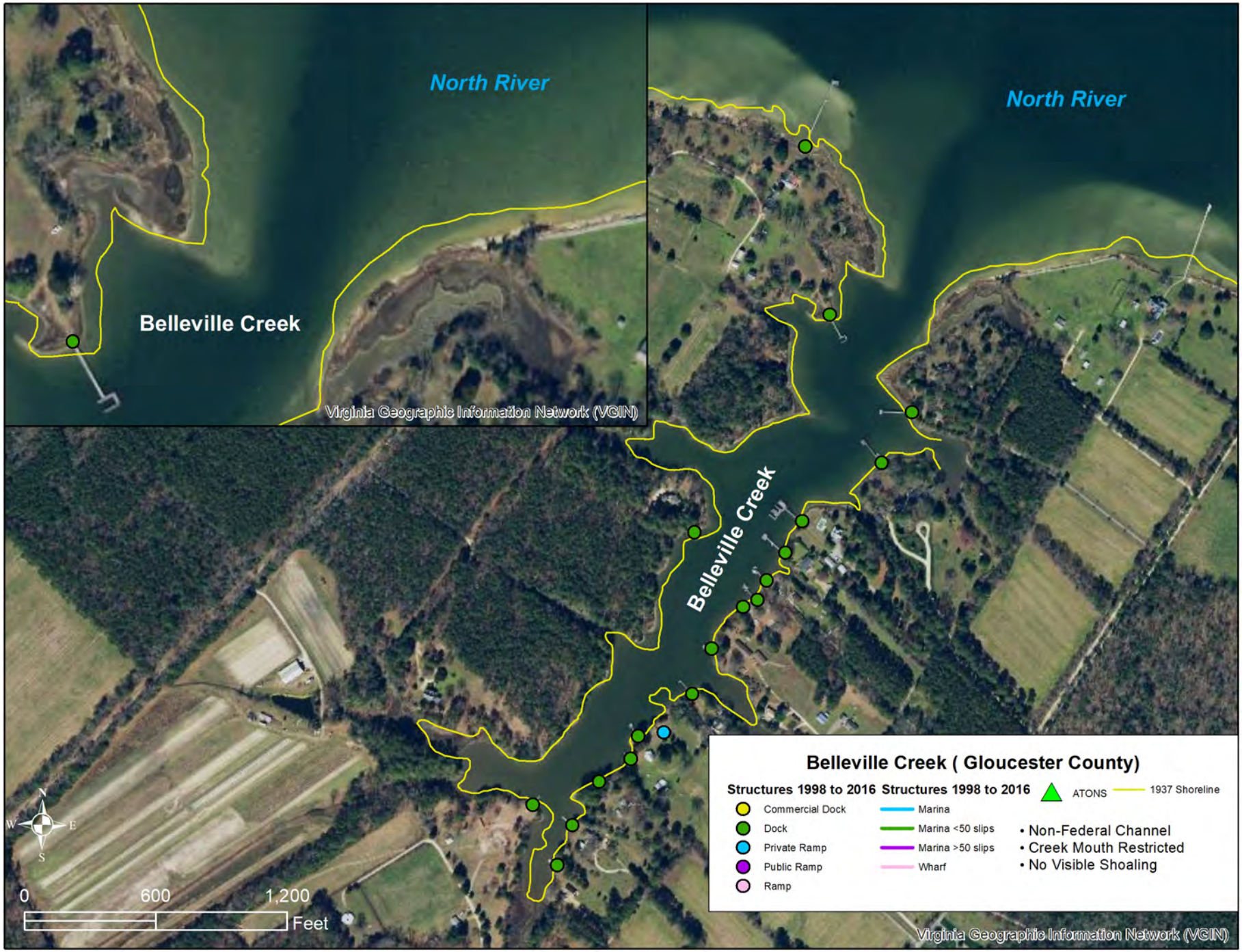
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


North River
Belleville Creek
Virginia Geographic Information Network (VGIN)
North River
Belleville Creek
Belleville Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• No Visible Shoaling
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Anchorage Creek

Creek ID Number: 81	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.4093	**Longitude:** -76.4209
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 3	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 8
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


North River
Anchorage Creek
Anchorage Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel < 50% Shoaled
N
W
E
S
0
600
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Davis Creek_GL

Creek ID Number: 82	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.3973	**Longitude:** -76.4187
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 18	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 49
Average Depth of Creek Mouth (ft): -6.0	**Maximum Depth of Creek Mouth (ft):** -6.7

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

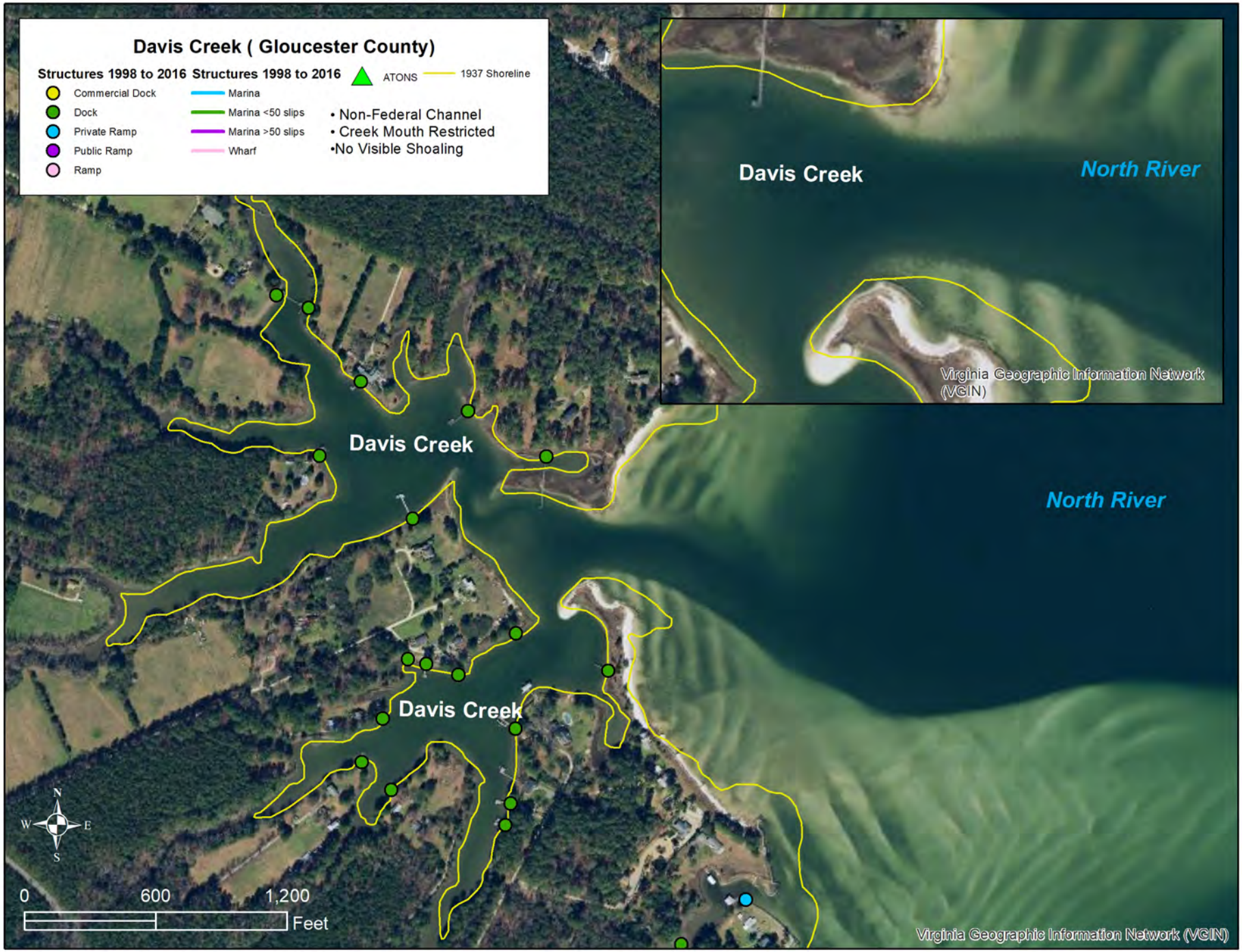
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Davis Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
•No Visible Shoaling
Davis Creek
North River
Virginia Geographic Information Network (VGIN)
Davis Creek
North River
Davis Creek
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Silver Creek

Creek ID Number: 83	**Locality:** Gloucester
Water Body: North River	**Channel Type:** Non-Federal
Latitude: 37.3853	**Longitude:** -76.4172
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 1	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 1
Average Depth of Creek Mouth (ft): -0.4	**Maximum Depth of Creek Mouth (ft):** -0.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Silver Creek
North River
Silver Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
•Channel < 50% Shoaled
0
100
200
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Wilson Creek**

Creek ID Number: 84	**Locality:** Gloucester
Water Body: Ware River	**Channel Type:** Non-Federal
Latitude: 37.3668	**Longitude:** -76.4689
Number of Marinas: 0	
Number of Boat Ramps: 5	
Number of Piers: 42	
Creek Mouth Morphology: Semi-Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 213
Average Depth of Creek Mouth (ft): -5.7	**Maximum Depth of Creek Mouth (ft):** -10.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

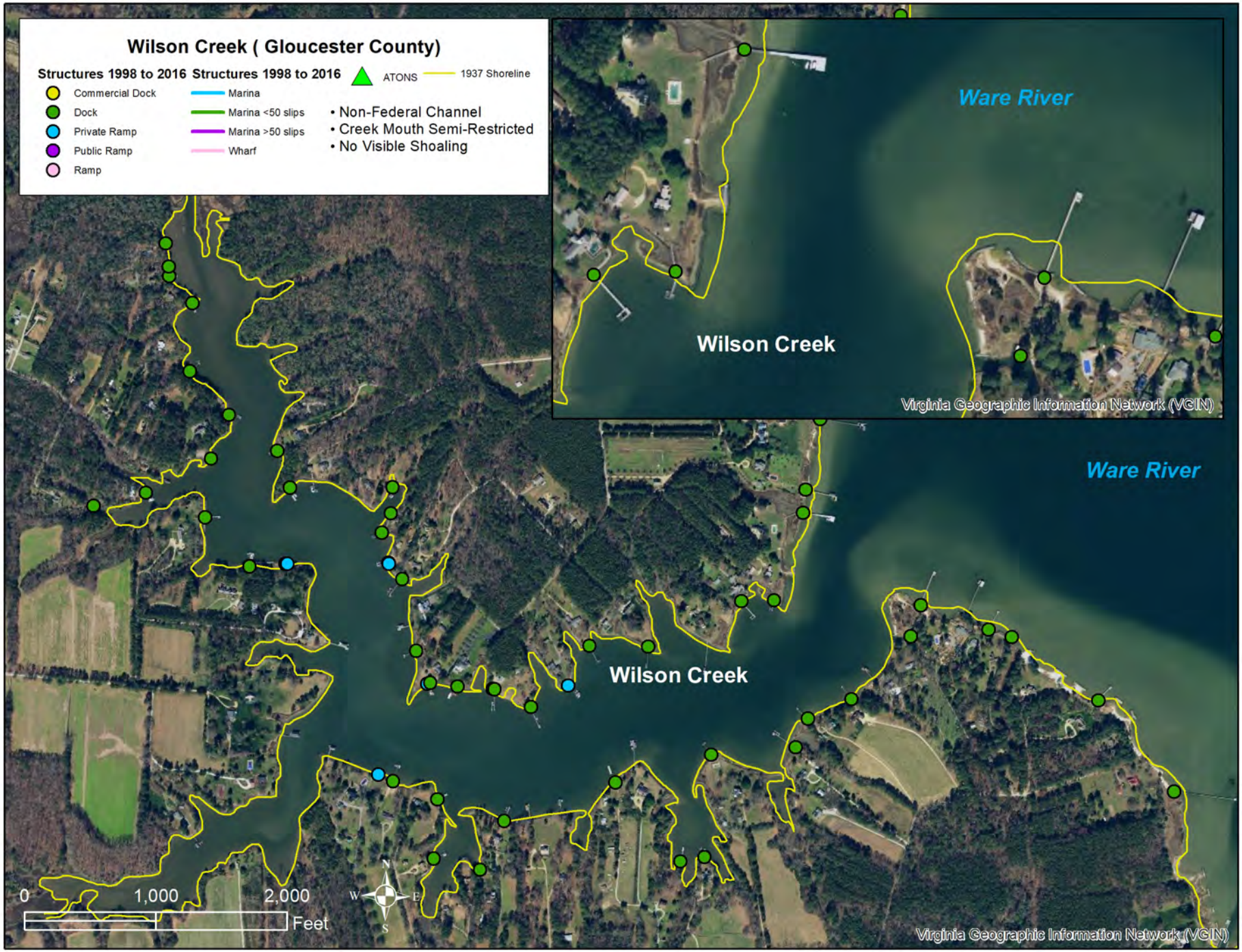
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Wilson Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Semi-Restricted
• No Visible Shoaling
Ware River
Wilson Creek
Virginia Geographic Information Network (VGIN)
Ware River
Wilson Creek
0
1,000
2,000
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for Oldhouse Creek

Creek ID Number: 85	**Locality:** Gloucester
Water Body: Ware River	**Channel Type:** Non-Federal
Latitude: 37.3609	**Longitude:** -76.4473
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 6	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 78
Average Depth of Creek Mouth (ft): -2.0	**Maximum Depth of Creek Mouth (ft):** -4.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

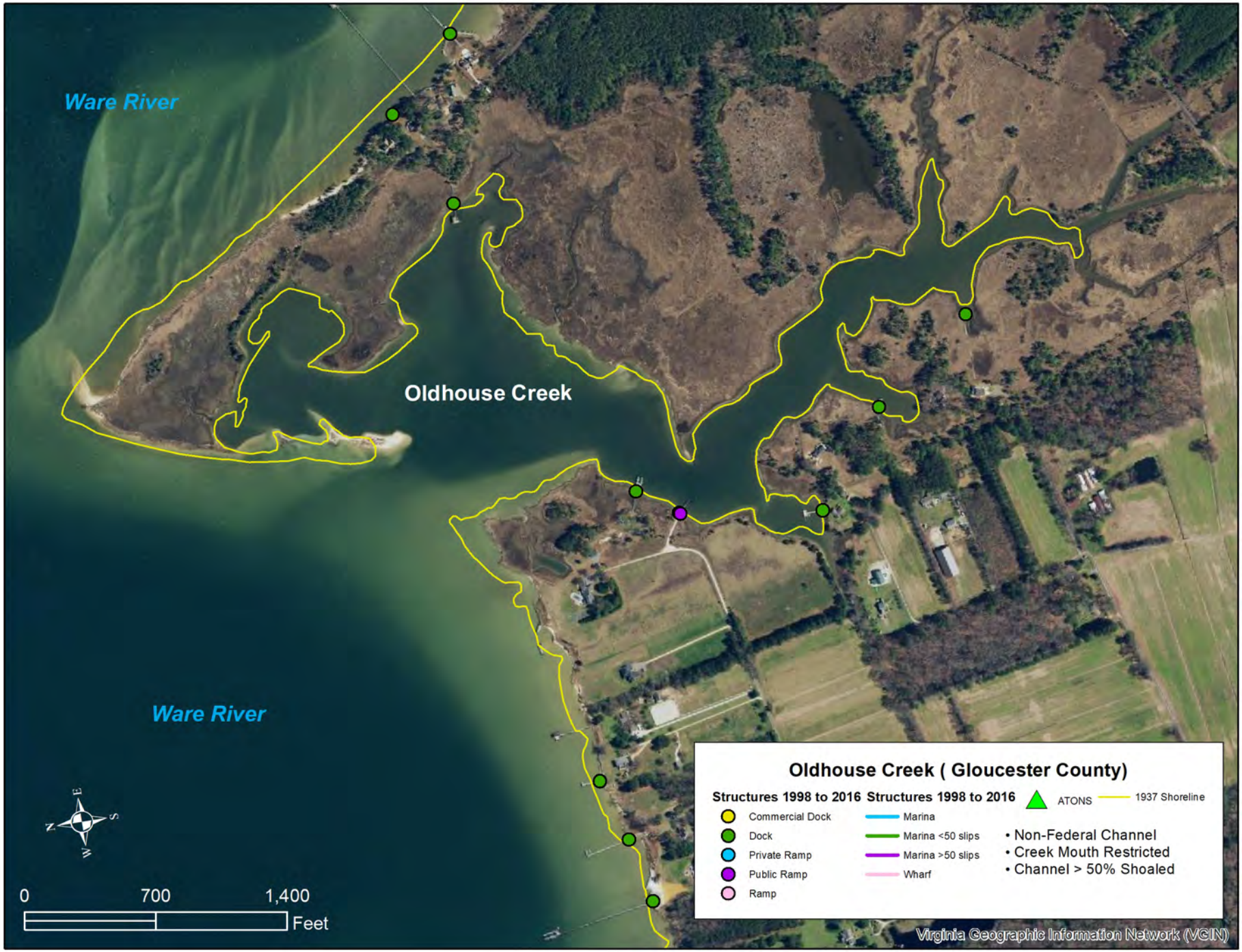
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Ware River
Oldhouse Creek
Ware River
Oldhouse Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
E
S
W
0
700
1,400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Whittaker Creek

Creek ID Number: 86	**Locality:** Gloucester
Water Body: Severn River	**Channel Type:** Non-Federal
Latitude: 37.3234	**Longitude:** -76.4313
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 1	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 45
Average Depth of Creek Mouth (ft): -2.6	**Maximum Depth of Creek Mouth (ft):** -5.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

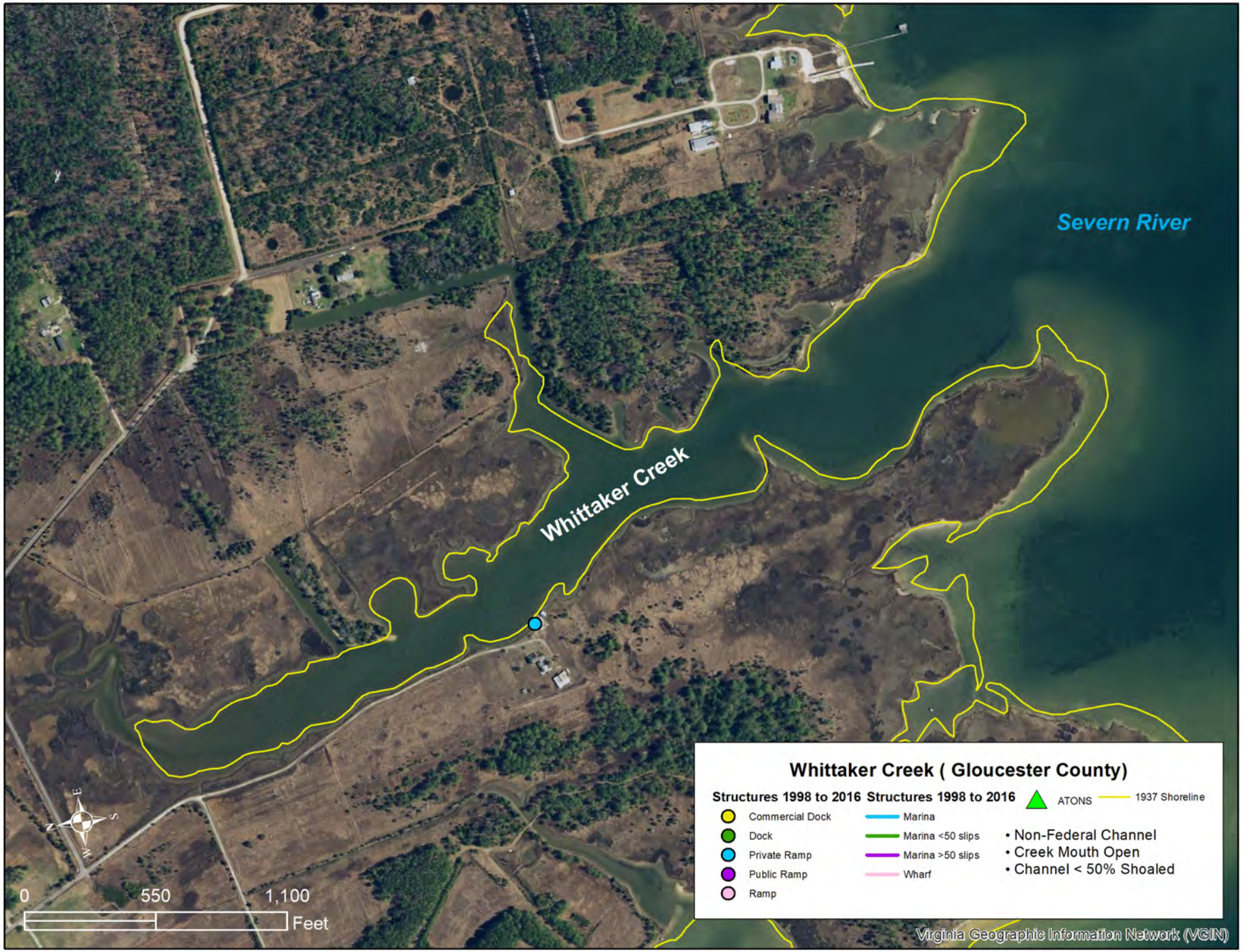
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
Whittaker Creek
Whittaker Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
N
E
S
W
0
550
1,100
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Free School Creek**

Creek ID Number: 87	**Locality:** Gloucester
Water Body: Severn River	**Channel Type:** Non-Federal
Latitude: 37.3308	**Longitude:** -76.4449
Number of Marinas: 0	
Number of Boat Ramps: 4	
Number of Piers: 19	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 38
Average Depth of Creek Mouth (ft): -4.5	**Maximum Depth of Creek Mouth (ft):** -6.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

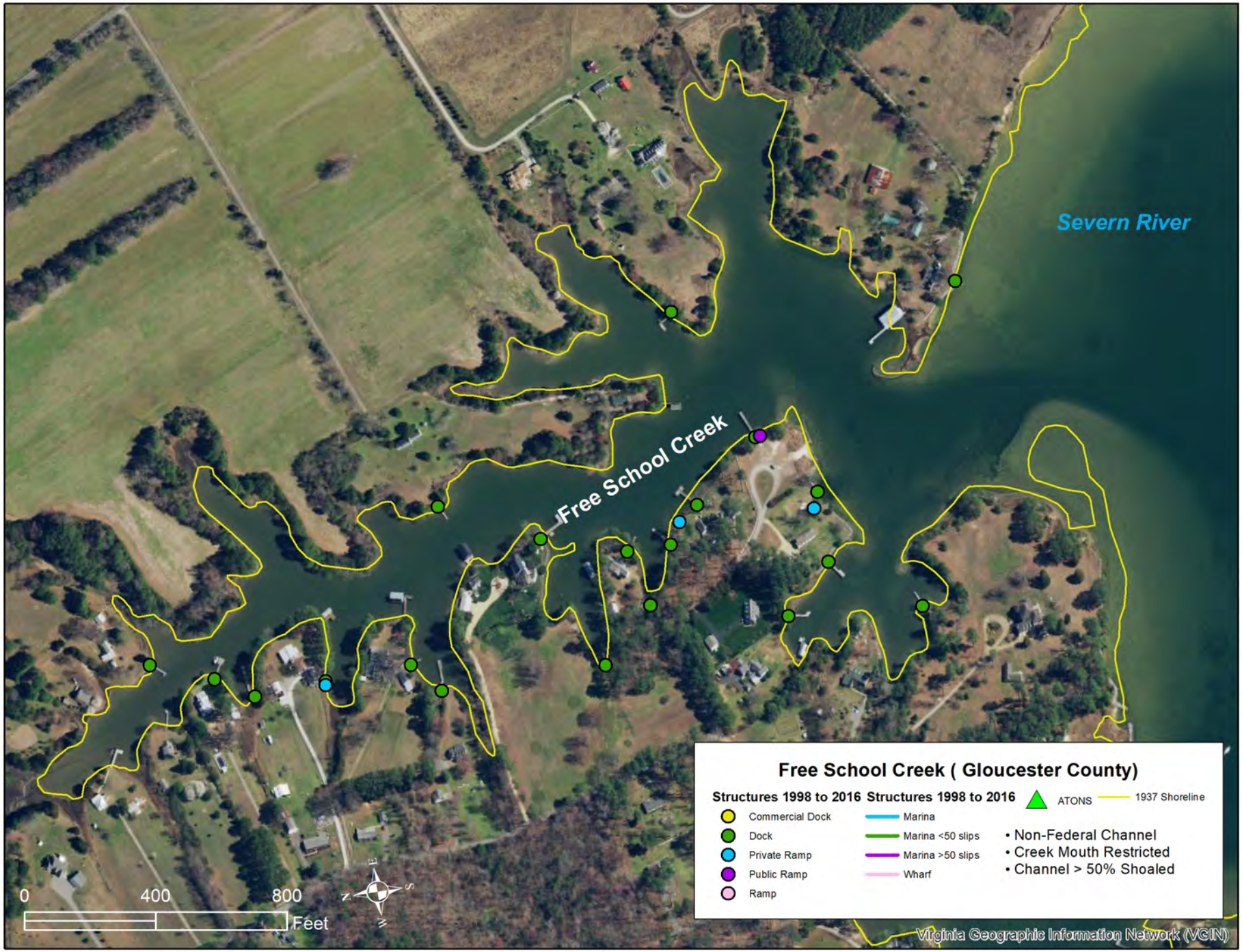
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
Free School Creek
Free School Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Sterling Creek**

Creek ID Number: 88	**Locality:** Gloucester
Water Body: Severn River	**Channel Type:** Non-Federal
Latitude: 37.3297	**Longitude:** -76.4501
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 10	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 16
Average Depth of Creek Mouth (ft): -3.2	**Maximum Depth of Creek Mouth (ft):** -4.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

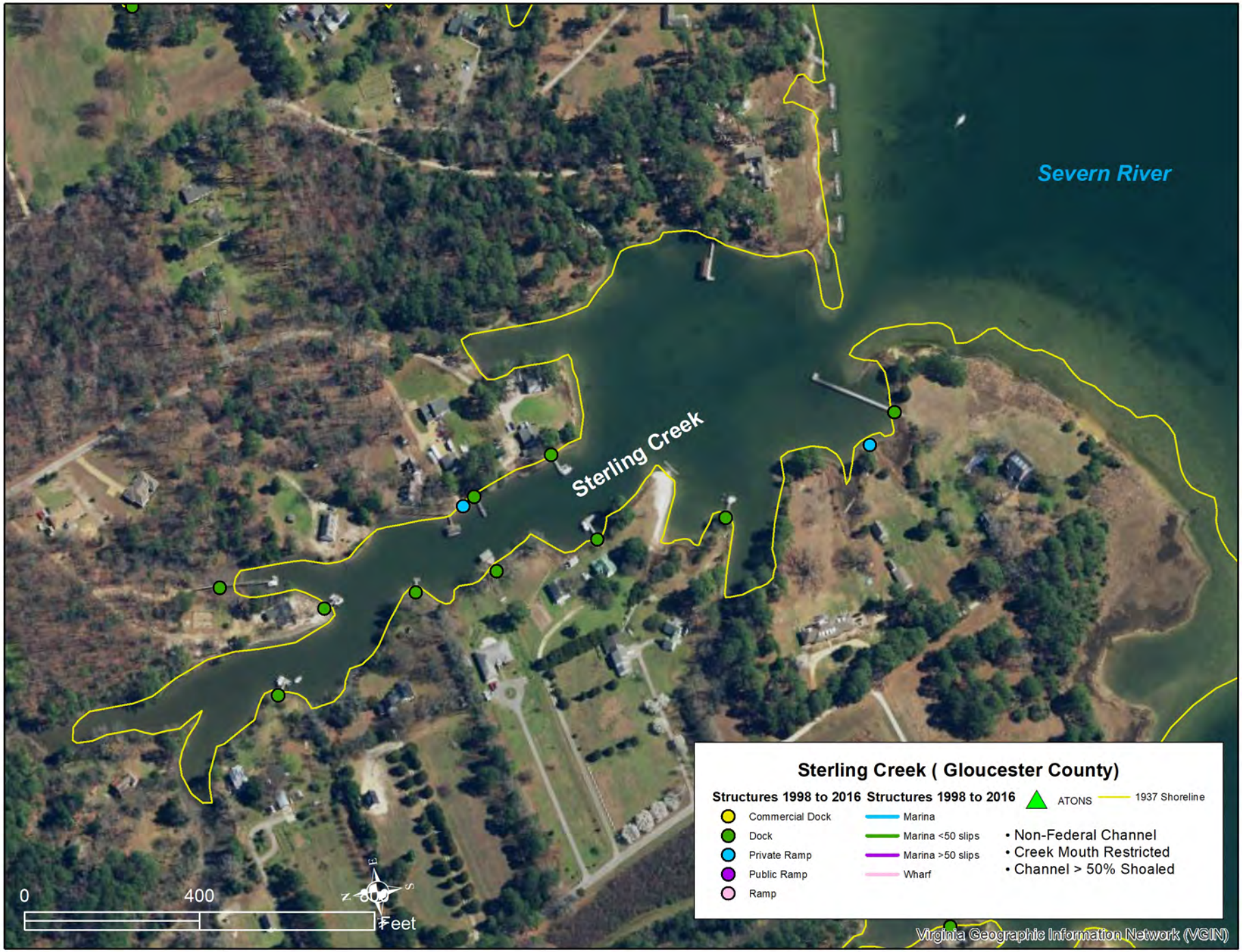
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
Sterling Creek
Sterling Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
0
400
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Vaughans Creek

Creek ID Number: 89	**Locality:** Gloucester
Water Body: Severn River (Northern Branch)	**Channel Type:** Non-Federal
Latitude: 37.3193	**Longitude:** -76.4712
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 21	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 88
Average Depth of Creek Mouth (ft): -4.9	**Maximum Depth of Creek Mouth (ft):** -7.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

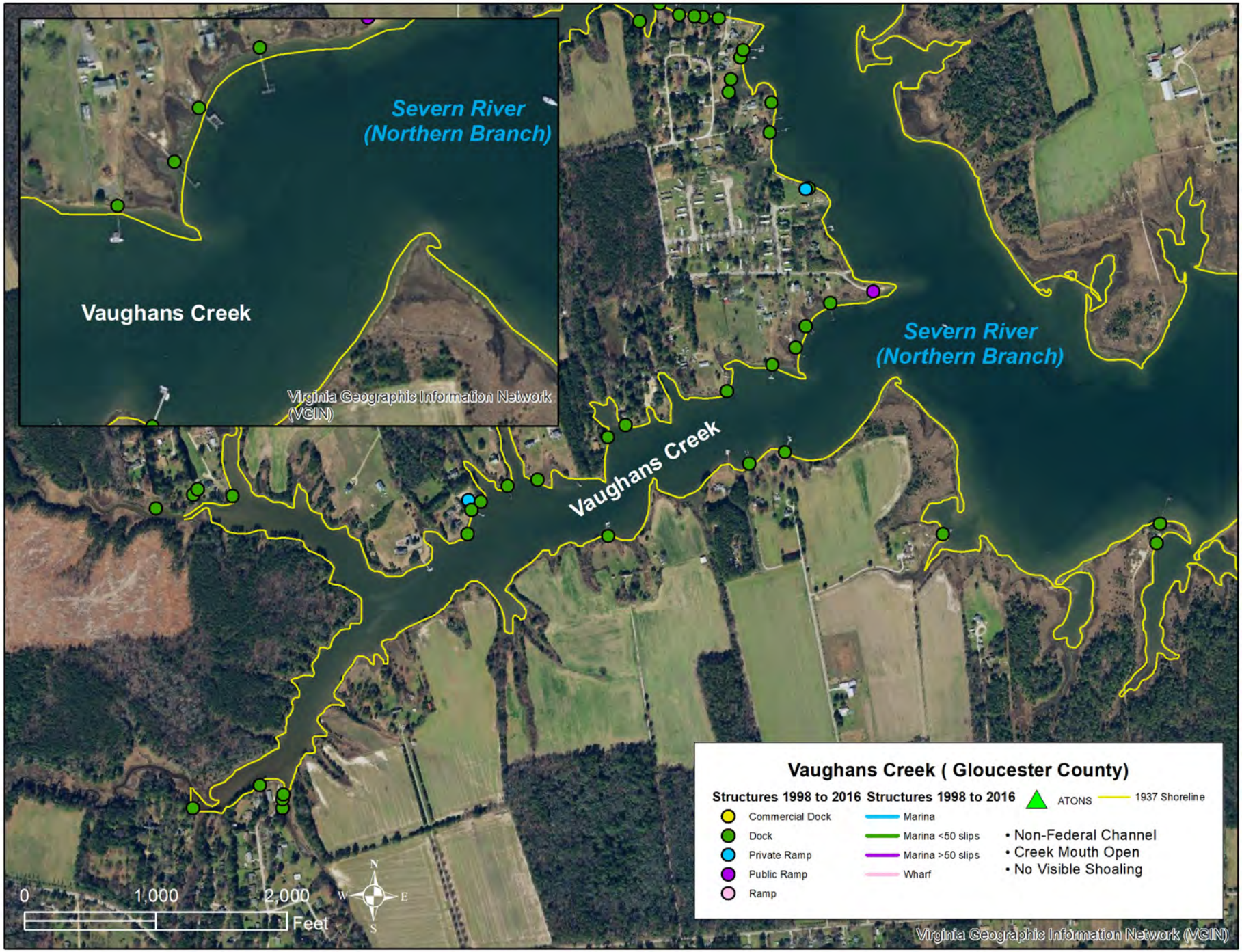
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
(Northern Branch)
Vaughans Creek
Virginia Geographic Information Network
(VGIN)
Severn River
(Northern Branch)
Vaughans Creek
Vaughans Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
1,000
2,000
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for Willetts Creek

Creek ID Number: 90	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.3013	**Longitude:** -76.4562
Number of Marinas: 1	
Number of Boat Ramps: 1	
Number of Piers: 12	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 130
Average Depth of Creek Mouth (ft): -4.2	**Maximum Depth of Creek Mouth (ft):** -6.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

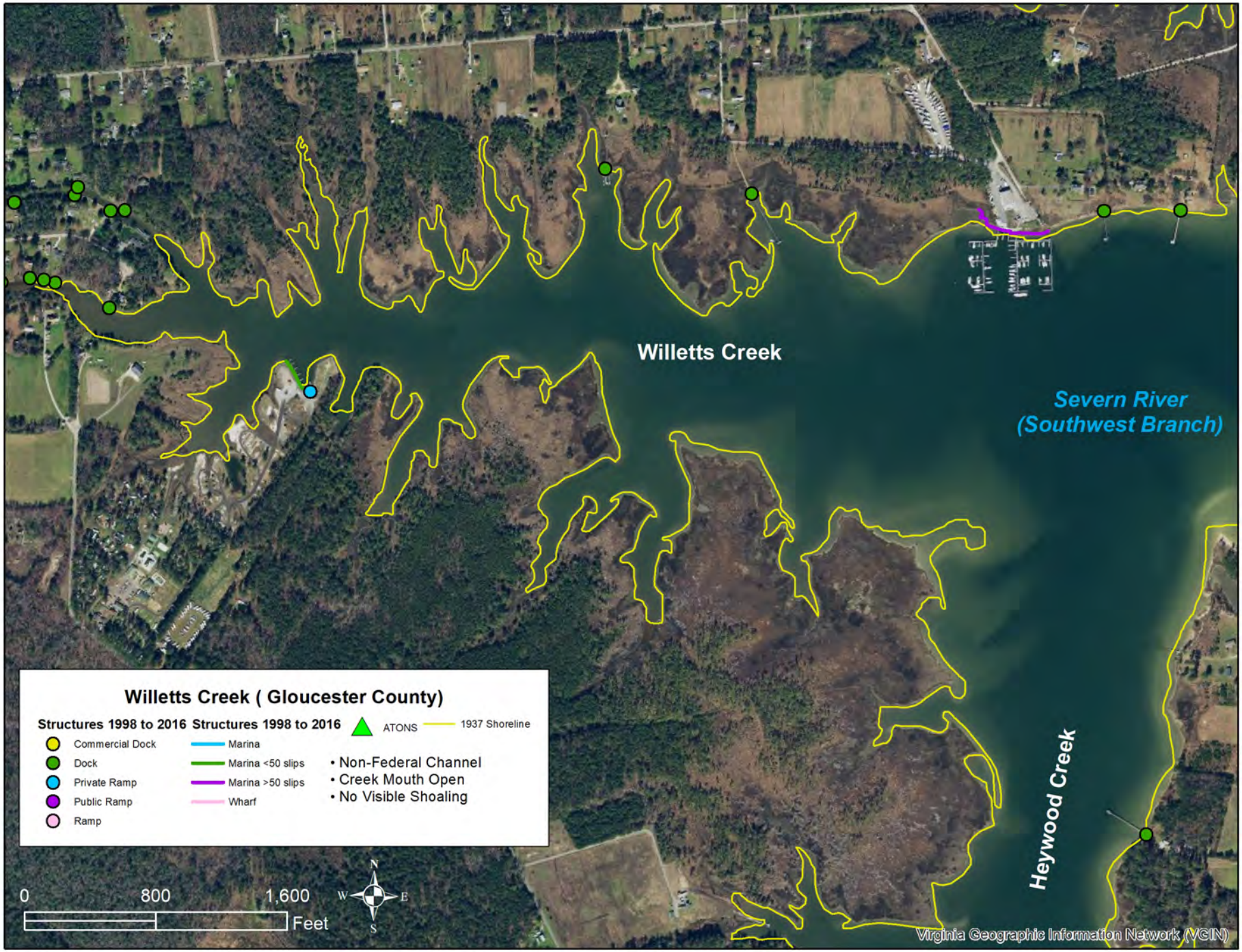
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Willetts Creek
Severn River
(Southwest Branch)
Heywood Creek
Willetts Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
800
1,600
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for Lady Creek

Creek ID Number: 91	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.2986	**Longitude:** -76.4477
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 2	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 7
Average Depth of Creek Mouth (ft): -2.2	**Maximum Depth of Creek Mouth (ft):** -3.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
(Southwest Branch)
Lady Creek
Rowes Creek
Lady Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
0
250
500
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Heywood Creek**

Creek ID Number: 92	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.2922	**Longitude:** -76.4551
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 2	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 100
Average Depth of Creek Mouth (ft): -4.2	**Maximum Depth of Creek Mouth (ft):** -6.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

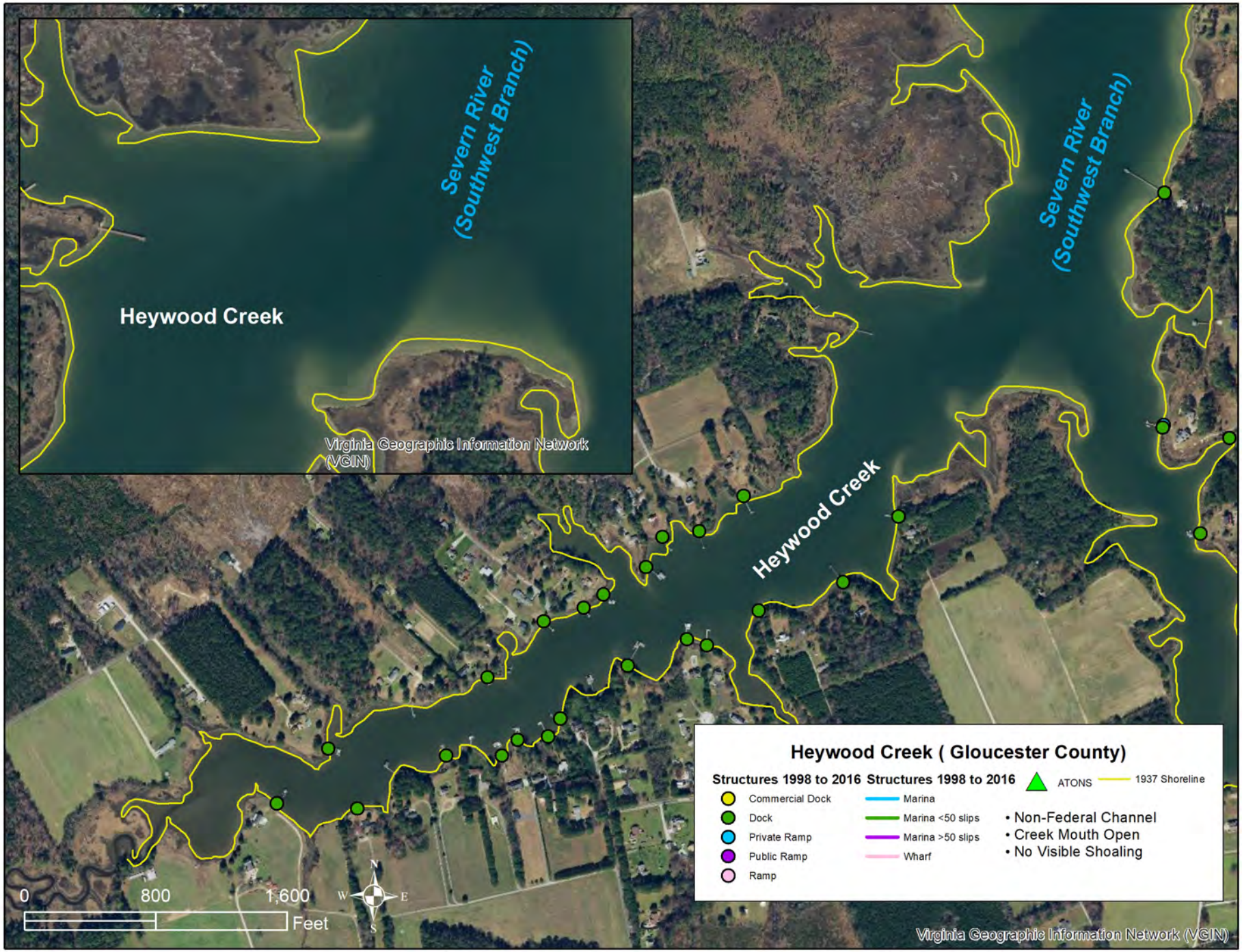
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
(Southwest Branch)
Heywood Creek
Virginia Geographic Information Network
(VGIN)
Severn River
(Southwest Branch)
Heywood Creek
Heywood Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
0
800
1,600
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Thorntons Creek**

Creek ID Number: 93	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.2909	**Longitude:** -76.4523
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 16	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 55
Average Depth of Creek Mouth (ft): -3.1	**Maximum Depth of Creek Mouth (ft):** -5.7

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

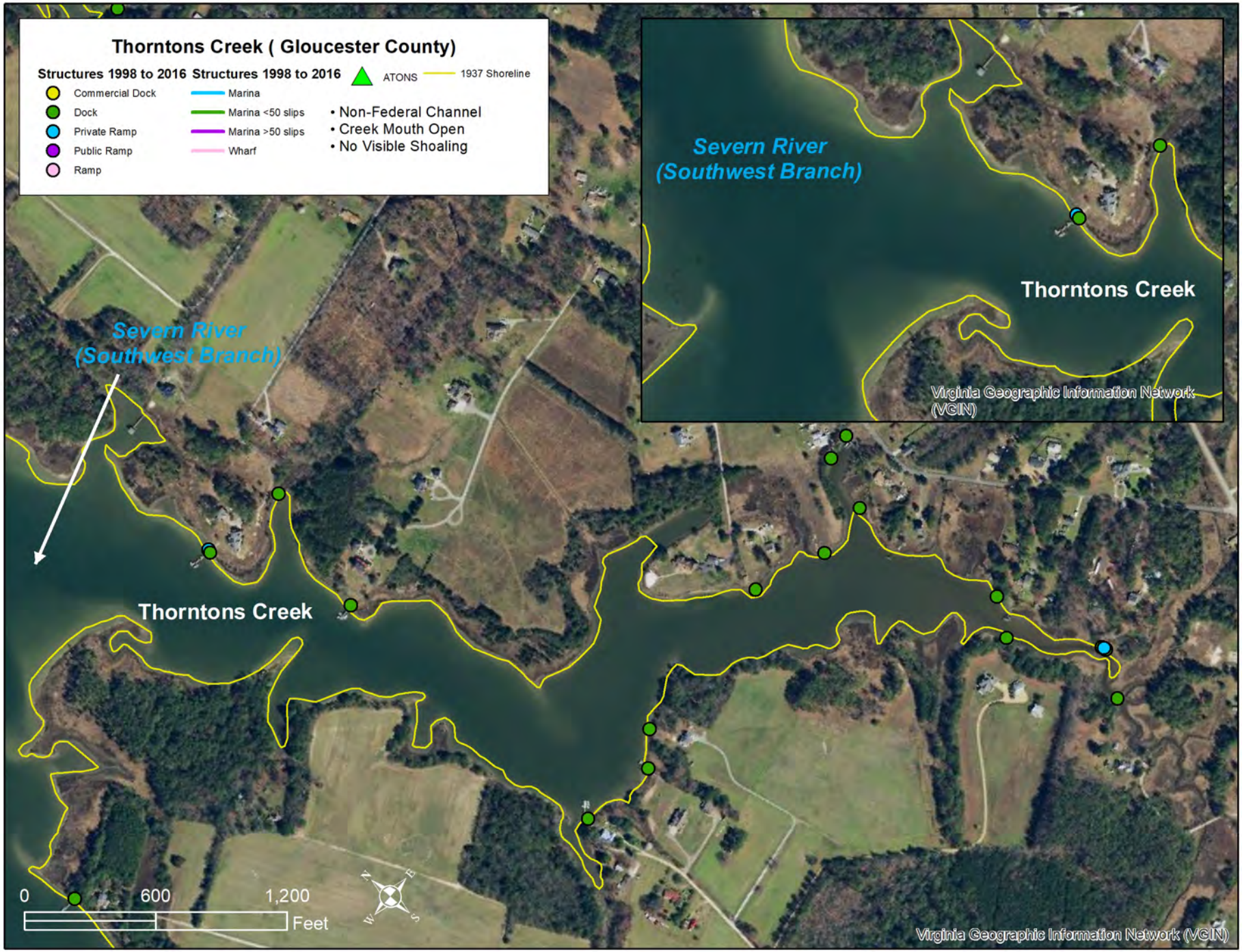
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Thorntons Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Severn River
(Southwest Branch)
Thorntons Creek
Severn River
(Southwest Branch)
Thorntons Creek
Virginia Geographic Information Network
(VGIN)
0
600
1,200
Feet
N
E
S
W
Virginia Geographic Information Network (VGIN)

Data Sheet for **Rowes Creek**

Creek ID Number: 94	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.2996	**Longitude:** -76.4431
Number of Marinas: 1	
Number of Boat Ramps: 3	
Number of Piers: 20	
Creek Mouth Morphology: Semi-Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 39
Average Depth of Creek Mouth (ft): -3.4	**Maximum Depth of Creek Mouth (ft):** -5.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

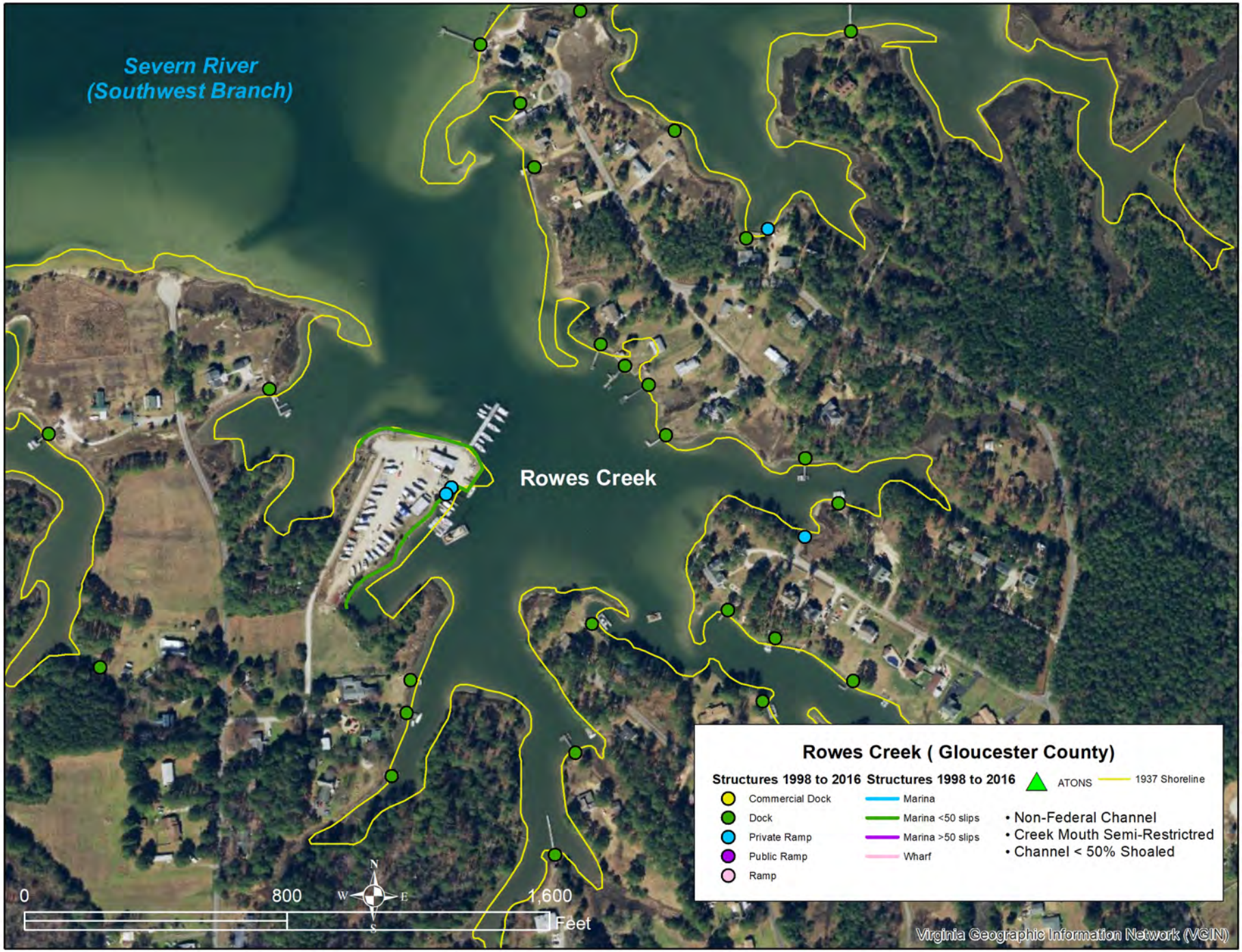
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
(Southwest Branch)
Rowes Creek
Rowes Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Semi-Restrictred
• Channel < 50% Shoaled
0
800
1,600
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for Holly Bush Creek

Creek ID Number: 95	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.3021	**Longitude:** -76.4405
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 3	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 27
Average Depth of Creek Mouth (ft): -3.6	**Maximum Depth of Creek Mouth (ft):** -6.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

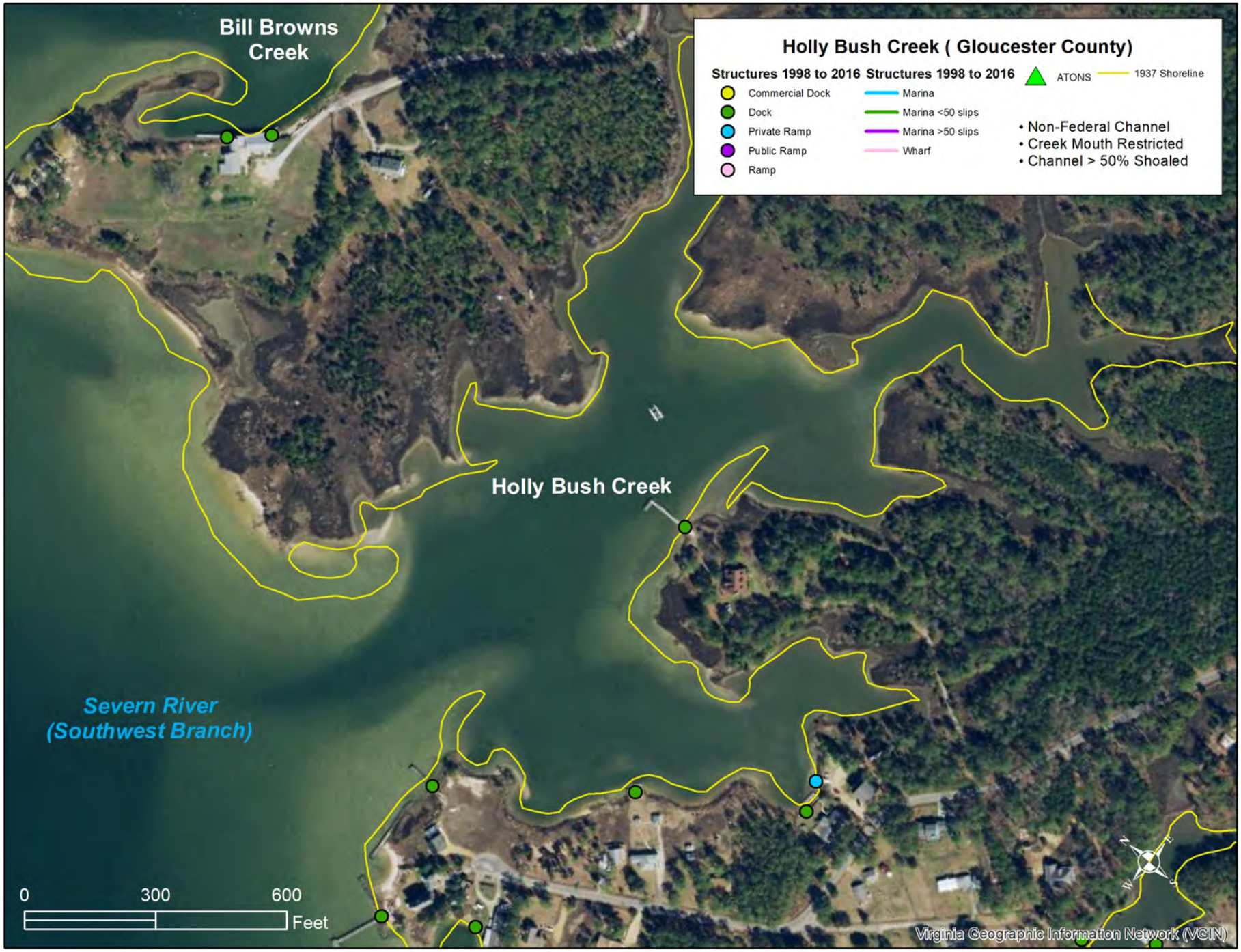
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Holly Bush Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
Bill Browns Creek
Holly Bush Creek
Severn River (Southwest Branch)
0
300
600
Feet
N
E
W
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Bill Browns Creek**

Creek ID Number: 96	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.3062	**Longitude:** -76.4375
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 5	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.7	**Creek Area (acres):** 21
Average Depth of Creek Mouth (ft): -2.6	**Maximum Depth of Creek Mouth (ft):** -5.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

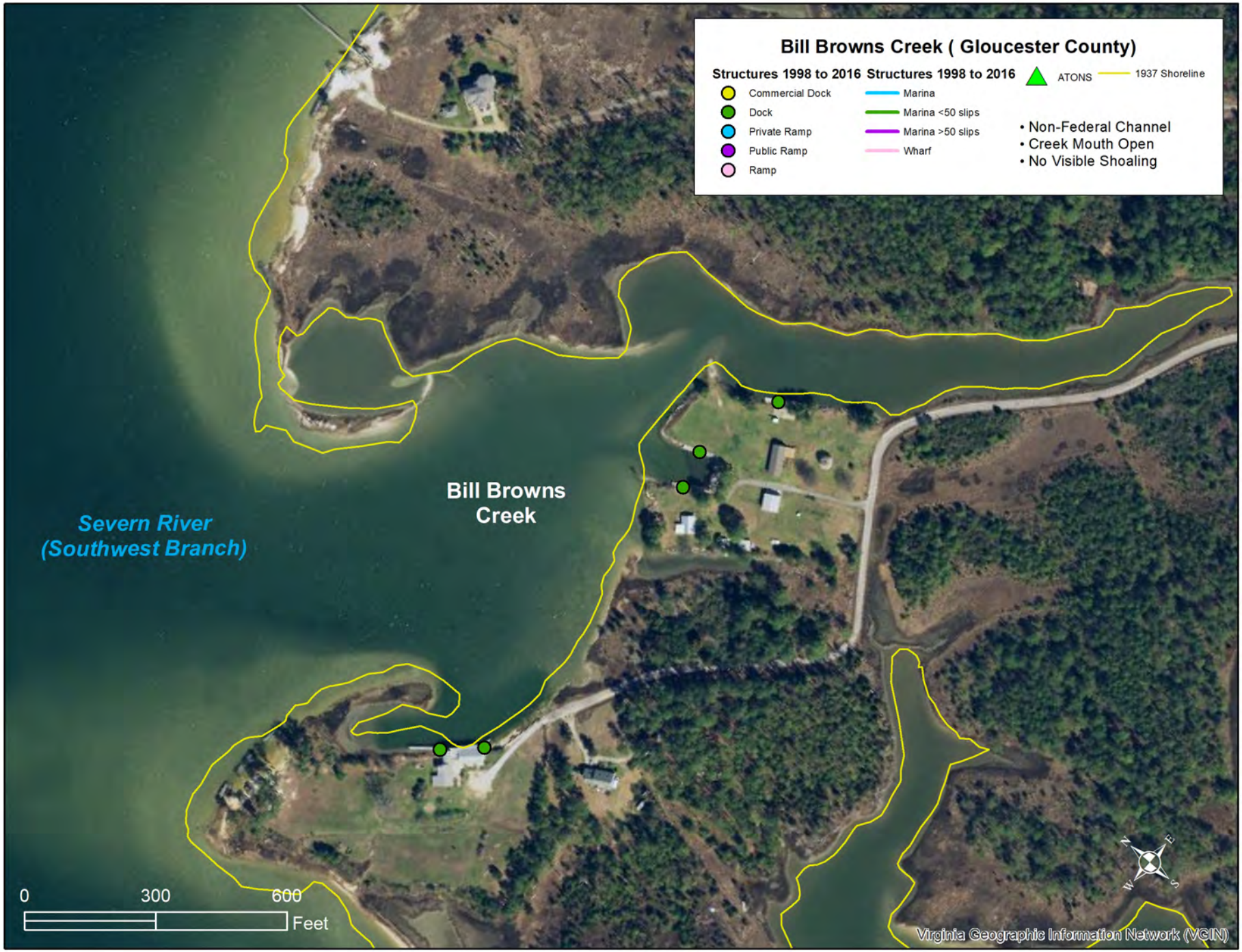
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Bill Browns Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Bill Browns Creek
Severn River (Southwest Branch)
0
300
600
Feet
N
E
S
W
Virginia Geographic Information Network (VGIN)

Data Sheet for Thomas Creek_GL

Creek ID Number: 97	**Locality:** Gloucester
Water Body: Severn River (Southwest Branch)	**Channel Type:** Non-Federal
Latitude: 37.3089	**Longitude:** -76.4315
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Semi-Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 16
Average Depth of Creek Mouth (ft): -1.4	**Maximum Depth of Creek Mouth (ft):** -3.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

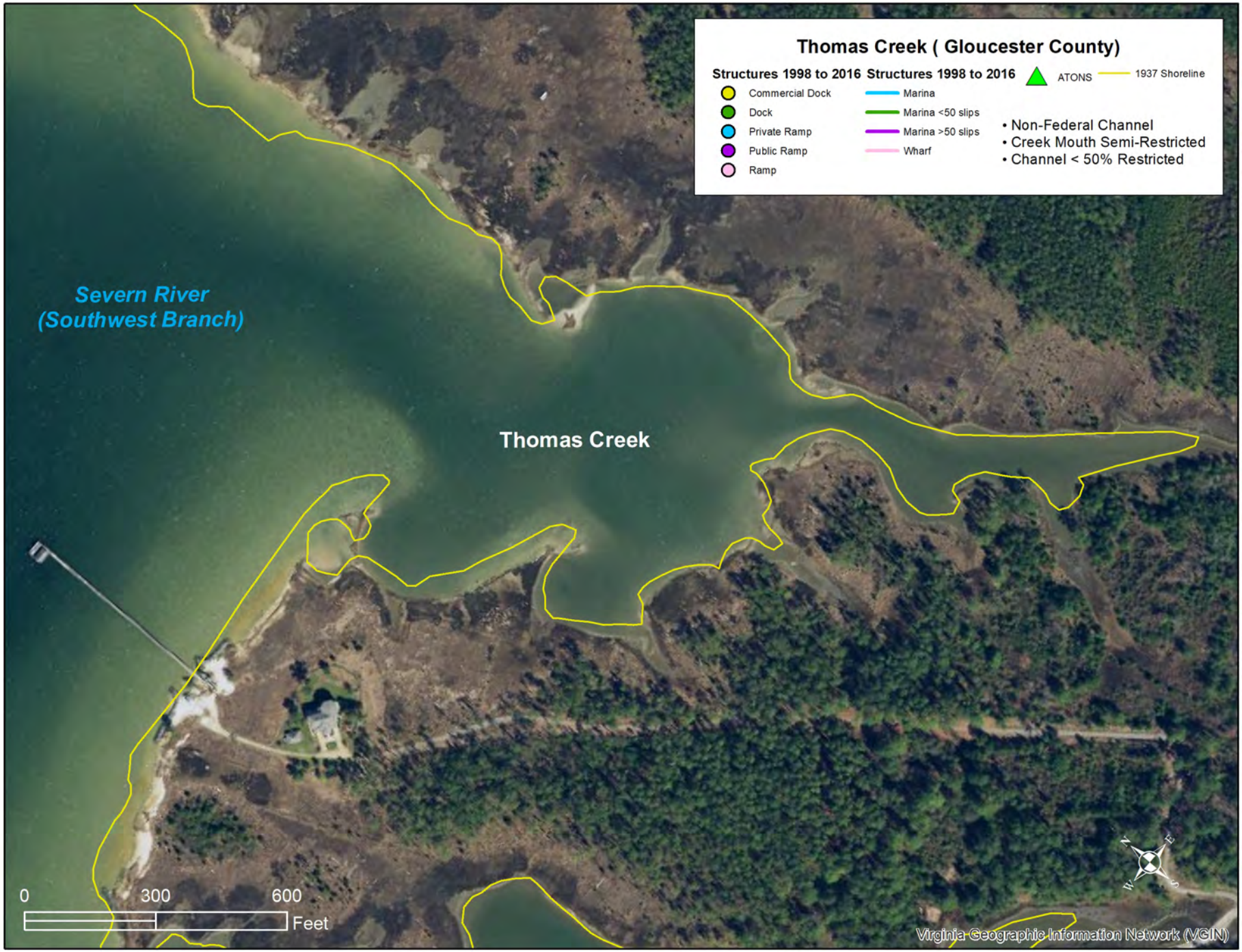
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Thomas Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Semi-Restricted
• Channel < 50% Restricted
Severn River
(Southwest Branch)
Thomas Creek
0
300
600
Feet
N
E
S
W
Virginia Geographic Information Network (VGIN)

Data Sheet for King Creek

Creek ID Number: 98	**Locality:** Gloucester
Water Body: Severn River	**Channel Type:** Non-Federal
Latitude: 37.3072	**Longitude:** -76.4194
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 4	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 18
Average Depth of Creek Mouth (ft): -1.7	**Maximum Depth of Creek Mouth (ft):** -2.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
King Creek
Severn River
King Creek
King Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• Channel > 50% Restricted
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)
Virginia Geographic Information Network (VGIN)

Data Sheet for **Long Creek**

Creek ID Number: 99	**Locality:** Gloucester
Water Body: Severn River	**Channel Type:** Non-Federal
Latitude: 37.3085	**Longitude:** -76.4101
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.5	**Creek Area (acres):** 28
Average Depth of Creek Mouth (ft): -1.3	**Maximum Depth of Creek Mouth (ft):** -2.1

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Severn River
Long Creek
Severn River
Long Creek
Long Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• No Visible Shoaling
0
600
1,200
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)
Virginia Geographic Information Network (VGIN)

Data Sheet for **Browns Bay**

Creek ID Number: 100	**Locality:** Gloucester
Water Body: Mobjack Bay	**Channel Type:** Non-Federal ATON
Latitude: 37.3026	**Longitude:** -76.3873
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 1	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.5	**Creek Area (acres):** 44
Average Depth of Creek Mouth (ft): -4.4	**Maximum Depth of Creek Mouth (ft):** -7.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

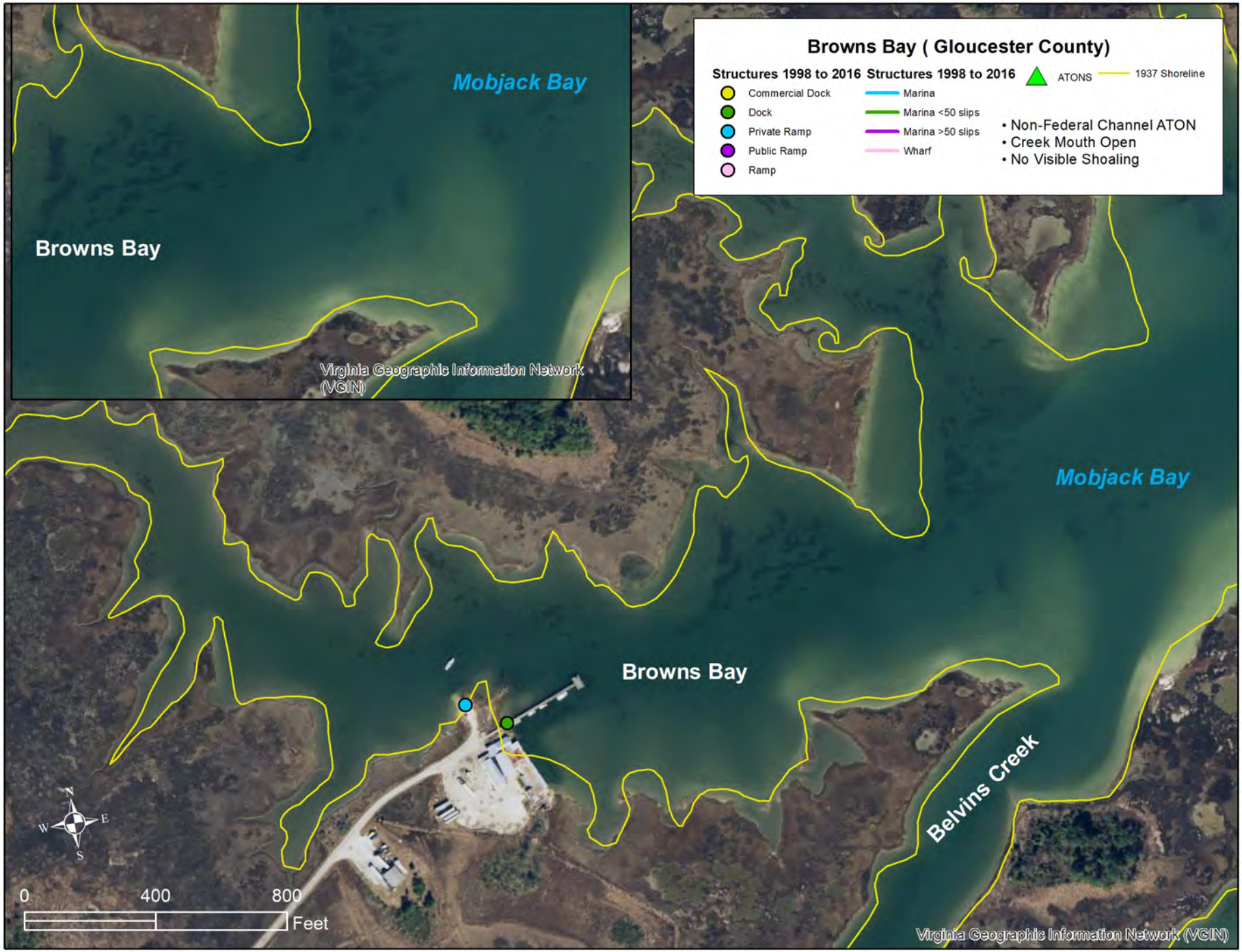
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Browns Bay (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Open
• No Visible Shoaling
Mobjack Bay
Browns Bay
Virginia Geographic Information Network (VGIN)
Mobjack Bay
Browns Bay
Belvins Creek
N
W
E
S
0
400
800
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Blevins Creek**

Creek ID Number: 101	**Locality:** Gloucester
Water Body: Mobjack Bay	**Channel Type:** Non-Federal
Latitude: 37.3000	**Longitude:** -76.3975
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 3	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 46
Average Depth of Creek Mouth (ft): -3.2	**Maximum Depth of Creek Mouth (ft):** -4.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Blevins Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
Mobjack Bay
Blevins Creek
Mobjack Bay
Blevins Creek
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Johns West Creek**

Creek ID Number: 102	**Locality:** Gloucester
Water Body: Mobjack Bay	**Channel Type:** Non-Federal
Latitude: 37.2957	**Longitude:** -76.3889
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 33
Average Depth of Creek Mouth (ft): -2.0	**Maximum Depth of Creek Mouth (ft):** -3.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

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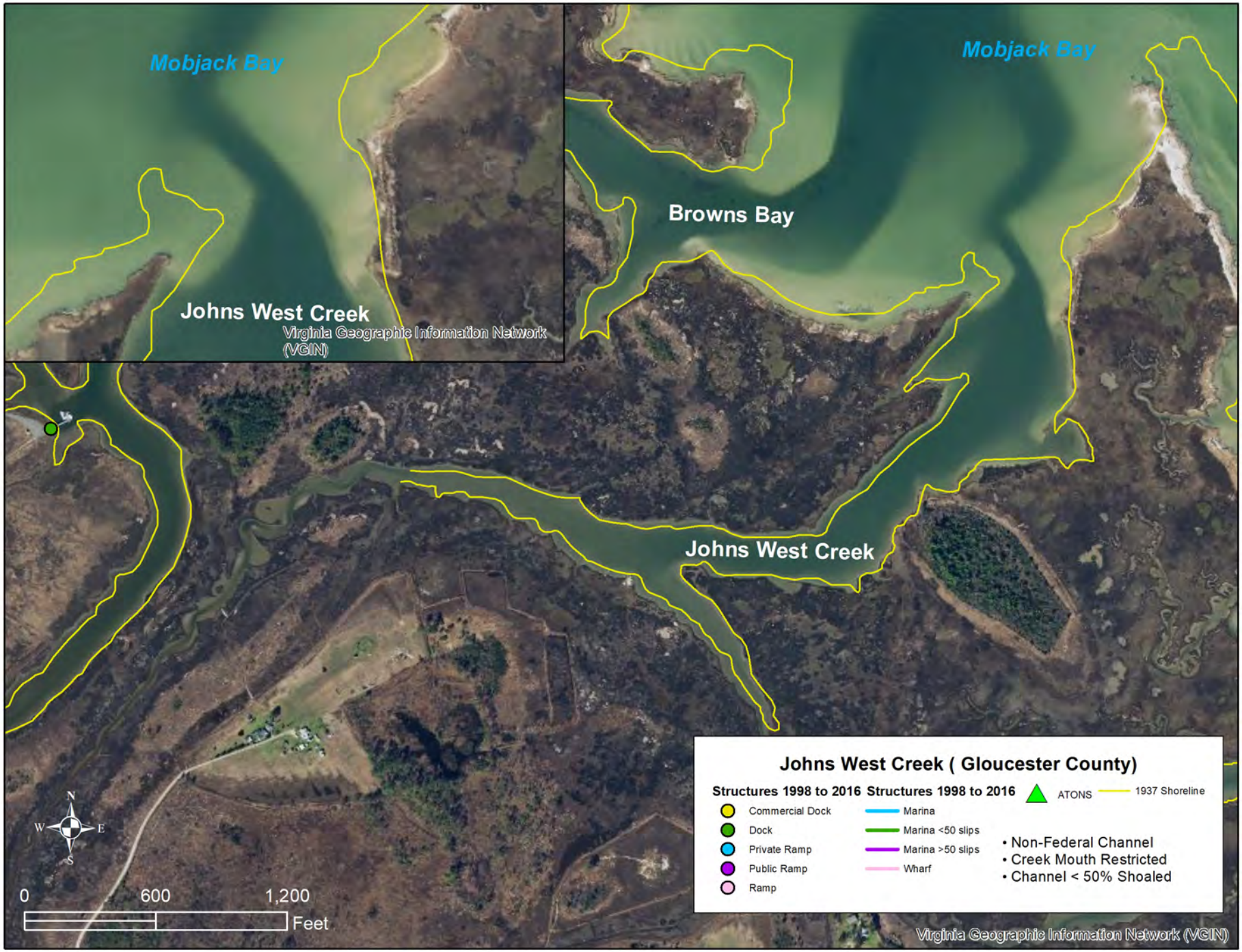
Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mobjack Bay
Johns West Creek
Virginia Geographic Information Network (VGIN)
Mobjack Bay
Browns Bay
Johns West Creek
Johns West Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel < 50% Shoaled
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Little Monday Creek

Creek ID Number: 103	**Locality:** Gloucester
Water Body: Mobjack Bay	**Channel Type:** Non-Federal
Latitude: 37.2860	**Longitude:** -76.3821
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 20
Average Depth of Creek Mouth (ft): -1.2	**Maximum Depth of Creek Mouth (ft):** -2.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

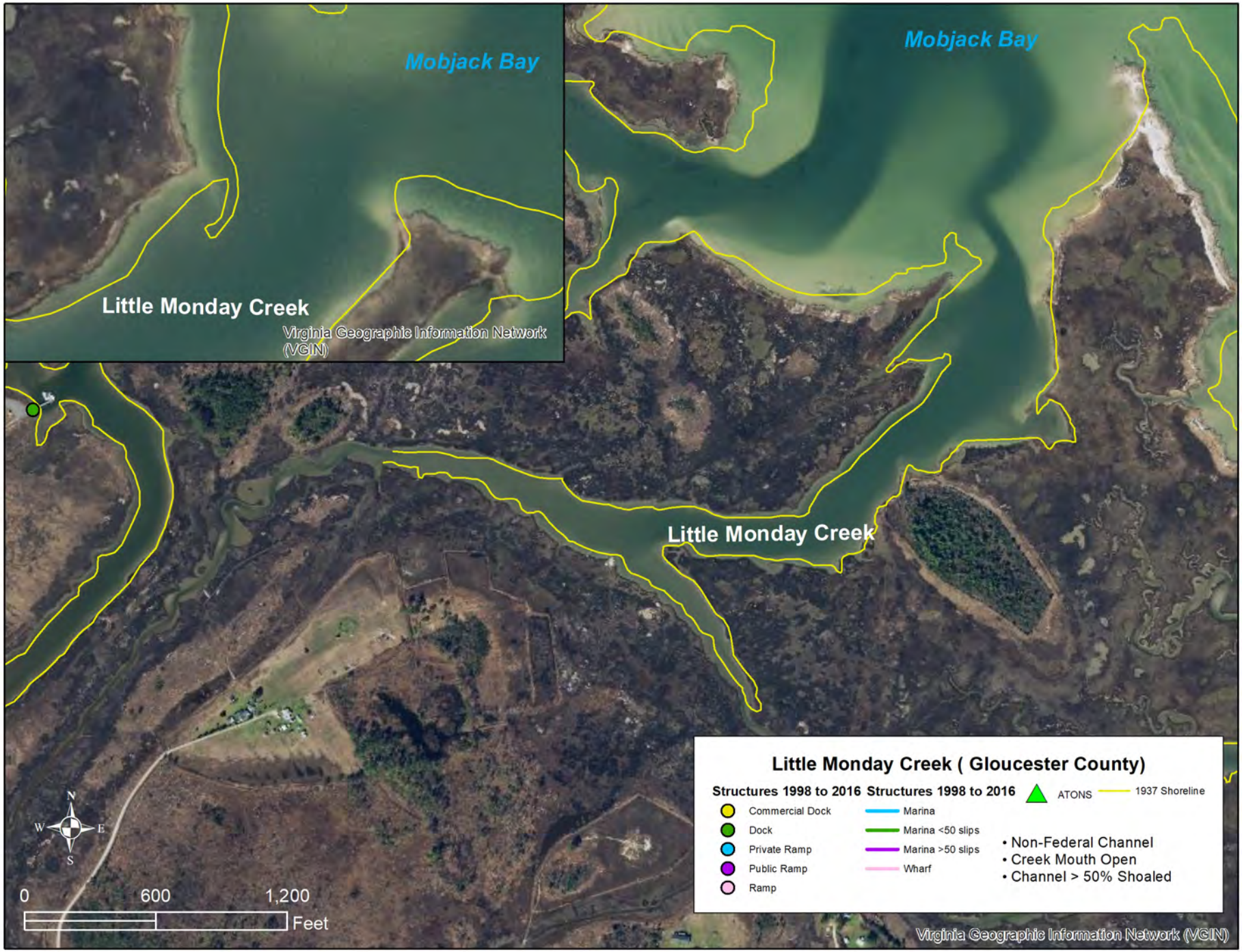
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mobjack Bay
Little Monday Creek
Virginia Geographic Information Network (VGIN)
Mobjack Bay
Little Monday Creek
Little Monday Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• Channel > 50% Shoaled
N
W
E
S
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Monday Creek**

Creek ID Number: 104	**Locality:** Gloucester
Water Body: Mobjack Bay	**Channel Type:** Non-Federal
Latitude: 37.2757	**Longitude:** -76.3819
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 91
Average Depth of Creek Mouth (ft): -4.1	**Maximum Depth of Creek Mouth (ft):** -6.6

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mobjack Bay
Monday Creek
Hog Island
Monday Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
0
300
600
Feet
N
W
E
S
Virginia Geographic Information Network (VGIN)

Data Sheet for **Perrin River**

Creek ID Number: 105	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal ATON
Latitude: 37.2641	**Longitude:** -76.4234
Number of Marinas: 3	
Number of Boat Ramps: 9	
Number of Piers: 30	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 94
Average Depth of Creek Mouth (ft): -5.0	**Maximum Depth of Creek Mouth (ft):** -7.7

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

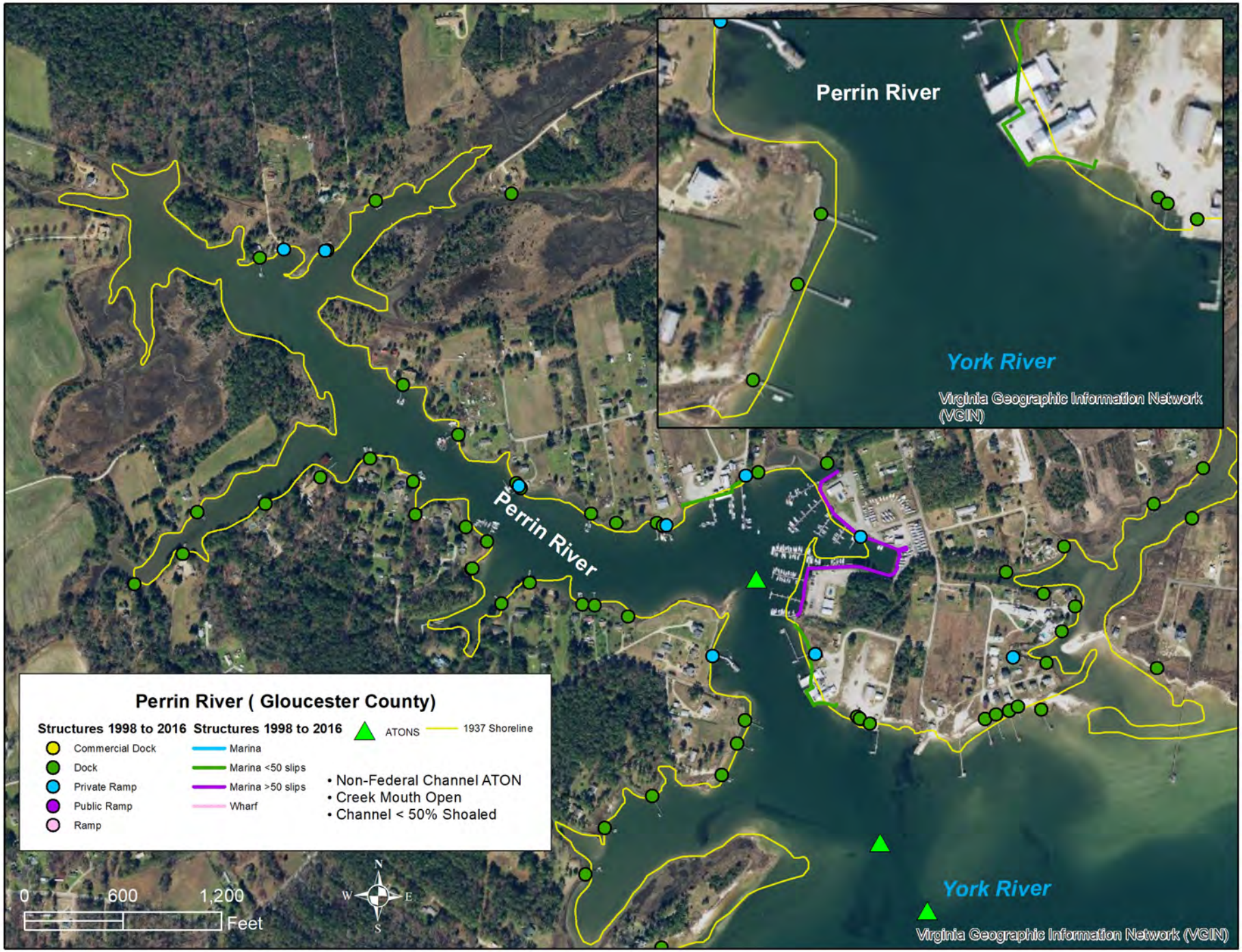
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Perrin River
York River
Virginia Geographic Information Network (VGIN)
Perrin River
Perrin River (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Open
• Channel < 50% Shoaled
0
600
1,200
Feet
N
W
E
S
York River
Virginia Geographic Information Network (VGIN)

Data Sheet for Sarah Creek

Creek ID Number: 106	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal ATON
Latitude: 37.2542	**Longitude:** -76.4815
Number of Marinas: 8	
Number of Boat Ramps: 11	
Number of Piers: 213	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.5	**Creek Area (acres):** 287
Average Depth of Creek Mouth (ft): -7.3	**Maximum Depth of Creek Mouth (ft):** -13.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

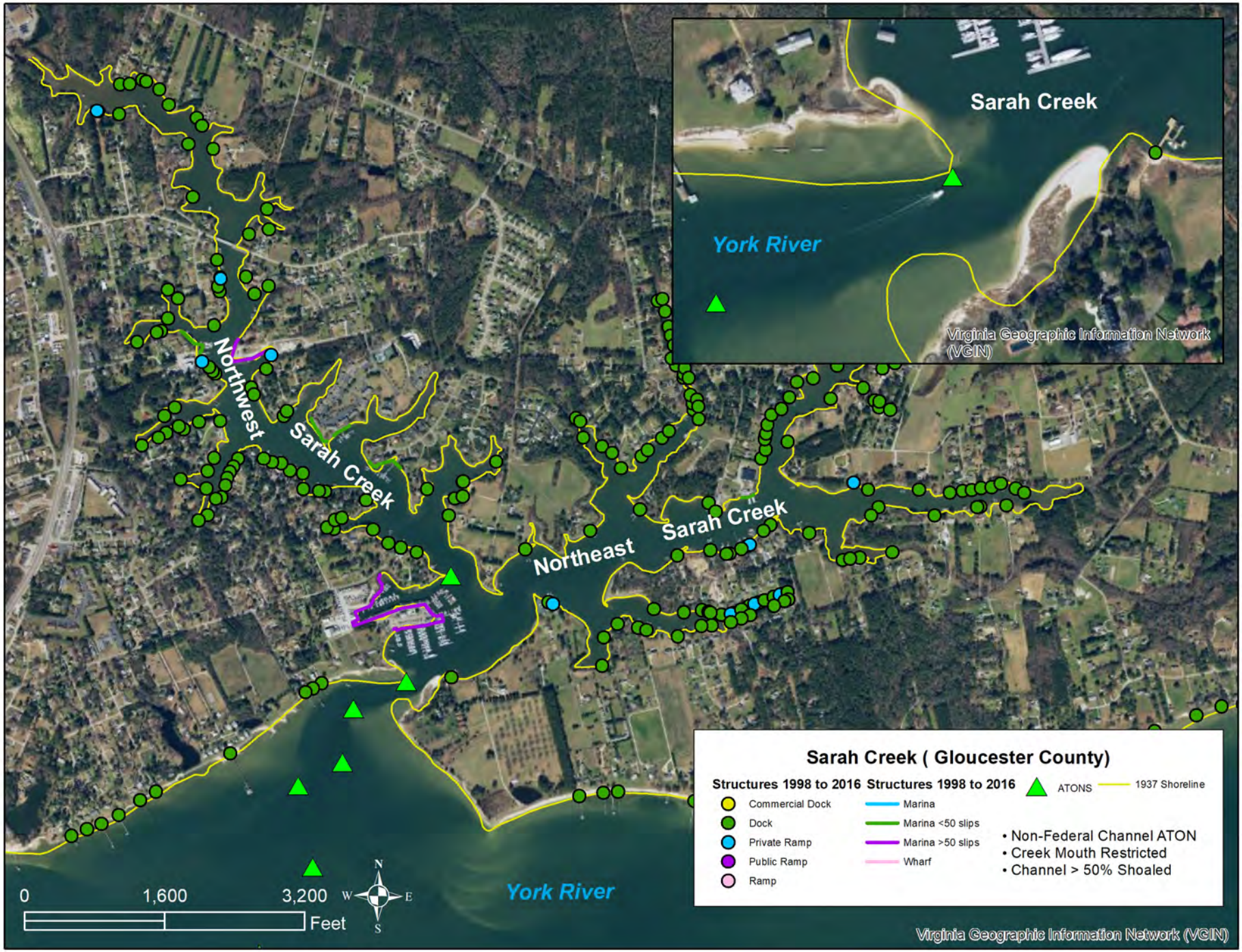
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Sarah Creek
York River
Virginia Geographic Information Network (VGIN)
Northwest Sarah Creek
Northeast Sarah Creek
York River
0
1,600
3,200
Feet
N
W
E
S
Sarah Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Restricted
• Channel > 50% Shoaled
Virginia Geographic Information Network (VGIN)

Data Sheet for Timberneck Creek

Creek ID Number: 107	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal ATON
Latitude: 37.2919	**Longitude:** -76.5347
Number of Marinas: 1	
Number of Boat Ramps: 2	
Number of Piers: 27	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.7	**Creek Area (acres):** 202
Average Depth of Creek Mouth (ft): -2.9	**Maximum Depth of Creek Mouth (ft):** -5.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

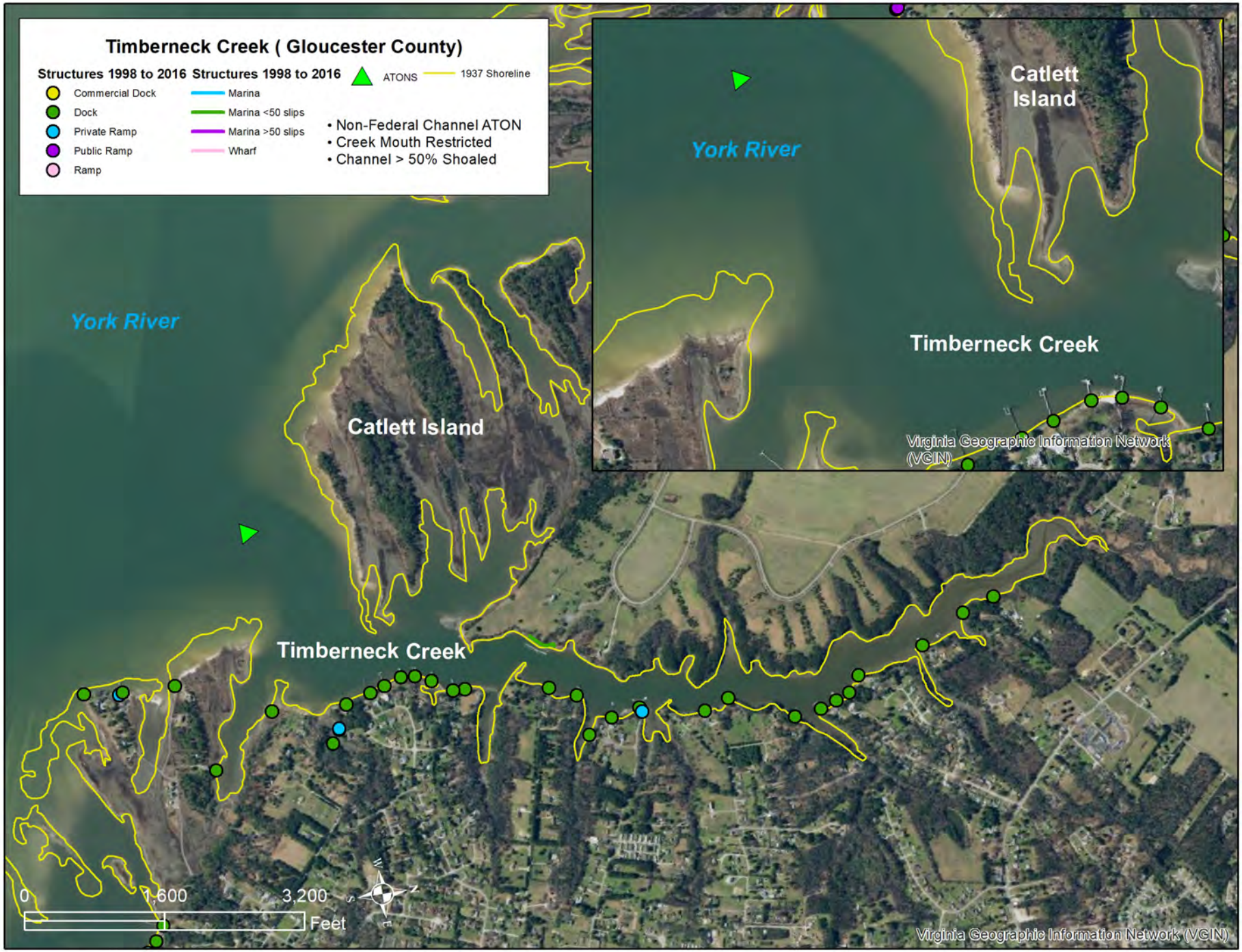
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Timberneck Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Restricted
• Channel > 50% Shoaled
York River
Catlett Island
Timberneck Creek
Virginia Geographic Information Network (VGIN)
0
1,600
3,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Cedarbush Creek

Creek ID Number: 108	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.3102	**Longitude:** -76.5565
Number of Marinas: 0	
Number of Boat Ramps: 2	
Number of Piers: 21	
Creek Mouth Morphology: Semi-Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 2.8	**Creek Area (acres):** 82
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

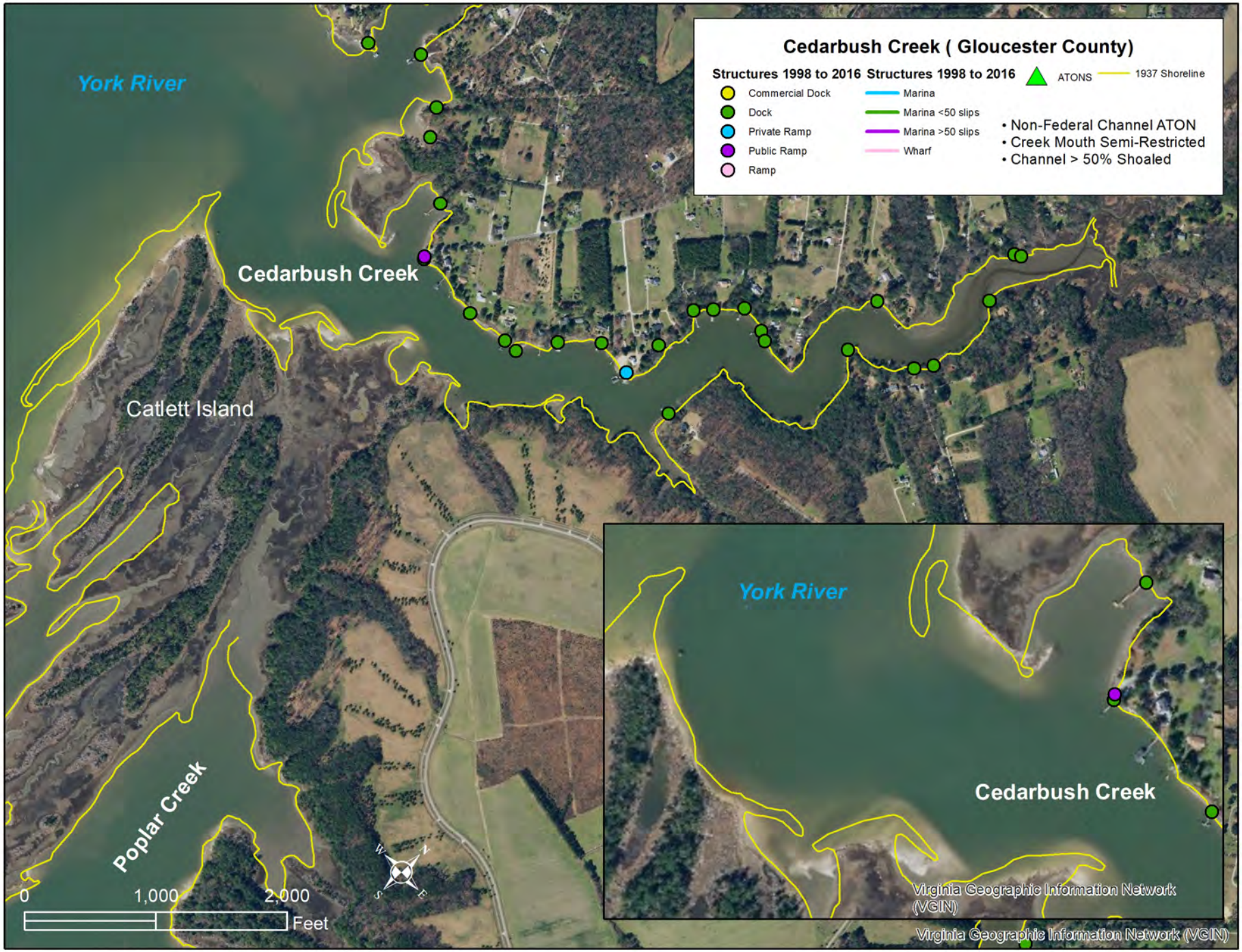
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Cedarbush Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel ATON
• Creek Mouth Semi-Restricted
• Channel > 50% Shoaled
York River
Cedarbush Creek
Catlett Island
Poplar Creek
0
1,000
2,000
Feet
York River
Cedarbush Creek
Virginia Geographic Information Network (VGIN)
Virginia Geographic Information Network (VGIN)

Data Sheet for Carter Creek

Creek ID Number: 109	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.3167	**Longitude:** -76.5702
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 20	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.8	**Creek Area (acres):** 169
Average Depth of Creek Mouth (ft): -0.4	**Maximum Depth of Creek Mouth (ft):** -0.9

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

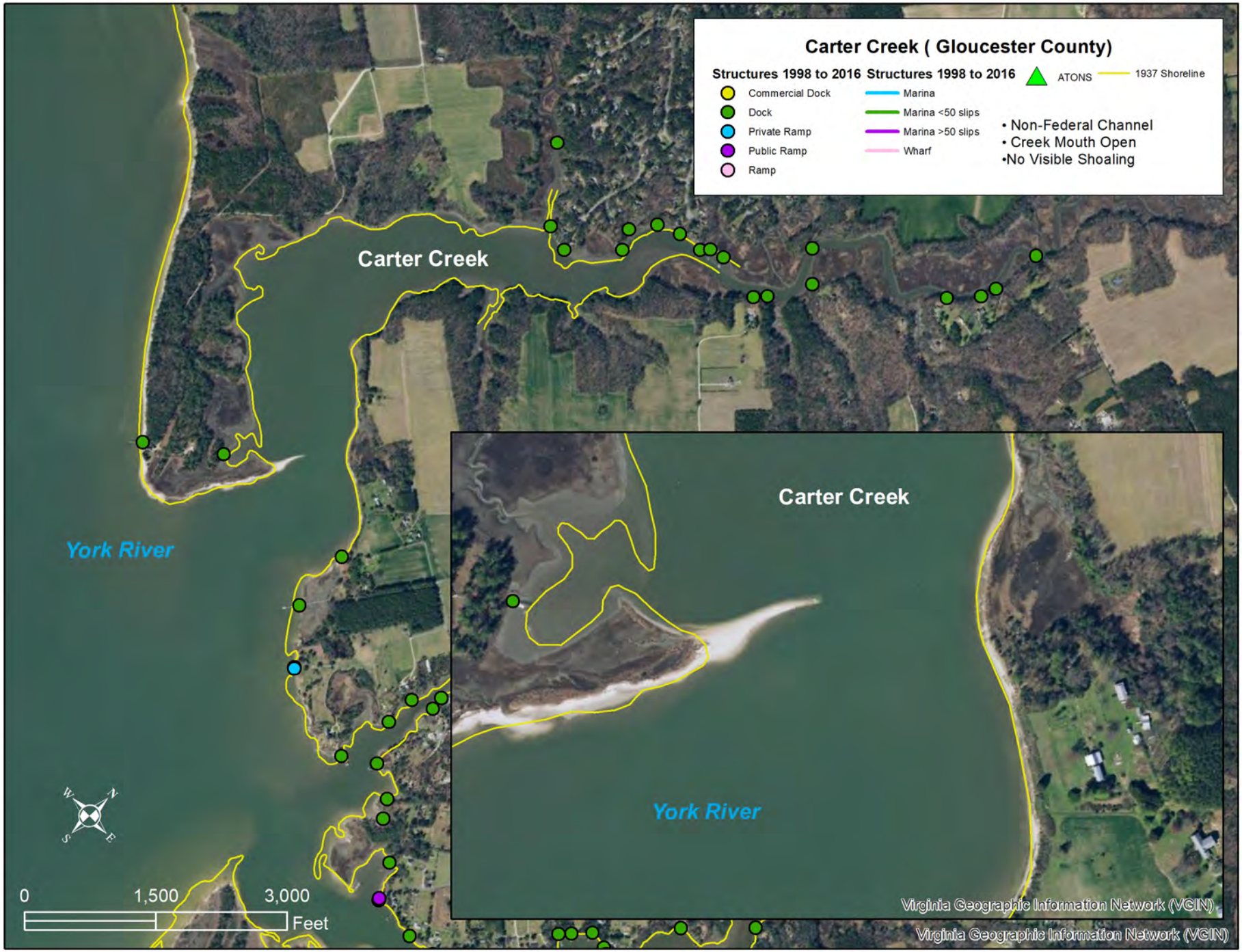
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Carter Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
•No Visible Shoaling
Carter Creek
York River
Carter Creek
York River
0
1,500
3,000
Feet
Virginia Geographic Information Network (VGIN)
Virginia Geographic Information Network (VGIN)

Data Sheet for Aberdeen Creek

Creek ID Number: 110	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Federal
Latitude: 37.3375	**Longitude:** -76.5924
Number of Marinas: 1	
Number of Boat Ramps: 4	
Number of Piers: 22	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 3.0	**Creek Area (acres):** 77
Average Depth of Creek Mouth (ft): -1.0	**Maximum Depth of Creek Mouth (ft):** -1.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

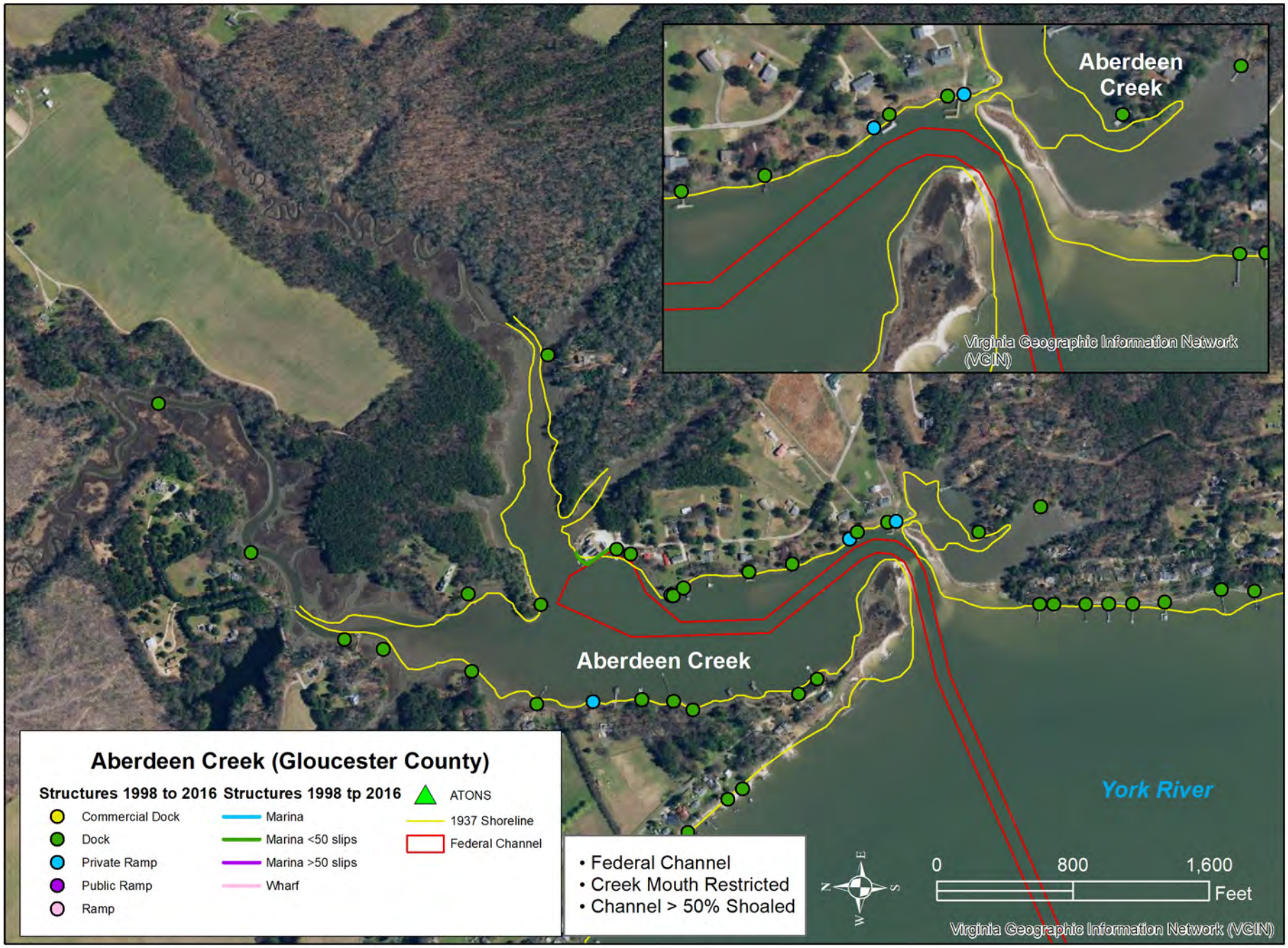
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Aberdeen Creek
Virginia Geographic Information Network (VGIN)
Aberdeen Creek
Aberdeen Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 tp 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
Federal Channel
• Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
N
E
S
W
0
800
1,600
Feet
York River
Virginia Geographic Information Network (VGIN)

Data Sheet for **Jones Creek**

Creek ID Number: 111	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.3607	**Longitude:** -76.6160
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 5	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 3.0	**Creek Area (acres):** 42
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

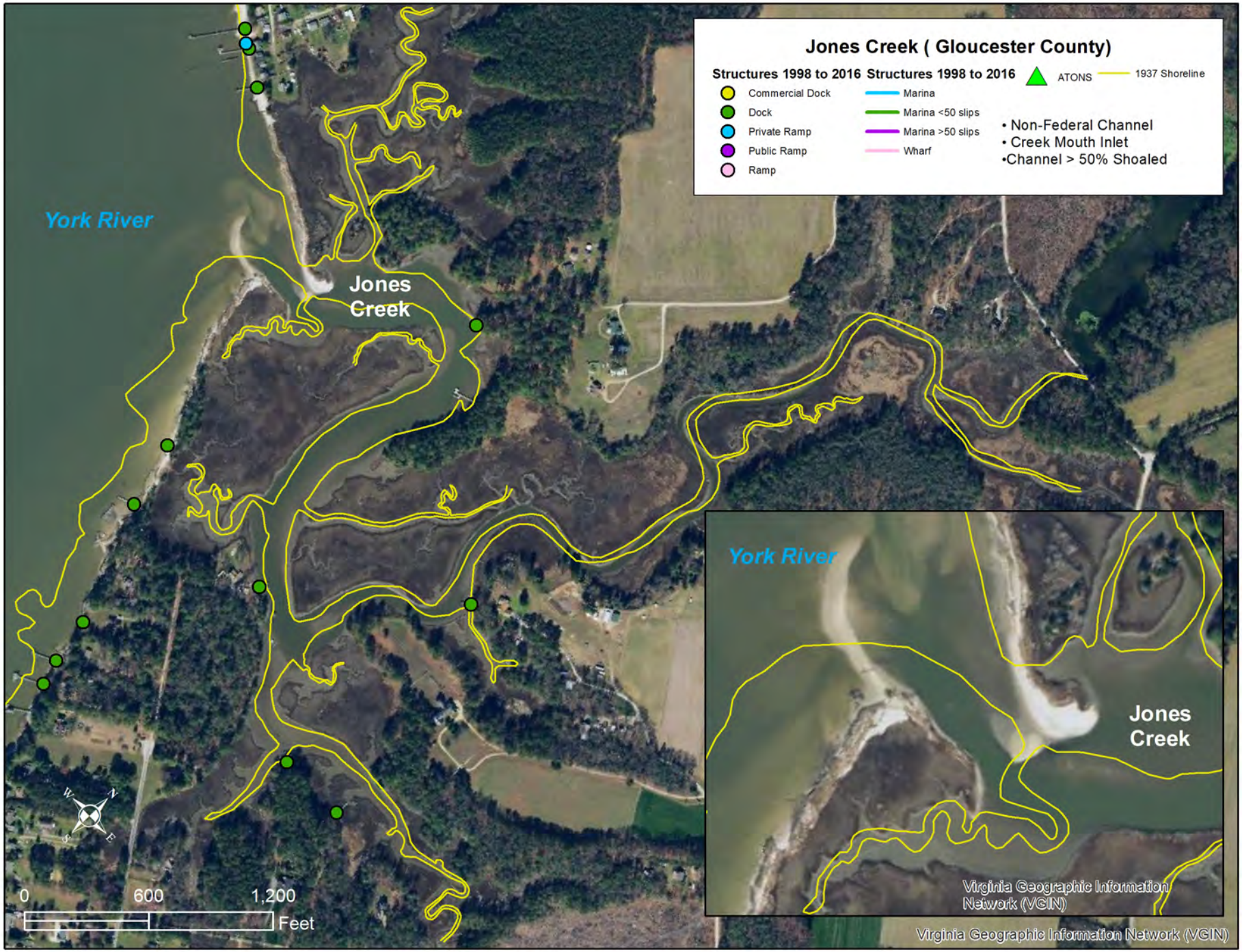
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Jones Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
•Channel > 50% Shoaled
York River
Jones Creek
York River
Jones Creek
Virginia Geographic Information Network (VGIN)
0
600
1,200
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for Sandy Creek

Creek ID Number: 112	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.3652	**Longitude:** -76.6227
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 3.0	**Creek Area (acres):** 6
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

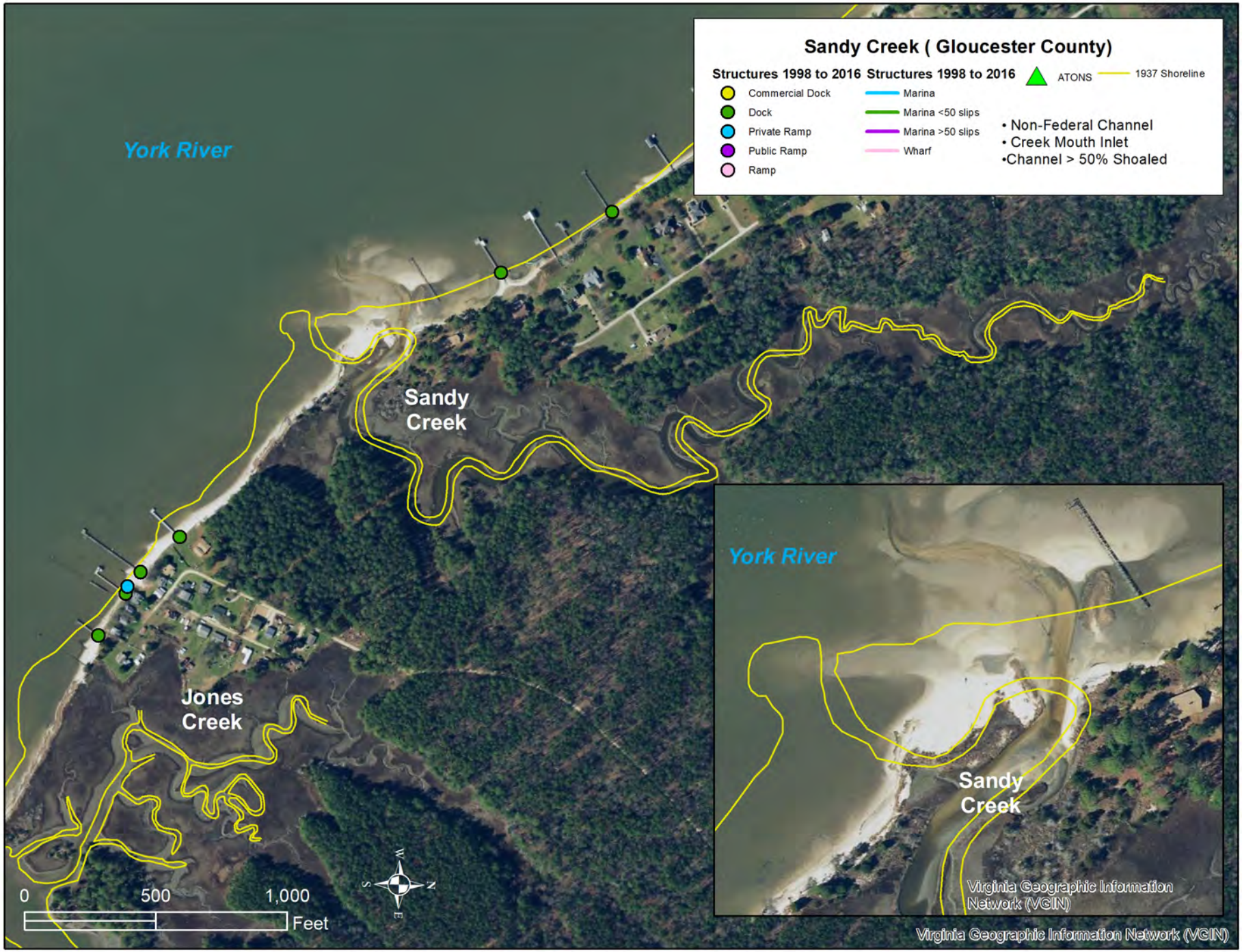
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Sandy Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
•Channel > 50% Shoaled
York River
Sandy Creek
Jones Creek
0
500
1,000
Feet
W
S
N
E
York River
Sandy Creek
Virginia Geographic Information Network (VGIN)
Virginia Geographic Information Network (VGIN)

Data Sheet for **Fox Creek**

Creek ID Number: 113	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.3857	**Longitude:** -76.6428
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 3	
Creek Mouth Morphology: Inlet	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 3.0	**Creek Area (acres):** 13
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

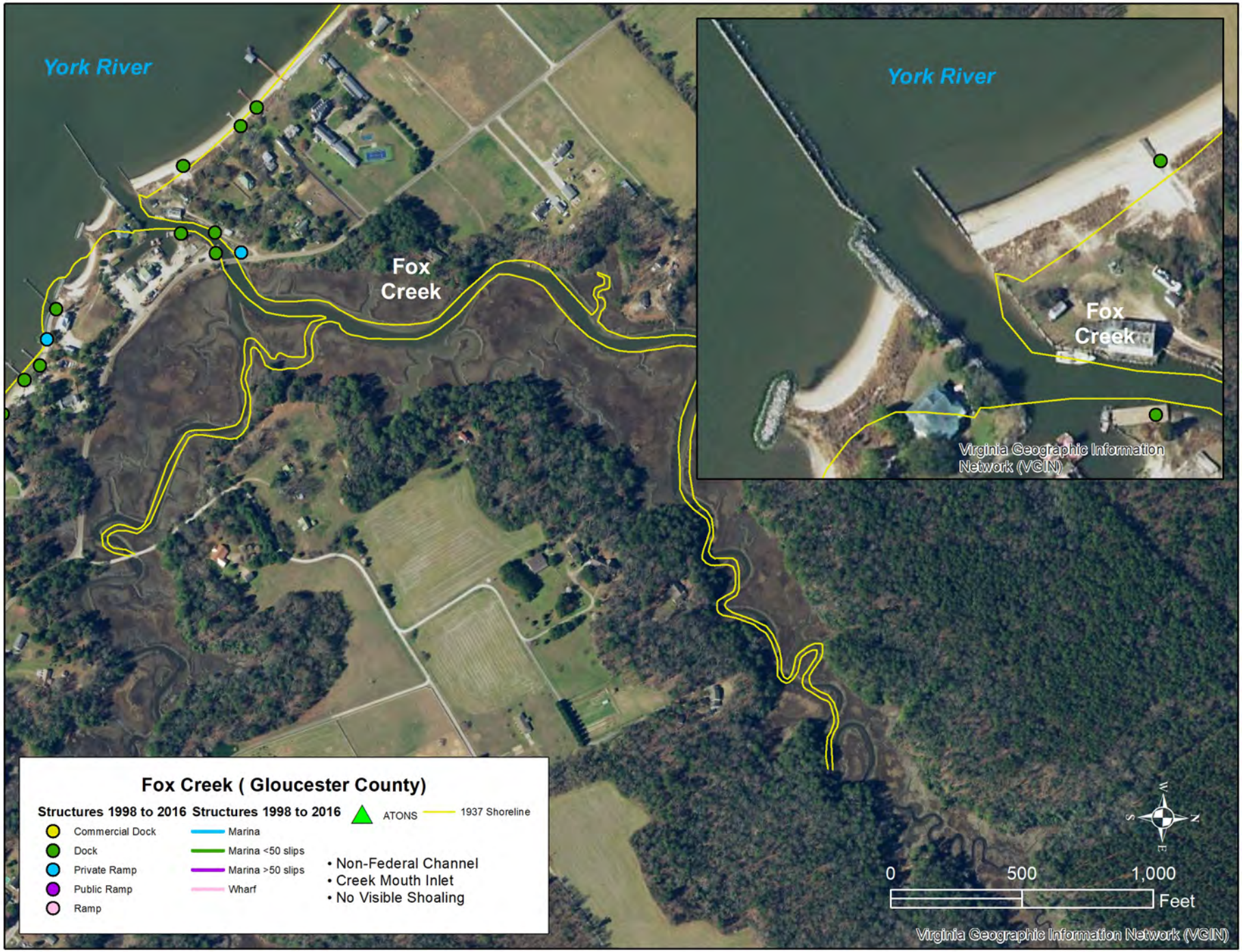
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


York River
Fox Creek
York River
Fox Creek
Virginia Geographic Information Network (VGIN)
Fox Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Inlet
• No Visible Shoaling
W
S
E
N
0
500
1,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Bland Creek**

Creek ID Number: 114	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.4058	**Longitude:** -76.6558
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 6	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 3.0	**Creek Area (acres):** 24
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

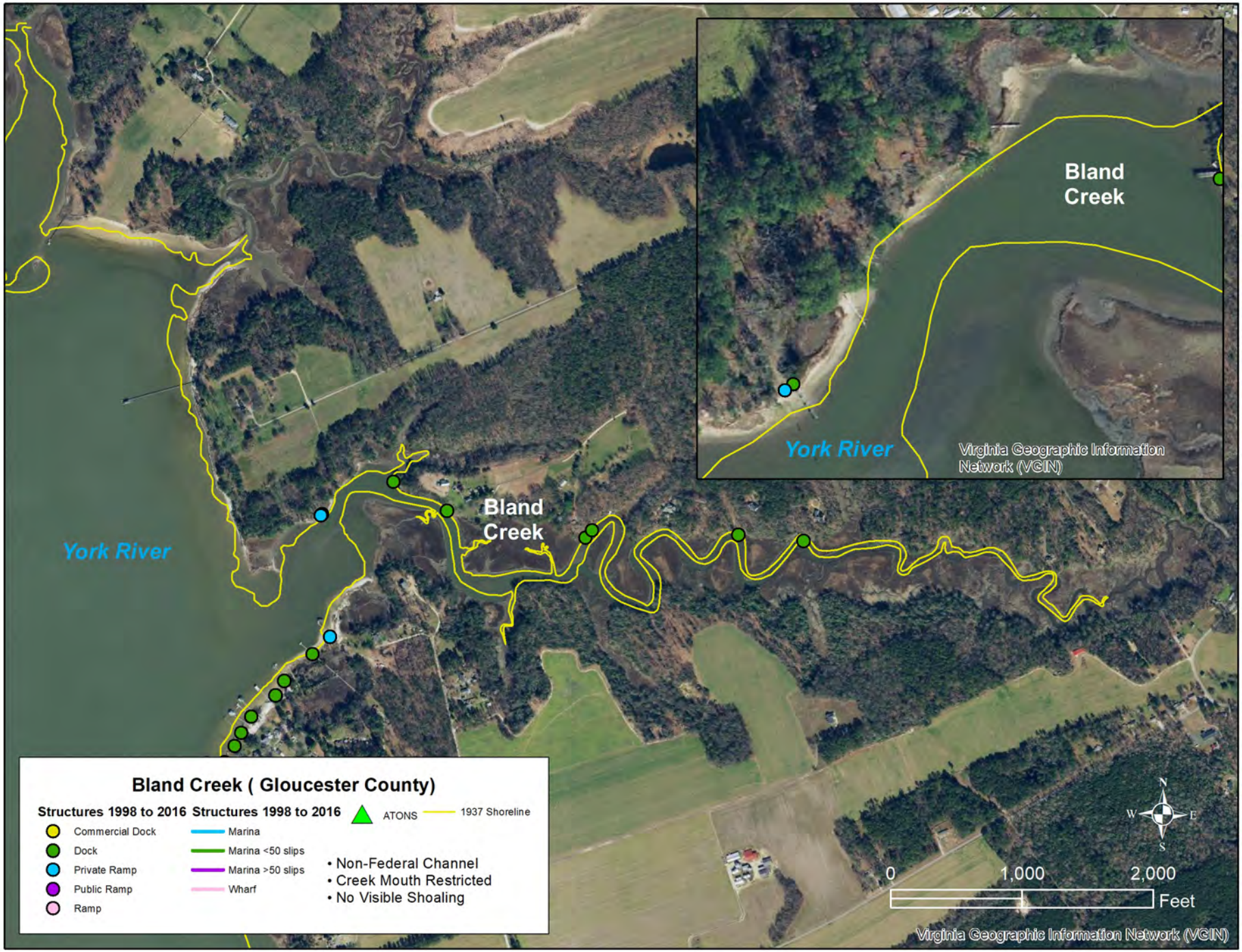
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Bland Creek
York River
Virginia Geographic Information Network (VGIN)
Bland Creek
York River
Bland Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• No Visible Shoaling
N
W
E
S
0
1,000
2,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Leigh Creek**

Creek ID Number: 115	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.4134	**Longitude:** -76.6576
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: >50% of channel
Tide Range (ft): 3.0	**Creek Area (acres):** 7
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


York River
Leigh Creek
York River
Leigh Creek
Virginia Geographic Information Network (VGIN)
Leigh Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• Channel > 50% Shoaled
W
S
N
E
0
500
Virginia Geographic Information Network (VGIN)

Data Sheet for **Purtan Creek**

Creek ID Number: 116	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.4138	**Longitude:** -76.6631
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 3.0	**Creek Area (acres):** 35
Average Depth of Creek Mouth (ft): -0.5	**Maximum Depth of Creek Mouth (ft):** -0.5

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

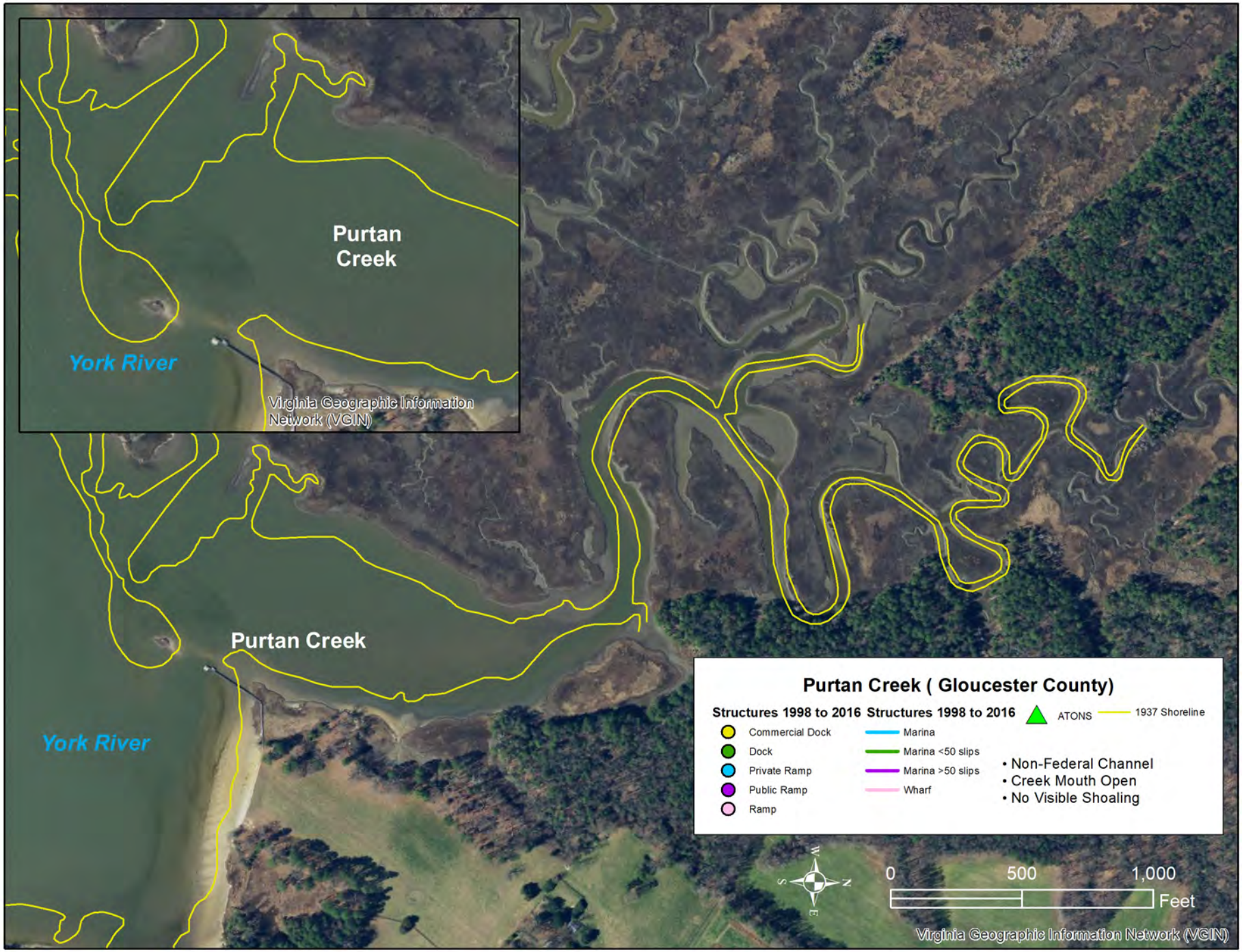
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Purtan
Creek
York River
Virginia Geographic Information
Network (VGIN)
Purtan Creek
York River
Purtan Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
W
S
N
E
0
500
1,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Adams Creek**

Creek ID Number: 117	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.4280	**Longitude:** -76.6924
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 8	
Creek Mouth Morphology: Restricted	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 3.0	**Creek Area (acres):** 103
Average Depth of Creek Mouth (ft): -0.3	**Maximum Depth of Creek Mouth (ft):** -0.3

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

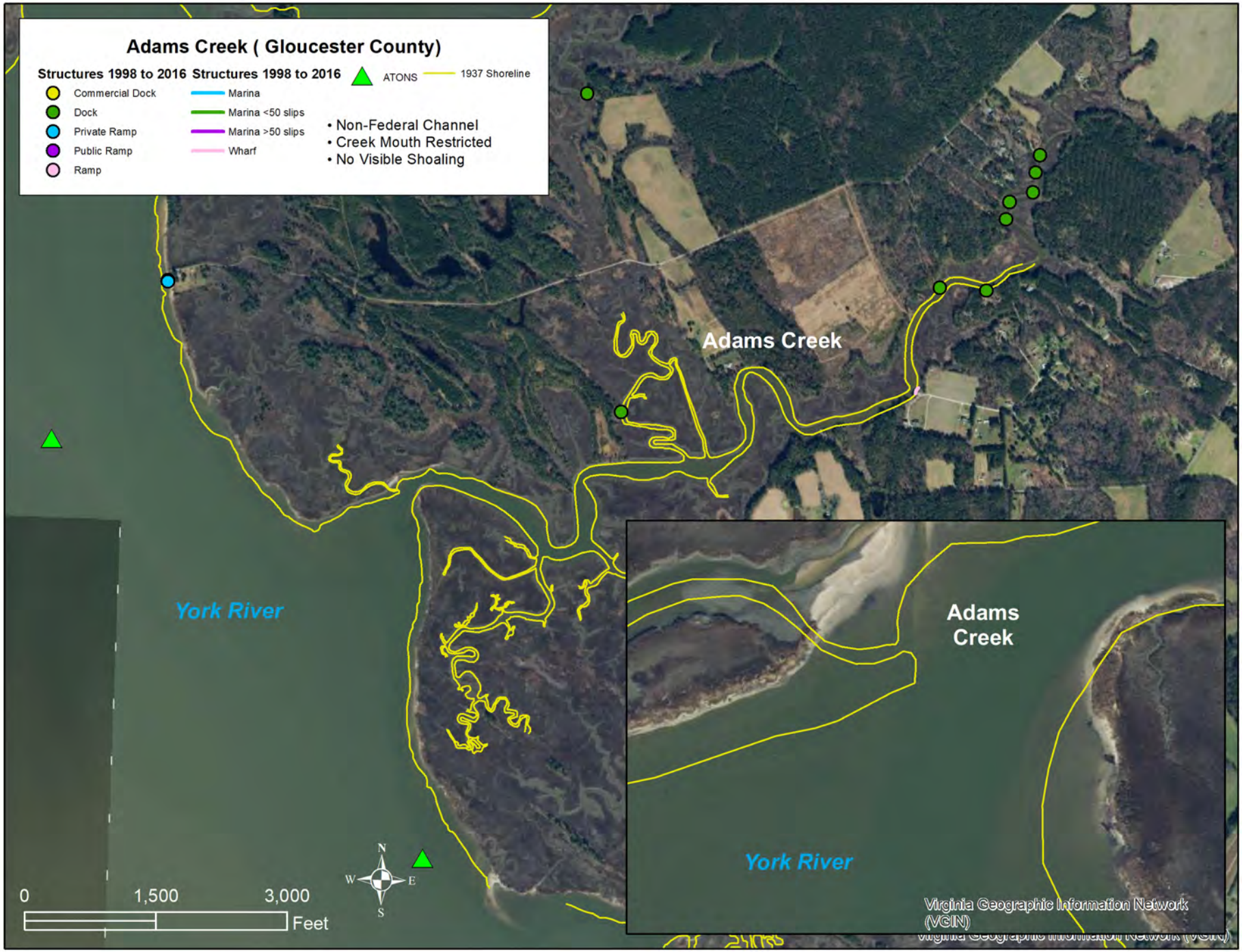
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Adams Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Restricted
• No Visible Shoaling
Adams Creek
York River
Adams Creek
York River
N
W
E
S
0
1,500
3,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Poropotank River**

Creek ID Number: 118	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.4437	**Longitude:** -76.7035
Number of Marinas: 0	
Number of Boat Ramps: 3	
Number of Piers: 48	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: <50% of channel
Tide Range (ft): 3.0	**Creek Area (acres):** 700
Average Depth of Creek Mouth (ft): -5.8	**Maximum Depth of Creek Mouth (ft):** -12.2

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

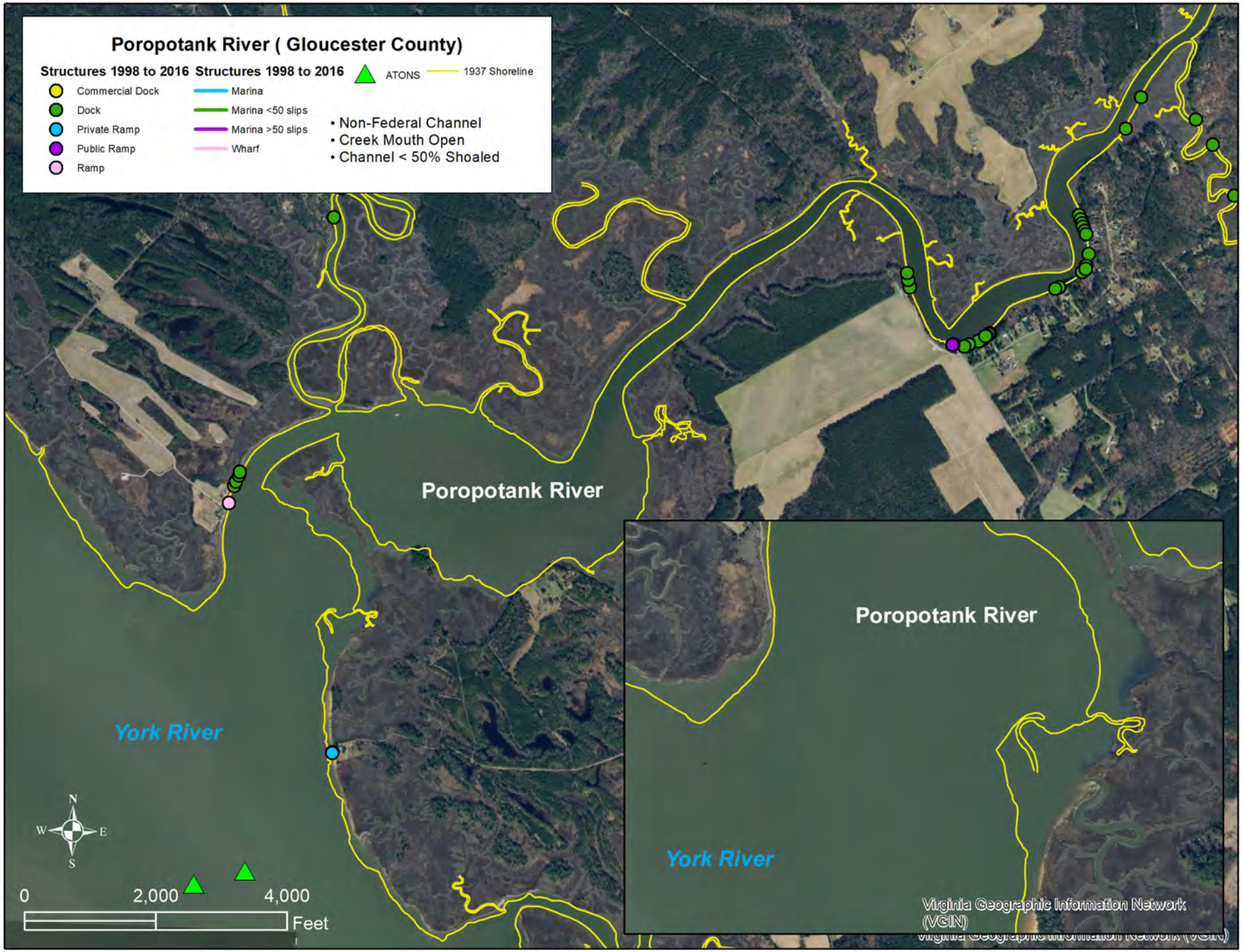
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Poropotank River (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• Channel < 50% Shoaled
Poropotank River
York River
Poropotank River
York River
N
W
E
S
0
2,000
4,000
Feet
Virginia Geographic Information Network (VGIN)

Data Sheet for **Hockley Creek**

Creek ID Number: 119	**Locality:** Gloucester
Water Body: York River	**Channel Type:** Non-Federal
Latitude: 37.4922	**Longitude:** -76.7449
Number of Marinas: 0	
Number of Boat Ramps: 0	
Number of Piers: 0	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 3.0	**Creek Area (acres):** 33
Average Depth of Creek Mouth (ft): -4.8	**Maximum Depth of Creek Mouth (ft):** -8.4

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

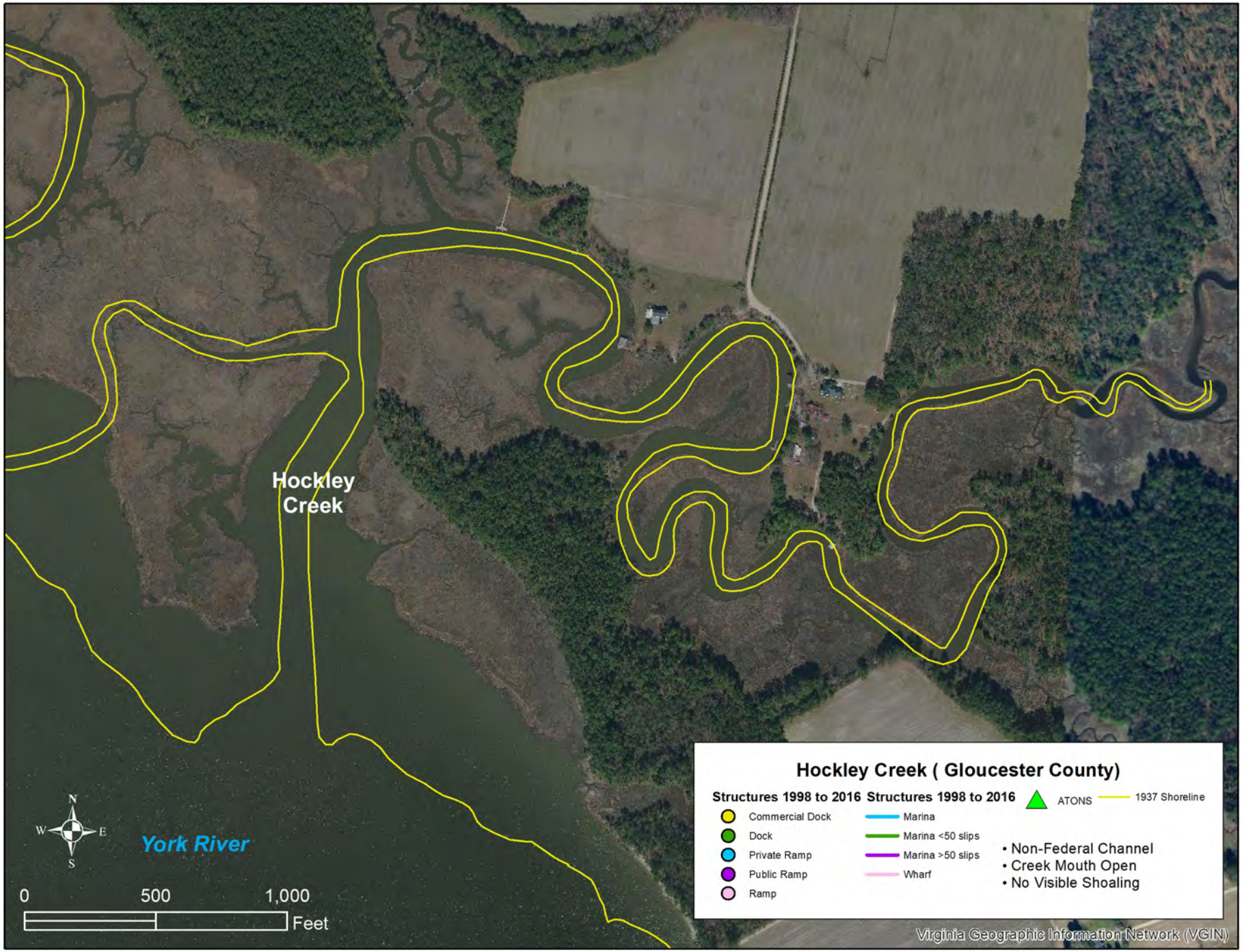
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Hockley Creek
York River
N
W
E
S
0
500
1,000
Feet
Hockley Creek (Gloucester County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
1937 Shoreline
• Non-Federal Channel
• Creek Mouth Open
• No Visible Shoaling
Virginia Geographic Information Network (VGIN)

Data Sheet for Mattaponi River Entrance

Creek ID Number: 120	**Locality:** King and Queen
Water Body: Mattaponi River	**Channel Type:** Non-Federal
Latitude: 37.5290	**Longitude:** -76.7873
Number of Marinas: 0	
Number of Boat Ramps: 1	
Number of Piers: 15	
Creek Mouth Morphology: Open	**%Shoaling of Creek**: No Visible Shoaling
Tide Range (ft): 2.9	**Creek Area (acres):**
Average Depth of Creek Mouth (ft): N/A	**Maximum Depth of Creek Mouth (ft):** -37.0

Notes:

Channel type categories are Federal, which includes those shallow draft channels that have a federally-defined channel; Non-Federal ATON, which includes non-federally defined channels but those which have aids to navigation; and Non-Federal, which includes non-federally defined channels but those which do not have aids to navigation.

Structure data was obtained from the VIMS, Center for Resource Management shoreline structure GIS database.

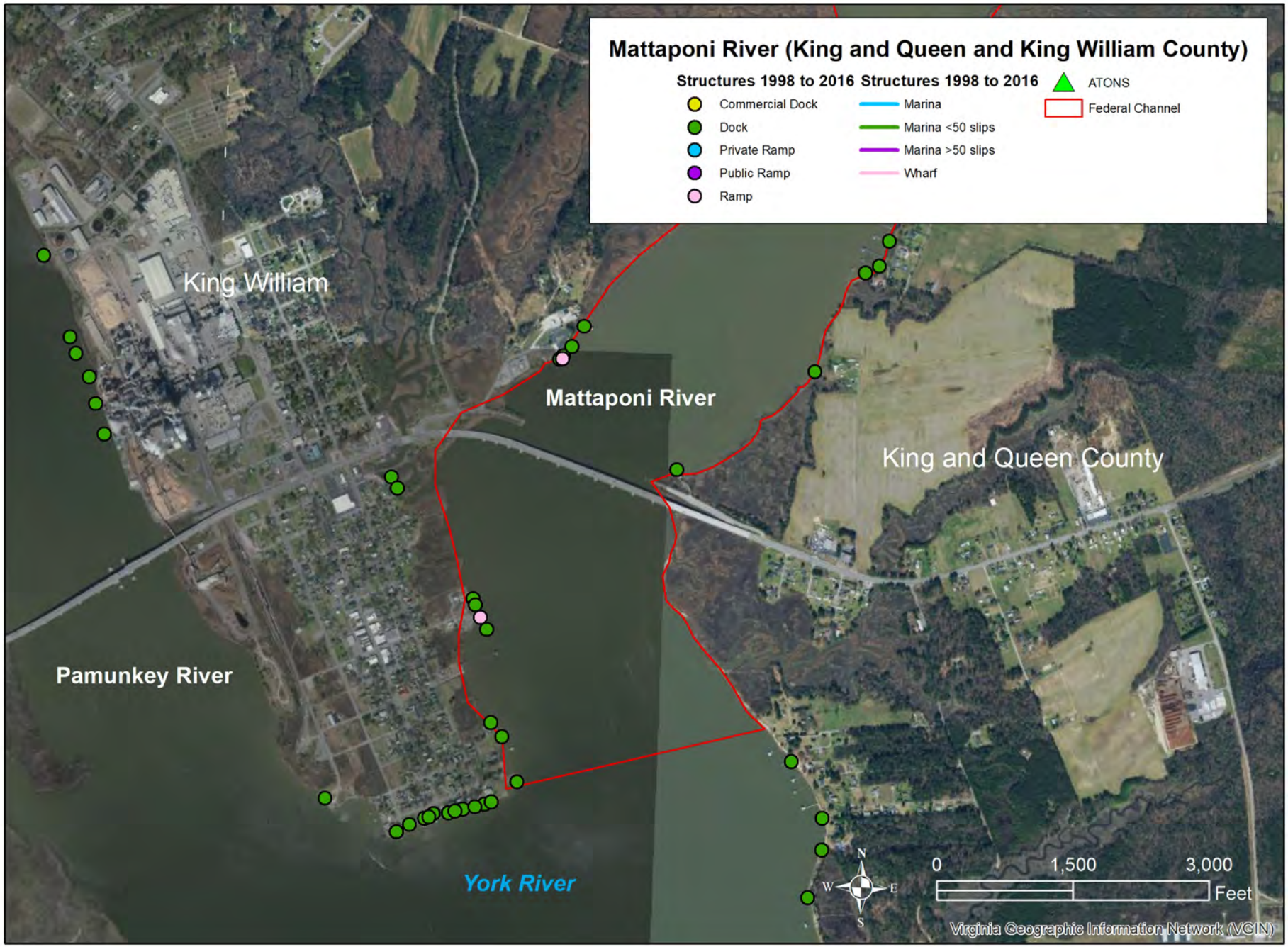
Creek mouth morphology was a qualitative assessment of the creek mouth performed for this project. An inlet morphology is defined as a narrow and very restricted channel such that the tidal range could be suppressed on the inside. A restricted inlet has narrowing headlands and possibly shoals on either side of the creek mouth somewhat restricting water flow. Semi-restricted ranges between restricted creek mouths and open creek mouths which have no land impeding creek flow.

% Shoaling of a creek was a qualitative assessment of shoaling within the creek, usually at the creek mouth or just outside the creek. It is related to the need for dredging. The assessment was performed using visual inspection of the 2017 VGIN images.

Tide Range was obtained using NOAA resources.

Creek Area was determined by using the Shoreline Studies Program's digitized 2017 shoreline which outlines the entire creek from the mouth to its headwaters. The mouth was visually-defined on the 2017 VGIN images. Area was calculated in GIS.

Average and maximum depth of the creek mouth was determined from the USGS topographic and bathymetric digital elevation model (https://www.usgs.gov/core-science-systems/eros/coned)


Mattaponi River (King and Queen and King William County)
Structures 1998 to 2016
Commercial Dock
Dock
Private Ramp
Public Ramp
Ramp
Structures 1998 to 2016
Marina
Marina <50 slips
Marina >50 slips
Wharf
ATONS
Federal Channel
King William
Mattaponi River
King and Queen County
Pamunkey River
York River
N
W
E
S
0
1,500
3,000
Feet
Virginia Geographic Information Network (VGIN)

Appendix B

Complete Table of Data for 120 Creeks on the Middle Peninsula

Summary Table	
Category	# of Creeks
Non-Federal	95
Non-Federal ATON	12
Federal	13
Category	# of Creeks
No Visible Shoaling	41
<50% of channel	39
>50% of channel	30
Completely shoaled	9
Category	# of Creeks
Open	45
Semi-Restricted	5
Restricted	50
Inlet	19
Category	# of Creeks
With Piers	106
With Marina	30
With Ramps	75
With Wharf	4

Consecutive Num	Creek Name	Type	County	Channel Type	Water Body	Creek Mouth
1	Hoskins	Creek	Essex	Federal	Rappahannock River	Restricted
2	Piscataway	Creek	Essex	Non-Federal	Rappahannock River	Open
3	Mud	Creek	Middlesex	Non-Federal	Rappahannock River	Open
4	Parrotts	Creek	Middlesex	Federal	Rappahannock River	Restricted
5	Harry George	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted
6	Weeks	Creek	Middlesex	Non-Federal	Rappahannock River	Open
7	Lagrange	Creek	Middlesex	Non-Federal ATON	Rappahannock River	Restricted
8	Robinson	Creek	Middlesex	Non-Federal ATON	Rappahannock River	Restricted
9	Urbanna	Creek	Middlesex	Federal	Rappahannock River	Restricted
10	Whiting	Creek	Middlesex	Federal	Rappahannock River	Restricted
11	Meachim	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted
12	Meachim East	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted
13	Locklies North	Creek	Middlesex	Non-Federal ATON	Rappahannock River	Open
14	Locklies	Creek	Middlesex	Non-Federal	Rappahannock River	Open
15	Locklies Offshore	Channel	Middlesex	Federal	Rappahannock River	N/A
16	Mill	Creek	Middlesex	Non-Federal	Rappahannock River	Open
17	Bush Park	Creek	Middlesex	Non-Federal	Rappahannock River	Inlet
18	Hunting	Creek	Middlesex	Non-Federal	Rappahannock River	Inlet
19	Sturgeon	Creek	Middlesex	Non-Federal	Rappahannock River	Restricted
20	Unnamed	Cove	Middlesex	Non-Federal	Rappahannock River	Open
21	Broad	Creek	Middlesex	Federal	Rappahannock River	Restricted
22	Jackson	Creek	Middlesex	Federal	Piankatank River	Restricted
23	Moore East	Creek	Middlesex	Non-Federal	Piankatank River	Inlet
24	Moore	Creek	Middlesex	Non-Federal	Piankatank River	Inlet
25	Cores	Creek	Middlesex	Non-Federal	Piankatank River	Inlet
26	Healy	Creek	Middlesex	Non-Federal	Piankatank River	Open
27	Wilton	Creek	Middlesex	Non-Federal	Piankatank River	Open
28	Ferry	Creek	Gloucester	Non-Federal	Piankatank River	Restricted
29	Dancing	Creek	Gloucester	Non-Federal	Piankatank River	Restricted
30	Cobbs	Creek	Mathews	Non-Federal ATON	Piankatank River	Open
31	Roane Point	Creek	Mathews	Non-Federal	Piankatank River	Inlet
32	Warehouse	Cove	Mathews	Non-Federal	Piankatank River	Inlet
33	Chappel	Creek	Mathews	Non-Federal	Piankatank River	Inlet
34	Queens	Creek	Mathews	Federal	Piankatank River	Restricted
35	Winder	Creek	Mathews	Non-Federal	Piankatank River	Inlet
36	Milford	Haven	Mathews	Federal	Milford Haven	Restricted
37	Lanes	Creek	Mathews	Non-Federal	Milford Haven	Open
38	Edwards	Creek	Mathews	Non-Federal	Milford Haven	Open
39	Barn	Creek	Mathews	Non-Federal	Milford Haven	Open
40	Whites	Creek	Mathews	Non-Federal	Milford Haven/Chesapeake Bay	Open
41	Stutts	Creek	Mathews	Non-Federal ATON	Milford Haven	Open
42	Billups	Creek	Mathews	Non-Federal	Milford Haven	Open
43	Hole in the Wall	Channel	Mathews	Non-Federal ATON	Milford Haven/Chesapeake Bay	Open
44	Stoakes	Creek	Mathews	Non-Federal	Milford Haven	Open
45	Morris	Creek	Mathews	Non-Federal	Stutts Creek/Milford Haven	Open
46	Hudgins	Creek	Mathews	Non-Federal	Stutts Creek/Milford Haven	Restricted
47	Garden	Creek	Mathews	Non-Federal	Chesapeake Bay	Inlet
48	Winter	Harbor	Mathews	Federal	Chesapkeake Bay	Inlet
49	Horn	Harbor	Mathews	Federal	Chesapeake Bay	Open
50	Dyer	Creek	Mathews	Non-Federal	Chesapeake Bay	Open
51	Harper	Creek	Mathews	Non-Federal	Mobjack Bay	Open
52	Davis	Creek	Mathews	Federal	Mobjack Bay	Inlet
53	Pepper	Creek	Mathews	Non-Federal ATON	Mobjack Bay	Restricted
54	Sloop	Creek	Mathews	Non-Federal	Mobjack Bay	Restricted
55	West Landing	Creek	Mathews	Non-Federal	East River	Restricted
56	Tabbs	Creek	Mathews	Non-Federal	East River	Open

Consecutive Num	Creek Name	Type	County	Channel Type	Water Body	Creek Mouth
57	Weston	Creek	Mathews	Non-Federal	East River	Open
58	Mill	Creek	Mathews	Non-Federal	East River	Restricted
59	Todds	Creek	Mathews	Non-Federal	East River	Open
60	Put In	Creek	Mathews	Non-Federal	East River	Open
61	Woodas	Creek	Mathews	Non-Federal	East River	Open
62	Miles	Creek	Mathews	Non-Federal	East River	Open
63	Mill 2	Creek	Mathews	Non-Federal	East River	Inlet
64	Raines	Creek	Mathews	Non-Federal	East River	Restricted
65	Thomas	Creek	Mathews	Non-Federal	East River	Restricted
66	Sharp Point	Creek	Mathews	Non-Federal	East River	Restricted
67	Whites	Creek	Mathews	Non-Federal	East River	Restricted
68	Godsey	Creek	Mathews	Non-Federal	North River	Restricted
69	Diggs	Creek	Mathews	Non-Federal	North River	Restricted
70	Cakes	Creek	Mathews	Non-Federal	North River	Restricted
71	Raymond	Creek	Mathews	Non-Federal	North River	Restricted
72	Old Log School	Creek	Mathews	Non-Federal	North River	Restricted
73	Oakland	Creek	Mathews	Non-Federal	North River	Semi-Restricted
74	Greenmansion	Cove	Mathews	Non-Federal ATON	North River	Restricted
75	Blackwater	Creek	Mathews	Non-Federal	North River	Open
76	Hampton	Creek	Mathews	Non-Federal	North River	Open
77	Toddsbury	Creek	Gloucester	Non-Federal	North River	Restricted
78	Elmington	Creek	Gloucester	Non-Federal	North River	Restricted
79	Back	Creek	Gloucester	Non-Federal	North River	Restricted
80	Belleville	Creek	Gloucester	Non-Federal	North River	Restricted
81	Anchorage	Creek	Gloucester	Non-Federal	North River	Inlet
82	Davis	Creek	Gloucester	Non-Federal	North River	Restricted
83	Silver	Creek	Gloucester	Non-Federal	North River	Inlet
84	Wilson	Creek	Gloucester	Non-Federal	Ware River	Semi-Restricted
85	Oldhouse	Creek	Gloucester	Non-Federal	Ware River	Restricted
86	Whittaker	Creek	Gloucester	Non-Federal	Severn River	Open
87	Free School	Creek	Gloucester	Non-Federal	Severn River	Restricted
88	Sterling	Creek	Gloucester	Non-Federal	Severn River	Restricted
89	Vaughans	Creek	Gloucester	Non-Federal	Severn River (Northern Branch)	Open
90	Willets	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open
91	Lady	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Restricted
92	Heywood	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open
93	Thorntons	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open
94	Rowes	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Semi-Restricted
95	Holly Bush	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Restricted
96	Bill Browns	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Open
97	Thomas	Creek	Gloucester	Non-Federal	Severn River (Southern Branch)	Semi-Restricted
98	King	Creek	Gloucester	Non-Federal	Severn River	Inlet
99	Long	Creek	Gloucester	Non-Federal	Severn River	Restricted
100	Browns	Bay	Gloucester	Non-Federal ATON	Mobjack Bay	Open
101	Blevins	Creek	Gloucester	Non-Federal	Mobjack Bay	Restricted
102	John West	Creek	Gloucester	Non-Federal	Mobjack Bay	Restricted
103	Little Monday	Creek	Gloucester	Non-Federal	Mobjack Bay	Open
104	Monday	Creek	Gloucester	Non-Federal	Mobjack Bay	Open
105	Perrin	River	Gloucester	Non-Federal ATON	York River	Open
106	Sarah	Creek	Gloucester	Non-Federal ATON	York River	Restricted
107	Timberneck	Creek	Gloucester	Non-Federal ATON	York River	Restricted
108	Cedarbush	Creek	Gloucester	Non-Federal	York River	Semi-Restricted
109	Carter	Creek	Gloucester	Non-Federal	York River	Open
110	Aberdeen	Creek	Gloucester	Federal	York River	Restricted
111	Jones	Creek	Gloucester	Non-Federal	York River	Inlet
112	Sandy	Creek	Gloucester	Non-Federal	York River	Inlet

Consecutive Num	Creek Name	Type	County	Channel Type	Water Body	Creek Mouth
113	Fox	creek	Gloucester	Non-Federal	York River	Inlet
114	Bland	Creek	Gloucester	Non-Federal	York River	Restricted
115	Leigh	Creek	Gloucester	Non-Federal	York River	Restricted
116	Purtan	Creek	Gloucester	Non-Federal	York River	Open
117	Adams	Creek	Gloucester	Non-Federal	York River	Restricted
118	Poropotank	River	oucester/King and Que	Non-Federal	York River	Open
119	Hockley	Creek	King and Queen	Non-Federal	York River	Open
120	Mattaponi Entrance*	River	King and Queen	Non-Federal	Mattaponi River	Open

*Mattaponi River is included, but only the shoreline at the mouth of the river was considered.

Consecutive Num	Creek Name	Creek Shoaled	Tide Range (ft)	# Piers	# Marina	# Ramps	# Wharf	Water Surface Area (acres)	Mouth Width (ft)
1	Hoskins	<50% of channel	1.84	18	0	1	0	132	212
2	Piscataway	No Visible Shoaling	1.84	36	0	4	0	427	566
3	Mud	>50% of channel	1.67	1	0	0	0	105	609
4	Parrotts	>50% of channel	1.67	19	0	4	0	115	528
5	Harry George	Completely shoaled	1.67	5	0	0	0	48	473
6	Weeks	No Visible Shoaling	1.67	2	0	1	0	110	526
7	Lagrange	<50% of channel	1.50	49	1	6	0	416	844
8	Robinson	>50% of channel	1.50	111	5	5	0	241	1799
9	Urbanna	>50% of channel	1.50	66	4	6	0	314	604
10	Whiting	Completely shoaled	1.50	59	0	1	0	132	299
11	Meachim	>50% of channel	1.50	83	0	2	0	158	344
12	Meachim East	Completely shoaled	1.50	9	2	2	0	25	708
13	Locklies North	<50% of channel	1.34	11	0	2	0	29	701
14	Locklies	<50% of channel	1.34	32	3	5	0	71	448
15	Locklies Offshore	<50% of channel	1.34	0	0	0	0	8	0
16	Mill	<50% of channel	1.34	37	0	2	1	75	587
17	Bush Park	Completely shoaled	1.34	38	5	4	0	77	107
18	Hunting	<50% of channel	1.34	35	1	2	0	26	57
19	Sturgeon	Completely shoaled	1.34	121	2	9	0	185	1508
20	Unnamed	Completely shoaled	1.34	18	0	0	0	12	743
21	Broad	<50% of channel	1.34	50	8	7	0	79	670
22	Jackson	No Visible Shoaling	1.34	103	5	6	0	156	1115
23	Moore East	<50% of channel	1.34	14	1	1	0	11	48
24	Moore	<50% of channel	1.34	53	0	3	0	50	89
25	Cores	>50% of channel	1.34	8	0	0	0	17	107
26	Healy	No Visible Shoaling	1.34	21	1	1	0	56	257
27	Wilton	No Visible Shoaling	1.34	50	2	1	0	100	520
28	Ferry	>50% of channel	1.50	17	0	1	0	75	594
29	Dancing	>50% of channel	1.50	14	0	1	0	23	287
30	Cobbs	No Visible Shoaling	1.34	58	3	1	0	69	342
31	Roane Point	<50% of channel	1.34	4	0	0	0	8	45
32	Warehouse	Completely shoaled	1.34	4	0	0	0	4	15
33	Chappel	Completely shoaled	1.34	8	0	0	0	44	79
34	Queens	<50% of channel	1.34	145	1	4	0	188	342
35	Winder	>50% of channel	1.34	9	0	0	0	16	112
36	Milford	<50% of channel	1.34	0	0	0	0	23	0
37	Lanes	No Visible Shoaling	1.34	26	0	1	0	50	581
38	Edwards	No Visible Shoaling	1.34	29	1	0	0	45	881
39	Barn	No Visible Shoaling	1.34	32	0	1	0	33	566
40	Whites	#N/A	1.34	16	0	0	0	0	0
41	Stutts	No Visible Shoaling	1.34	108	1	5	0	238	1229
42	Billups	No Visible Shoaling	1.34	24	1	5	0	218	2052
43	Hole in the Wall	>50% of channel	1.10	0	0	0	0	0	0
44	Stoakes	No Visible Shoaling	1.34	6	1	0	0	219	1694
45	Morris	No Visible Shoaling	1.34	37	0	2	0	72	332
46	Hudgins	<50% of channel	1.34	6	0	0	0	10	122
47	Garden	Completely shoaled	1.50	2	0	0	0	181	659
48	Winter	>50% of channel	1.70	44	1	2	0	916	0
49	Horn	<50% of channel	1.84	113	3	7	0	745	2266
50	Dyer	No Visible Shoaling	1.84	14	0	4	0	159	1652
51	Harper	>50% of channel	2.34	2	0	0	0	69	1908
52	Davis	>50% of channel	2.34	13	2	5	5	49	254
53	Pepper	No Visible Shoaling	2.50	16	0	1	0	214	1960
54	Sloop	<50% of channel	2.50	13	0	1	0	17	149
55	West Landing	<50% of channel	2.67	9	0	0	0	20	666
56	Tabbs	<50% of channel	2.67	10	0	2	0	59	1188

Consecutive Num	Creek Name	Creek Shoaled	Tide Range (ft)	# Piers	# Marina	# Ramps	# Wharf	Water Surface Area (acres)	Mouth Width (ft)
57	Weston	<50% of channel	2.67	9	0	0	0	23	410
58	Mill	<50% of channel	2.67	15	0	1	0	19	135
59	Todds	No Visible Shoaling	2.67	13	0	0	0	18	689
60	Put In	No Visible Shoaling	2.67	48	0	1	0	130	80
61	Woodas	No Visible Shoaling	2.67	23	0	2	0	33	620
62	Miles	No Visible Shoaling	2.67	19	0	1	0	29	288
63	Mill 2	<50% of channel	2.67	8	0	2	1	14	75
64	Raines	<50% of channel	2.67	8	0	3	0	20	657
65	Thomas	>50% of channel	2.67	4	0	0	0	11	210
66	Sharp Point	<50% of channel	2.67	2	0	2	0	14	390
67	Whites	>50% of channel	2.67	11	0	0	0	12	253
68	Godsey	>50% of channel	2.67	6	0	1	0	41	250
69	Diggs	>50% of channel	2.67	2	0	0	0	14	356
70	Cakes	<50% of channel	2.67	2	0	1	0	20	266
71	Raymond	<50% of channel	2.67	1	0	1	0	14	331
72	Old Log School	<50% of channel	2.67	3	0	1	0	14	370
73	Oakland	No Visible Shoaling	1.34	8	0	1	0	21	483
74	Greenmansion	No Visible Shoaling	1.34	10	1	1	0	37	407
75	Blackwater	No Visible Shoaling	1.34	51	1	4	0	265	1332
76	Hampton	No Visible Shoaling	1.34	0	0	0	0	19	520
77	Toddsbury	No Visible Shoaling	2.67	4	0	1	0	14	211
78	Elmington	<50% of channel	2.67	8	0	1	0	22	428
79	Back	<50% of channel	2.67	22	0	0	0	58	441
80	Belleville	No Visible Shoaling	2.67	17	0	1	0	37	329
81	Anchorage	<50% of channel	2.67	3	0	1	0	8	54
82	Davis	No Visible Shoaling	2.67	18	0	0	0	49	308
83	Silver	<50% of channel	2.67	1	0	0	0	1	12
84	Wilson	No Visible Shoaling	2.67	42	0	5	0	213	761
85	Oldhouse	>50% of channel	2.67	6	0	1	0	78	90
86	Whittaker	<50% of channel	2.67	0	0	1	0	45	680
87	Free School	>50% of channel	2.67	19	0	4	0	38	408
88	Sterling	>50% of channel	2.67	10	0	2	0	16	260
89	Vaughans	No Visible Shoaling	2.67	21	0	1	0	88	726
90	Willets	No Visible Shoaling	2.67	12	1	1	0	130	1523
91	Lady	<50% of channel	2.67	2	0	0	0	7	361
92	Heywood	No Visible Shoaling	2.67	2	0	0	0	100	730
93	Thorntons	No Visible Shoaling	2.67	16	0	2	0	55	516
94	Rowes	<50% of channel	2.67	20	1	3	0	39	754
95	Holly Bush	>50% of channel	2.67	3	0	1	0	27	545
96	Bill Browns	No Visible Shoaling	2.67	5	0	0	0	21	754
97	Thomas	<50% of channel	2.67	0	0	0	0	16	589
98	King	>50% of channel	2.50	4	0	0	0	18	65
99	Long	No Visible Shoaling	2.50	0	0	0	0	28	386
100	Browns	No Visible Shoaling	2.50	1	0	1	0	44	647
101	Blevins	<50% of channel	2.50	3	0	0	0	46	371
102	John West	<50% of channel	2.50	0	0	0	0	33	461
103	Little Monday	>50% of channel	2.50	0	0	0	0	20	408
104	Monday	<50% of channel	2.50	0	0	0	0	91	473
105	Perrin	<50% of channel	2.50	30	3	9	0	94	431
106	Sarah	>50% of channel	2.50	213	8	11	0	287	409
107	Timberneck	>50% of channel	2.67	27	1	2	0	202	1468
108	Cedarbush	>50% of channel	2.84	21	0	2	0	82	843
109	Carter	No Visible Shoaling	2.84	20	0	0	0	169	521
110	Aberdeen	>50% of channel	3.00	22	1	4	0	77	124
111	Jones	>50% of channel	3.00	5	0	0	0	42	138
112	Sandy	>50% of channel	3.00	0	0	0	0	6	38

Consecutive Num	Creek Name	Creek Shoaled	Tide Range (ft)	# Piers	# Marina	# Ramps	# Wharf	Water Surface Area (acres)	Mouth Width (ft)
113	Fox	No Visible Shoaling	3.00	3	0	1	0	13	70
114	Bland	No Visible Shoaling	3.00	6	0	0	0	24	220
115	Leigh	>50% of channel	3.00	0	0	0	0	7	134
116	Purtan	No Visible Shoaling	3.00	0	0	0	0	35	677
117	Adams	No Visible Shoaling	3.00	8	0	0	1	103	389
118	Poropotank	<50% of channel	3.00	48	0	3	0	700	2163
119	Hockley	No Visible Shoaling	3.00	0	0	0	0	33	434
120	Mattaponi Entrance*	No Visible Shoaling	2.90	15	0	1	0	NA	NA

*Mattaponi River is included, but only the shoreline at the mouth of the river was considered.

Consecutive Num	Creek Name	TidalPrism (m3)	Cross-Sectional Area (m2)
1	Hoskins	298,761	8
2	Piscataway	969,381	114
3	Mud	216,394	39
4	Parrotts	235,904	132
5	Harry George	97,860	25
6	Weeks	227,191	126
7	Lagrange	769,435	26
8	Robinson	446,594	86
9	Urbanna	580,895	205
10	Whiting	244,266	36
11	Meachim	292,038	72
12	Meachim East	46,406	205
13	Locklies North	48,312	253
14	Locklies	116,846	113
15	Locklies Offshore	14,062	0
16	Mill	123,720	143
17	Bush Park	127,900	5
18	Hunting	42,354	2
19	Sturgeon	305,923	150
20	Unnamed	20,040	229
21	Broad	130,929	386
22	Jackson	258,301	299
23	Moore East	18,303	1
24	Moore	82,916	3
25	Cores	28,673	6
26	Healy	91,979	128
27	Wilton	165,391	321
28	Ferry	139,192	227
29	Dancing	43,363	58
30	Cobbs	113,863	194
31	Roane Point	13,590	1
32	Warehouse	6,749	1
33	Chappel	73,530	2
34	Queens	310,902	201
35	Winder	25,843	9
36	Milford	38,502	0
37	Lanes	81,936	256
38	Edwards	73,884	498
39	Barn	54,802	189
40	Whites		
41	Stutts	529,037	816
42	Billups	360,459	898
43	Hole in the Wall		
44	Stoakes	361,411	547
45	Morris	119,301	186
46	Hudgins	17,112	14
47	Garden	335,065	67
48	Winter	-	0
49	Horn	1,691,280	1101
50	Dyer	360,475	562
51	Harper	198,929	346
52	Davis	140,877	62
53	Pepper	661,270	720
54	Sloop	53,490	10
55	West Landing	67,378	151
56	Tabbs	195,482	518

Consecutive Num	Creek Name	TidalPrism (m3)	Cross-Sectional Area (m2)
57	Weston	74,597	98
58	Mill	62,386	13
59	Todds	60,520	241
60	Put In	426,893	47
61	Woodas	110,055	178
62	Miles	96,548	124
63	Mill 2	45,614	5
64	Raines	65,531	260
65	Thomas	35,287	34
66	Sharp Point	46,742	84
67	Whites	40,227	26
68	Godsey	136,234	45
69	Diggs	45,099	39
70	Cakes	64,534	22
71	Raymond	46,480	46
72	Old Log School	46,343	75
73	Oakland	35,316	122
74	Greenmansion	61,043	148
75	Blackwater	566,467	849
76	Hampton	31,361	155
77	Toddsbury	44,528	39
78	Elmington	73,512	14
79	Back	192,407	136
80	Belleville	120,386	112
81	Anchorage	25,643	1
82	Davis	162,135	171
83	Silver	3,838	0
84	Wilson	699,895	403
85	Oldhouse	257,642	17
86	Whittaker	149,169	163
87	Free School	124,385	169
88	Sterling	52,308	76
89	Vaughans	288,998	331
90	Willets	427,296	589
91	Lady	24,036	73
92	Heywood	329,331	285
93	Thorntons	180,484	151
94	Rowes	127,422	239
95	Holly Bush	89,082	181
96	Bill Browns	67,911	157
97	Thomas	52,724	75
98	King	55,042	10
99	Long	85,128	45
100	Browns	134,685	266
101	Blevins	140,913	109
102	John West	101,961	85
103	Little Monday	60,372	45
104	Monday	281,640	178
105	Perrin	291,125	199
106	Sarah	886,548	278
107	Timberneck	666,256	400
108	Cedarbush	286,440	24
109	Carter	591,951	20
110	Aberdeen	283,700	12
111	Jones	153,925	4
112	Sandy	23,409	1

Consecutive Num	Creek Name	TidalPrism (m3)	Cross-Sectional Area (m2)
113	Fox	48,786	2
114	Bland	88,953	7
115	Leigh	24,524	4
116	Purtan	130,324	29
117	Adams	380,485	12
118	Poropotank	2,591,830	1172
119	Hockley	120,453	195
120	Mattaponi Entrance*	NA	

*Mattaponi River is included, but only the shoreline at the mouth of the river was considered.