COMMONWEALTH of VIRGINIA
DEPARTMENT OF HEALTH
DIVISION OF SHELLFISH SAFETY

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UPPER MACHODOC CREEK
Growing Area # 001A
King George County
Shoreline Sanitary Survey

Date: 18 January 2023
Survey Period: January – November 2022
Total Number of Properties Surveyed and Near Shore Samples Collected: 206
Surveyed By: A. Roach, I. Geeson, J. Friedman, & J. Hudnall

SECTION A: GENERAL

This survey area extends from Reference Point 1A at triangulation marker "Club Eccentric" on Mathias Point to Reference Point 1 just north of Rosier Creek, including the Potomac River shoreline between these two points, Gambo Creek (Hideaway Pond), Upper Machodoc Creek (Williams Creek, Deep Creek, Poplar Neck Creek), Black Marsh, and all their tributaries east of U.S. Route 301.

The topography is characterized by ridges rising to 165' at U.S. Route 301 towards the southeast quadrant of the survey area near the town of Allnut. Elevations in the northern part of the survey area around Mathias Point to the mouth of the Upper Machodoc Creek reach a maximum of 25' with steep bluffs along the Potomac River. Elevations near the mouth of the creek are typically 25' to 30' rising to 150' in the south near Spy Hill. The population is concentrated in the town of Dahlgren and the U.S. Naval Weapons Center. The shoreline in the headwaters of Machodoc creek is forested with tidal marshland.

Meteorological data indicated a total of 34.84” of rain fell during the survey period. A monthly breakdown of rainfall is as follows:

Jan. 18-31	0.51”	February	1.85”	March	2.97”	April	3.1”
May	5.36”	June	3.41”	July	8.51”	August	2.96”
September	2.11”	October	3.34”	Nov. 1-7	0.21”		

In January 2022 the Dahlgren Wastewater Treatment Plant VA0026514 discharged in their estimation between 75000 and 100,000 gallons of partially treated sewage into Upper Machodoc Creek. An emergency shellfish closure was immediately put in place and then extended until such time as a working group consisting of the municipality, DEQ and third party auditors concluded that the plant was under operational control. The administrative closure was rescinded in March 2022. A satisfactory inspection by DEQ was conducted in June of 2022 and their permit was reissued.

At the beginning of the survey, inspectors reviewed the available literature from prior reports, public works and online resources to characterize land use, drainage patterns, and establish nearshore seawater stations. Properties identified in the previous survey as having sanitary deficiencies or other environmental significance were revisited to evaluate their current status. Waterfront roadways and navigable shoreline within the survey boundary were visually inspected to identify potential pollution sources requiring further investigation.

Nearshore seawater stations were established to survey the full extent of waters beyond routine classification stations. Stations were created in closer proximity to the shoreline and farther upstream than routine stations and are intended to evaluate drainage entry points of potential point and nonpoint source pollution. Station data were analyzed to compare relative concentrations of fecal indicator bacteria within the waterway to identify potential onshore sources of contamination.

Hydrographic data, sampling times and range of enterococcus concentrations measured are shown in the table below. Maps of the enterococcus sampling are shown at the conclusion of this report.

Growing Area # 80 Nearshore Sampling						Rainfall in inches	
Sample dates	High Tide*	Ebb Current	Sampling time	Enterococcus range (MPN/100ml)	Day of	Previous 24 hours	Previous 7 days
1/18/22	3:52	6:59	12:10-13:39	63-886	0	0.79	1.33
1/25/22	8:28	12:55	9:37-11:53	<10-1414	0	0	0.29
2/15/22	14:48	18:20	14:22-16:34	<10-31	0	0	0.04
3/1/22	14:46	17:48	14:10-16:51	<10-86	0	0	0.19
3/15/22	14:34	18:07	13:03-13:25	<10-41	0	0	1.61
4/5/22	6:58	10:41	9:07-12:52	<10-364	0.05	0	0.15
4/6/22	7:37	11:28	10:06-12:30	<10-12033	0.85	0.05	0.2
Total rainfall for nearshore sampling period 1/18/22 - 4/6/22 6.27”							

* High tide estimated from Dahlgren.
** Slack ebb current estimated from Potomac River Bridge.

Information in this report is gathered by and primarily for use by the Division of Shellfish Safety, Virginia Department of Health, in order to fulfill its responsibilities of shellfish growing area supervision and classification. However, the data are made available to various agencies participating in shellfish program coordinated activities or other interested parties.

Copies of VPDES permits and inspections are available at the Department of Environmental Quality. A directory and interactive map are available via the internet at https://www.deq.virginia.gov/permits-regulations/permits/water/surface-water-virginia-pollutant-discharge-elimination-system and https://geohub-vadeq.hub.arcgis.com/pages/Water%20Datasets

Copies of Bacteriological, Hydrographic and Shellfish Closure data are available at the area office for review. Copies of the current condemnation notices and maps are available via the Internet at https://www.vdh.virginia.gov/environmental-health/environmental-health-services/shellfish-safety/

This report lists only those properties which have a sanitary deficiency or have other environmental significance. ***"DIRECT"*** indicates that the significant activity or deficiency has a direct impact on shellfish waters.

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SECTION B: SEWAGE POLLUTION SOURCES

	GA #	Field #	Inspection Date	Deficiency or Pollution Type	Latitude	Longitude	Pollutant Remarks	Septic System Type	Structure Type	Contact	Overall Site Remarks	Locality	DSS Staff	Date of Correction	Correction Notes
425	1A	149	3/31/2022	SEWAGE TREATMENT PLANT, indirect	38.341311	-77.056770	1 MGD design flow. 0.31 Average Flow. Under consent agreement with DEQ.		Business	Y	Town of Dahlgren WWTP. Tertiary treatment UV disinfection. DEQ permit # VA0026514.	King George	IG		
5014	1A	149A	8/29/2022	SEWAGE TREATMENT PLANT, direct	38.323432	-77.053163	Outfall for VA0026514			N	Oufall for VA0026514 Dahlgren WWTP	King George	IG		
1880	1A	150	3/31/2022	SEWAGE TREATMENT PLANT, indirect	38.322189	-77.029687	Design Flow 0.72 MGD Max 1.2 Avg 0.5			Y	Naval Support Facility Dahlgren WWTP. DEQ permit # VA0021067.	King George	IG		
5013	1A	150A	8/29/2022	SEWAGE TREATMENT PLANT, direct	38.320819	-77.027767	Outfall for WWTP VA0021067			N	Outfall for VA0021067 Dahlgren WWTP	King George	IG		
4941	1A	32A	4/5/2022	POTENTIAL POLLUTION	38.298692	-77.057330	Campsite with small dock.			N	Attempted site visit from road, no access.	King George	IG		
1891	1A	B31	3/31/2022	POTENTIAL POLLUTION	38.318150	-77.069509	Previous survey had septic tank lid missing. No access current survey.	Conv	Dwelling	N	Property abandoned. No tresspassing/camera security signs posted.	King George	IG		
1904	1A	B317	3/31/2022	POTENTIAL POLLUTION	38.272672	-77.053965	Previous survey references a garden hose from basement to ravine.			N	No access.	King George	IG		

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SECTION C: NONSEWAGE WASTE SITES

	GA #	Field #	Inspection Date	Deficiency or Pollution Type	Latitude	Longitude	Pollutant Remarks	Septic System Type	Structure Type	Contact	Overall Site Remarks	Locality	DSS Staff
5022	1A	1G	9/16/2022	INDUSTRIAL WASTES, indirect	38.325145	-77.030258	Discharges to Upper Machodoc and Potomac. Reviewed 2 years of DEQ quarterly inspections. Superfund Site. Reviewed Final Five-Year Review Report.			Y	Naval Support Facility Dahlgren. EPA ID VA7170024684	King George	IG
1890	1A	B2	3/31/2022	SOLID WASTE SITES, indirect	38.322894	-77.062224	Lot overgrown with with several old vehicles on site.			N		King George	IG
1881	1A	151	3/31/2022	STORMWATER, direct	38.325682	-77.026431	Discharges to Upper Machodoc and Potomac. Reviewed 2 years of DEQ quarterly inpsections.			Y	Naval Support Facility Dahlgren WWTP. DEQ permit # VA0021067.	King George	IG

SECTION D: BOATING ACTIVITY

	GA #	Field #	Inspection Date	Deficiency or Pollution Type	Latitude	Longitude	Pollutant Remarks	Septic System Type	Structure Type	Contact	Overall Site Remarks	Locality	Boating Activity Type	Number of Wet Slips	NUM BOATS <26'	NUM BOATS >26'	Evidence of Live-Aboards	DSS Staff
1884	1A	154	3/31/2022	BOATING ACTIVITY	38.319839	-77.034311	Not a part of VDH Marina program, boats are for short patrols for firing practice, no MSD onboard.		Marine	Y	Dahlgren Yard Craft Boat Yard. Naval yard boat launch and pier.	King George	Marina	25	0	0	N	IG
1887	1A	157	3/31/2022	BOATING ACTIVITY	38.323301	-77.044469			Marine	Y	Naval Surface Weapons Center. Naval recreational yacht club. VDH Permit renewed 2023.	King George	Marina	64	0	0	N	IG
1888	1A	158	3/31/2022	BOATING ACTIVITY	38.322424	-77.049431			Marine	Y	Machodoc Creek Marina. Satisfactory Marina Program inspection 6/3/22	King George	Marina	66	0	0	N	IG
1889	1A	159	3/31/2022	BOATING ACTIVITY	38.338463	-77.060498			Marine	N	Williams Creek Townhouse community pier.	King George	Under Surveillance	3	0	0		IG

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SECTION E: CONTRIBUTES ANIMAL POLLUTION

	GA #	Field #	Inspection Date	Deficiency or Pollution Type	Latitude	Longitude	Pollutant Remarks	Septic System Type	Structure Type	Contact	Overall Site Remarks	Locality	DSS Staff
5047	1A	33J	11/10/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.298079	-77.085813	4 cattle and some chicken on premises. manure left on field		Dwelling	Y		King George	IG
5046	1A	34	11/10/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.297364	-77.083367	4 sheep and approx 15 chickens visible on site		Dwelling	N	4 sheep and approx 15 chickens visible on site	King George	IG
1894	1A	B131	3/31/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.301974	-77.079352	Small number of horses and sheep.			N		King George	IG
1895	1A	B178	3/31/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.308914	-77.100779	Aproximately 30 cattle.			N		King George	IG
1896	1A	B191	3/31/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.308374	-77.100287	Aproximately 3 cattle.			N		King George	IG
1901	1A	B305	3/31/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.274257	-77.065265	6 Cattle.			Y		King George	IG
1903	1A	B308	3/31/2022	CONTRIBUTES ANIMAL POLLUTION, indirect	38.273236	-77.062688	Aproximately 60 Chickens.			N		King George	IG

SUMMARY

Growing Area # 001A
Upper Machodoc Creek
18 January 2023

SECTION B: SEWAGE POLLUTION SOURCES
1. SEWAGE TREATMENT FACILITIES
2 – DIRECT – # 149A, 150A
2 – INDIRECT – #149, 150
4 – B.1. TOTAL

2. ON-SITE SEWAGE DEFICIENCIES – Correction of deficiencies in this section is the responsibility of the local health department.
0 – CONTRIBUTES POLLUTION, DIRECT – None.
0 – CONTRIBUTES POLLUTION, INDIRECT – None.
0 – CP – (Kitchen or Laundry Wastes), DIRECT – None.
0 – CP – (Kitchen or Laundry Wastes), INDIRECT – None.
0 – NO FACILITIES, DIRECT – None.
0 – NO FACILITIES, INDIRECT – None.
0 – B.2. TOTAL

3. POTENTIAL POLLUTION – Periodic surveillance of these properties will be maintained to determine any status change.
3 – POTENTIAL POLLUTION – # 32A, B31, B317

SECTION C: NON-SEWAGE WASTE SITES
1. INDUSTRIAL WASTE SITES
0 – DIRECT – None.
1 – INDIRECT – # 1G
1 – C.1. TOTAL

2. SOLID WASTE SITES
0 – DIRECT – None.
1 – INDIRECT – # B2
1 – C.2. TOTAL

3. STORMWATER OUTFALLS
0 – DIRECT – None.
1 – INDIRECT – # 151
1 – E. TOTAL

SECTION D: BOATING ACTIVITY
3 – MARINA – # 154, 157, 158
1 – UNDER SURVEILLANCE – # 159
4– D. TOTAL

SECTION E: CONTRIBUTES ANIMAL POLLUTION
0 – DIRECT – None.
7 – INDIRECT – # 33J, 34, B131, B178, B191, B305, B308
7 – E. TOTAL

Virginia Department of Health
Division of Shellfish Safety

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001A
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King George County

N

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Number of Properties Surveyed and Near Shore Samples Collected: 206

0 0.5 1 Miles

Legend

Seawater Sampling Stations

- Active
- Inactive
- Sewered Areas
- Boat Ramps (DGIF)

Shoreline Survey Deficiencies

- Sewage Treatment Facility - Direct
- Sewage Treatment Facility - Indirect
- Contributes Pollution - Direct
- Contributes Pollution - Indirect
- Contributes Pollution (Kitchen or Laundry wastes) - Direct
- Contributes Pollution (Kitchen or Laundry wastes) - Indirect
- No Facilities - Direct
- No Facilities - Indirect
- Potential Pollution
- Industrial Wastes, Direct
- Industrial Wastes, Indirect
- Solid Waste Dumpsite - Direct
- Solid Waste Dumpsite - Indirect
- S Stormwater, Direct
- S Stormwater, Indirect
- Boating Activity
- A Contributes Animal Pollution - Direct
- A Contributes Animal Pollution - Indirect

Geographic coordinates in NAD83 datum; shown in degrees, minutes & seconds.

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment
www.vdh.virginia.gov/shellfish

Near Shore Enterococcus Sampling
Growing Area # 001A -
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* Highest value was 12,033 collected on 4/6/22.