

Coastal GEMS Fact Sheet Information Template for Grantees

Description *(a brief description, 3-4 sentences about what the map shows in GEMS, and the purpose and intended use of the data)*

This project evaluated water bodies in the Virginia coastal zone using several water quality models to calculate residence times. Results were grouped into tidal flushing categories (quickly, intermediately, and slowly flushed) using mean depth. The categories reflect a relative time frame in which a water body is flushed.

Status *(when the data was created, date of the last update)*

Created November, 2007

Citation *(in format: Year. Data Layer Name. Agency Name.)*

2007. Tidal Flushing Characteristics in Virginia's Tidal Embayments. Center for Coastal Resources Management. Virginia Institute of Marine Science.

This data/tool can is directly accessible at: *(if the data is directly downloadable for a website, or if it can be found in greater detail through another web mapping application, please include the web address. If there is a disclaimers page that you require people to read first, please use this web address)*

http://ccrm.vims.edu/tidal_flushing/tidal_flushing.html

Contact Information *(for the person who has created or manages the dataset)*

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Why should we care? *(in paragraph form describe the ecological, economic, and social values of the resource. If the data is a planning tool or example, describe the resources it is intended to manage and protect.)*

Tidal flushing is an important consideration for local government planners who wish to expand waterfront development in a community where economic growth relies on water-dependent activities. The ability to maintain a balance between ecological function and economic

development is essential. The physical environment can lend important insight if certain characteristics such as flushing can be identified in advance. Until this project, there was no resource for local government planners to consult for information on flushing characteristics across the Virginia coastal zone.

Links for more resource information: *(please include **up to 3** web links. Give each link a name, for example:*

Coastal GEMS Factsheet. www.deq.virginia.gov/coastal/documents/coastalgems.pdf

How is this resource managed? *(in paragraph form describe management of the resource at the federal, state, and local levels as applicable)*

Links for more information on management of the resource: *(please include **up to 3** web links to agency regulations, giving each a name as above. Include one for each level of management – federal, state, and local – if possible, or more if there is more than one state or federal law/regulation or managing agency for the resource)*

Why was this data created? *(in paragraph form describe the people involved and the project that initiated the development of this data)*

This dataset was created for a 2006 Virginia Coastal Zone Management Program grant.

Links to projects that funded this data: *(include **up to 2** web links, giving a name to each as above. These are links to CZM-funded project description pages, or your agency project description pages)*

How was this data created? *(in paragraph form, provide a brief metadata. Discuss incorporated datasets, project partners, basic methodology, and what the final dataset shows)*

The objective of this project was to perform a combination of water quality modeling analyses that evaluated individual systems for general flushing characteristics. Residence times for water bodies in the Virginia coastal zone were calculated using three water quality models, depending upon the complexity of the water body. Results showed that residence times range from 0.1 to 29 days. One outlier has a residence time of 72 days. Approximately 80% of water bodies in the Virginia coastal zone are dominated by quickly flushed tidal creeks and tributaries with residence times less than about 5 days.

Descriptive statistics were used to analyze the data, and the residence times were grouped into tidal flushing categories using mean depth. Shallower water bodies flush more quickly than deeper water bodies. The flushing categories (quickly, intermediately, and slowly flushed) reflect a relative time frame in which a water body is flushed. Residence times and flushing categories were joined to a geographic information system layer in order to spatially display and analyze results.

Future Directions *(in paragraph form, discuss continuations to the project, future updates to the dataset, and/or policies and other outcomes anticipated from use of the data)*

One application of this dataset was to overlay shellfish closure zones (Division of Shellfish Sanitation, Virginia Department of Health) to analyze the coincidence between closure zones and flushing categories. From a management perspective, it is important to know the time scales at which contaminants are flushed out of a water body. Relating flushing characteristics to shellfish condemned zones shows that more condemned zones occur in slowly flushed water bodies. Managers may use this information to help target water bodies that are suitable for shellfish growing areas or aquaculture.

Frequently Asked Questions *(include as many questions, answers, and links to more information as you deem appropriate, but include at least one. These questions are common questions received by the agency from the public about a particular resource or project, and are intended to reduce the number of calls you field)*