
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY ESTUARINE PROBABILISTIC MONITORING PROGRAM DATA DICTIONARY

Virginia Department of Environmental Quality Estuarine Probabilistic Monitoring Program: Benthic Components

- Taxonomic Data Dictionary
- Biomass Data Dictionary
- Sediment Data Dictionary
- Water Quality Data Dictionary
- Event and Biota Event Data Dictionary
- Benthic Index of Biotic Integrity Data Dictionary

NOTE THIS DICTIONARY WAS REVISED ON 11 OCTOBER 2012 AND SUPERSEDES ALL OTHER CBP DICTIONARIES FOR THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY ESTUARINE PROBABILISTIC MONITORING PROGRAM

Need new Project Purpose text

NAMES AND DESCRIPTIONS OF ASSOCIATED DATA DICTIONARY FILES
2012 Users Guide to Chesapeake Bay Program Biological Data

#PROJECT TITLE:

Virginia Department of Environmental Quality Estuarine Probabilistic Monitoring Program: Benthic Components

CURRENT PRINCIPAL INVESTIGATORS

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CURRENT FUNDING AGENCIES

Virginia Department of Natural Resources and US EPA Office of Water

#PROJECT COST

Not Available

#CURRENT QA/QC OFFICER

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#LOCATION OF STUDY

Chesapeake Bay and tidal tributaries in the state of Virginia

#DATE INTERVALS

07/06/2005-12/31/2011

#ABSTRACT

The Virginia Department of Environmental Quality (DEQ) united its National Coastal Assessment Program (NCA) with its Chesapeake Bay Probabilistic Benthic Monitoring (CBP-PBM) Program beginning in the summer of 2005. The primary motivations for this decision were two-fold. First, the probable reduction of federal grant support for the NCA Program after the summer of 2004 would require considerable restructuring of the of DEQ's estuarine probabilistic monitoring to continue with a comprehensive program in the future. Second, the current CBP-PBM Program has not provided sufficient data for the assessment of minor tidal tributary segments using the recently approved Benthic Index of Biotic Integrity (B-IBI) assessment method. A formal assessment methodology, using the standardized Chesapeake Bay Benthic IBI, was approved by the States of Virginia and Maryland, the Interstate Chesapeake Bay Program, and EPA Region 3 for the 2004 305(b) assessment.

The sharing of objectives and resources among these two monitoring activities will provide a number of advantages to both monitoring programs and to the assessment process.

1. Chesapeake Bay Program

- a. Increase the number of B-IBI samples for the characterization of the minor tidal tributaries (at no extra resource expenditure).
- b. Associate the B-IBI data with other elements of the Sediment Quality Triad (SQT) -toxicity and chemical contaminants.
- c. Associate the B-IBI data with additional water column parameters – nutrients, chlorophyll, bacteria, clean metals, PAR and field parameter profiles – not collected during CBP probabilistic B-IBI sampling.

2. Estuarine ProbMon (NCA) Program (under reduced resources in 2005 and beyond)

- a. Provide a second screening element to the SQT (B-IBI + toxicity tests) prior to investing resources in the (relatively expensive) chemical analyses of sediment metals and organic contaminants, in the event that resources limit the number of chemical analyses that can be performed.
- b. Adding B-IBI data at these sites would relax the necessity of performing toxicity tests on two species to single species tests at each site, thus reducing per site resource requirements.
- c. Provide a possible increase in the annual number of probabilistic sites (current N = 35) in minor tidal tributaries within the CB drainage.

3. 305(b) Assessment

- a. Association of the B-IBI evaluation with the toxicity test and chemical results, as well as the water column data, would provide the basis for a more robust "weight of evidence" assessment, even if a single probabilistic site were to be sampled within a minor tributary segment.

#STATION NAMES AND DESCRIPTIONS

>EPA-National Coast Assessment sampling was conducted during the 2005-2006 time frames. Sampling for this program used randomly selected Chesapeake Bay Program monitoring sites plus a number of additional sites. The additional sites were selected probabilistically, using the EMAP random tessellation stratified survey design. Rather than being completely random, the nested hexagon design assures that chance spatial groupings of nearby stations don't occur. The two DEQ-specified strata in our program include (1) Atlantic Coastal estuarine waters (Chincoteague to Back Bay) and (2) only 'minor tidal tributaries' within the

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Bay drainage - to exclude the mainstem Bay, Rappahannock, York and James. Major 'embayments', such as Mobjack Bay, Fleets Bay and Ingram Bay are included, as are tidal embayments on the Virginia side of the Potomac. We weight our total site distribution to receive 30% on the Atlantic side and 70% within the Bay drainage. Other than that, the distribution within the Bay drainage is completely un-weighted, all minor tidal tributary waters within the Bay drainage have an equal chance of being selected.

>VADEQ Estuarine Probabilistic Monitoring

#STATION NAMES, AND POSITIONS

>EPA-National Coast Assessment Samples (NCA). The EPA National Coastal Assessment program piggybacked sampling with the on going Chesapeake Bay Program monitoring from 2005-2008. Please note that between 2005-2006 the following stations have both CBP and NCA names. Co-listed stations, random CBP sites also collected as part of the NCA, were selected using standard CBP protocol for random site selection. Non-Colisted sites were selected using NCA's protocol described above. All sites where data was collected as part of NCA have additional water quality (Nutrients, chlorophyll) and toxicity data collected synchronously. These data sets will have data for stations by the NCA names. This ancillary data can be obtained by contacting

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EPA/NCA Name	CBP Name	Stream Name	Co-listed Site	Sampling Year
VA05-0001A	12J51	Chickahominy River	Yes	2005
VA05-0002A	12M52	Chesapeake Bay Mainstem	Yes	2005
VA05-0003A	12J50	Lower James River	Yes	2005
VA05-0004A	12Y52	Pamunkey River	Yes	2005
VA05-0008A	12Y51	York River	Yes	2005
VA05-0010A	12M53	Chesapeake Bay Mainstem	Yes	2005
VA05-0011A	12M56	Chesapeake Bay Mainstem	Yes	2005
VA05-0015A	12M55	Chesapeake Bay Mainstem	Yes	2005
VA05-0018B	12M50	Chesapeake Bay Mainstem	Yes	2005
VA05-0021A	12M51	Chesapeake Bay Mainstem	Yes	2005
VA05-0022A	12R51	Rappahannock River	Yes	2005
VA05-0024A	12M54	Chesapeake Bay Mainstem	Yes	2005
VA05-0025A	12M57	Chesapeake Bay Mainstem	Yes	2005
VA05-0026A	12M62	Ware River	Yes	2005
VA05-0029A	12R50	Corrotoman River	Yes	2005
VA05-0030A	12M59	Pocomoke Sound	Yes	2005
VA05-0037A	12M58	Chesapeake Bay Mainstem	Yes	2005
VA05-0041A	12M60	Lynnhaven Bay	Yes	2005
VA05-0044A	12Y50	Chesapeake Bay Mainstem /York River	Yes	2005
VA05-0046A	12M63	Piankatank River	Yes	2005
VA05-0050A	12R52	Rappahannock River	Yes	2005
VA06-0059A	13J51	Elizabeth River	Yes	2006
VA06-0067A	13J52	Lower James River	Yes	2006
VA06-0081A	13J53	Chickahominy River	Yes	2006
VA06-0089A	13J54	Appomattox River	Yes	2006
VA06-0077A	13J55	Lower James River	Yes	2006
VA06-0053A	13M51	Chesapeake Bay Mainstem	Yes	2006
VA06-0055A	13M52	Chesapeake Bay Mainstem	Yes	2006

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EPA/NCA Name	CBP Name	Stream Name	Co-listed Site	Sampling Year
VA06-0058A	13M53	Chesapeake Bay Mainstem	Yes	2006
VA06-0069A	13M54	Chesapeake Bay Mainstem	Yes	2006
VA06-0071A	13M55	Chesapeake Bay Mainstem	Yes	2006
VA06-0073A	13M56	Chesapeake Bay Mainstem	Yes	2006
VA06-0084A	13M57	Chesapeake Bay Mainstem	Yes	2006
VA06-0092A	13M58	Mobjack Bay	Yes	2006
VA06-0100A	13M59	Chesapeake Bay Mainstem	Yes	2006
VA06-0080A	13M60	Piankatank River	Yes	2006
VA06-0090A	13M61	Northwest Branch	Yes	2006
VA06-0060A	13R51	Rappahannock River	Yes	2006
VA06-0076A	13R52	Rappahannock River	Yes	2006
VA06-0098A	13R54	Rappahannock River	Yes	2006
VA06-0052B	13C76	Mockhorn Island Area	Yes	2006
VA06-0054A	13C77	Chincoteague Bay	Yes	2006
VA06-0056A	13C78	Burtens Bay	Yes	2006
VA06-0057C	13C79	Hog Island Bay	Yes	2006
VA06-0063A	13C80	Back Bay	Yes	2006
VA06-0068A	13C81	Magothy Bay	Yes	2006
VA06-0070A	13C82	Chincoteague Bay	Yes	2006
VA06-0072B	13C83	Chincoteague Bay	Yes	2006
VA06-0075A	13C84	Back Bay	Yes	2006
VA06-0079A	13C85	Back Bay	Yes	2006
VA06-0087A	13C86	lcw canal	Yes	2006
VA06-0094A	13C87	Chincoteague Bay	Yes	2006
VA06-0095A	13C88	Hog Island Bay	Yes	2006
VA06-0096C	13C89	Metompkin Bay	Yes	2006
VA06-0097A	13C90	Sand Channel	Yes	2006
VA06-0051A	13J76	Lower James River	Yes	2006
VA06-0061A	13J77	Lower James River	Yes	2006
VA06-0065A	13J78	Upper James River	Yes	2006
VA06-0066A	13J79	Lower James River	Yes	2006
VA06-0082A	13J80	Warwick River	Yes	2006
VA06-0083A	13J81	Upper James River	Yes	2006
VA06-0085A	13J82	Lower James River	Yes	2006
VA06-0091A	13J83	Albermarle-Chesapeake Canal	Yes	2006
VA06-0099A	13J84	Lower James River	Yes	2006
VA06-0093A	13M76	Piankatank River	Yes	2006
VA06-0064A	13R76	Rappahannock River	Yes	2006
VA06-0074A	13R77	Rappahannock River	Yes	2006
VA06-0088A	13R78	Rappahannock River	Yes	2006
VA06-0062A	13Y76	York River	Yes	2006
VA06-0078A	13Y77	York River	Yes	2006
VA06-0086A	13Y78	York River	Yes	2006

>The Virginia Estuarine Probabilistic Monitoring Program evolved out of the EPA National Coastal Assessment program. The goal of this program was to provide sufficient probabilistic benthic samples to

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complete the 'aquatic life use' assessment in smaller estuarine segments which have previously had insufficient data available for the 305(b) assessment.

STATION	LATITUDE	LONGITUDE	BASIN
VA07-0001	37.471333	-75.808194	ATLANTIC OCEAN
VA07-0002	37.306972	-75.804194	ATLANTIC OCEAN
VA07-0003	38.001667	-75.333306	ATLANTIC OCEAN
VA07-0004	37.987528	-75.322472	ATLANTIC OCEAN
VA07-0005	37.356611	-75.744028	ATLANTIC OCEAN
VA07-0006	36.694167	-75.956056	ATLANTIC OCEAN
VA07-0007	38.003222	-75.303361	ATLANTIC OCEAN
VA07-0008	36.67275	-75.946111	ATLANTIC OCEAN
VA07-0009	37.389667	-75.763639	ATLANTIC OCEAN
VA07-0010	37.600833	-75.684611	ATLANTIC OCEAN
VA07-0011	37.962333	-75.425528	ATLANTIC OCEAN
VA07-0012	36.61025	-75.932194	ATLANTIC OCEAN
VA07-0013	37.170528	-75.936944	ATLANTIC OCEAN
VA07-0014	37.906278	-75.411778	CHESAPEAKE BAY
VA07-0015	37.974889	-75.348361	ATLANTIC OCEAN
VA07-0016	38.65308	-77.139648	POTOMAC RIVER
VA07-0017	37.65419	-76.51259	RAPPAHANNOCK RIVER
VA07-0018	37.38885	-76.46073	CHESAPEAKE BAY
VA07-0019	37.2515	-76.893431	JAMES RIVER
VA07-0020	37.922211	-76.387631	POTOMAC RIVER
VA07-0021	37.549889	-75.882528	CHESAPEAKE BAY
VA07-0022	37.78698	-76.31944	CHESAPEAKE BAY
VA07-0023	37.188389	-76.427333	CHESAPEAKE BAY
VA07-0024	37.980761	-76.810831	RAPPAHANNOCK RIVER
VA07-0025	37.48903	-76.31957	ATLANTIC OCEAN
VA07-0026	37.951861	-75.695278	CHESAPEAKE BAY
VA07-0027	36.835806	-76.254672	JAMES RIVER
VA07-0028	37.41166	-76.6599	YORK RIVER
VA07-0029	37.41835	-76.26245	ATLANTIC OCEAN
VA07-0030	38.2133	-76.97538	POTOMAC RIVER
VA07-0031	36.849917	-76.528778	JAMES RIVER
VA07-0032	38.61561	-77.24305	POTOMAC RIVER
VA07-0033	37.84725	-76.365919	CHESAPEAKE BAY
VA07-0034	37.67761	-76.31049	CHESAPEAKE BAY
VA07-0035	37.29295	-76.866411	JAMES RIVER
VA07-0036	38.01297	-76.54111	POTOMAC RIVER
VA07-0037	37.275861	-76.021778	CHESAPEAKE BAY
VA07-0038	37.894583	-75.715083	CHESAPEAKE BAY
VA07-0039	37.31215	-76.433586	CHESAPEAKE BAY

STATION	LATITUDE	LONGITUDE	BASIN
VA07-0040	37.545089	-76.813919	YORK RIVER
VA07-0041	37.518389	-76.42791	CHESAPEAKE BAY
VA07-0042	37.942556	-75.67625	CHESAPEAKE BAY
VA07-0043	37.892556	-76.103	CHESAPEAKE BAY
VA07-0044	37.950611	-76.887019	RAPPAHANNOCK RIVER
VA07-0045	37.43921	-76.44448	CHESAPEAKE BAY
VA07-0046	38.10006	-77.06174	RAPPAHANNOCK RIVER
VA07-0047	36.886556	-76.468528	JAMES RIVER
VA07-0048	38.63317	-77.14088	POTOMAC RIVER
VA07-0049	37.766861	-75.80075	CHESAPEAKE BAY
VA07-0050	37.65252	-76.32156	CHESAPEAKE BAY
VA08-0001	37.113556	-75.923222	ATLANTIC OCEAN
VA08-0002	37.165583	-75.923194	ATLANTIC OCEAN
VA08-0003	37.904639	-75.426111	ATLANTIC OCEAN
VA08-0004	37.996361	-75.307194	ATLANTIC OCEAN
VA08-0005	37.309056	-75.81425	ATLANTIC OCEAN
VA08-0006	37.171833	-75.9185	ATLANTIC OCEAN
VA08-0007	37.986639	-75.331333	ATLANTIC OCEAN
VA08-0008	36.579861	-75.909194	ATLANTIC OCEAN
VA08-0009	37.461861	-75.783833	ATLANTIC OCEAN
VA08-0010	37.880611	-75.40675	ATLANTIC OCEAN
VA08-0011	37.959889	-75.433917	ATLANTIC OCEAN
VA08-0012	36.609111	-75.930806	ATLANTIC OCEAN
VA08-0013	37.295167	-75.850722	ATLANTIC OCEAN
VA08-0014	37.674694	-75.611833	ATLANTIC OCEAN
VA08-0015	37.996806	-75.380333	ATLANTIC OCEAN
VA08-0016	37.26178	-76.87746	JAMES RIVER
VA08-0017	37.105444	-76.333861	CHESAPEAKE BAY
VA08-0018	37.91044	-76.31228	CHESAPEAKE BAY
VA08-0019	37.41446	-76.41356	CHESAPEAKE BAY
VA08-0020	37.32626	-76.57246	YORK RIVER
VA08-0021	38.617472	-77.215972	POTOMAC RIVER
VA08-0022	37.793194	-75.744889	CHESAPEAKE BAY
VA08-0023	37.769333	-75.804222	CHESAPEAKE BAY
VA08-0024	36.907333	-76.473722	JAMES RIVER
VA08-0025	37.52384	-76.80145	YORK RIVER
VA08-0026	37.66052	-76.34576	CHESAPEAKE BAY
VA08-0027	38.04323	-76.52443	POTOMAC RIVER
VA08-0028	36.886639	-76.112528	CHESAPEAKE BAY

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STATION	LATITUDE	LONGITUDE	BASIN
VA08-0029	37.714483	-76.46785	RAPPAHANNOCK RIVER
VA08-0030	37.50176	-76.32493	CHESAPEAKE BAY
VA08-0031	38.20877	-76.96667	POTOMAC RIVER
VA08-0032	37.36074	-76.90704	JAMES RIVER
VA08-0033	37.087389	-76.335306	CHESAPEAKE BAY
VA08-0034	37.947278	-75.68125	CHESAPEAKE BAY
VA08-0035	37.38536	-76.33508	CHESAPEAKE BAY
VA08-0036	37.016306	-76.311167	JAMES RIVER
VA08-0037	38.683167	-77.169528	POTOMAC RIVER
VA08-0038	37.84359	-76.28253	CHESAPEAKE BAY
VA08-0039	37.668722	-75.8335	CHESAPEAKE BAY
VA08-0040	36.872306	-76.336028	JAMES RIVER
VA08-0041	37.58125	-77.01707	YORK RIVER
VA08-0042	37.69487	-76.31234	CHESAPEAKE BAY
VA08-0043	37.99625	-76.46968	POTOMAC RIVER
VA08-0044	37.112111	-76.368306	CHESAPEAKE BAY
VA08-0045	37.78647	-76.59683	RAPPAHANNOCK RIVER
VA08-0046	37.45974	-76.26958	CHESAPEAKE BAY
VA08-0047	38.275944	-77.001639	POTOMAC RIVER
VA08-0048	37.20774	-77.01867	JAMES RIVER
VA08-0049	36.561444	-76.037556	JAMES RIVER
VA08-0050	37.882472	-75.698306	CHESAPEAKE BAY
VA09-0002	38.0055	-75.299278	CHESAPEAKE BAY
VA09-0003	37.987194	-75.404333	CHESAPEAKE BAY
VA09-0004	37.200056	-75.910083	ATLANTIC OCEAN
VA09-0006	37.9885	-75.352278	CHESAPEAKE BAY
VA09-0007	37.153278	-75.930083	ATLANTIC OCEAN
VA09-0008	37.199167	-75.926667	ATLANTIC OCEAN
VA09-0010	37.891167	-75.410139	CHESAPEAKE BAY
VA09-0011	37.5945	-75.626917	ATLANTIC OCEAN
VA09-0012	37.384028	-75.754444	ATLANTIC OCEAN
VA09-0014	37.989222	-75.373556	CHESAPEAKE BAY
VA09-0015	37.105333	-75.929583	ATLANTIC OCEAN
VA09-0017	37.229111	-76.705444	JAMES RIVER
VA09-0018	37.682917	-76.915111	YORK RIVER
VA09-0019	37.814111	-76.304528	CHESAPEAKE BAY
VA09-0020	36.83	-76.398222	ELIZABETH RIVER
VA09-0021	38.604111	-77.227861	POTOMAC RIVER
VA09-0022	37.821944	-76.584889	RAPPAHANNOCK RIVER
VA09-0023	37.616917	-75.884972	CHESAPEAKE BAY
VA09-0024	37.180972	-76.434556	CHESAPEAKE BAY
VA09-0025	38.302667	-77.062583	POTOMAC RIVER

STATION	LATITUDE	LONGITUDE	BASIN
VA09-0026	37.984083	-76.500556	POTOMAC RIVER
VA09-0027	37.353806	-76.445056	CHESAPEAKE BAY
VA09-0028	36.892111	-76.078833	CHESAPEAKE BAY
VA09-0029	37.788306	-75.749889	CHESAPEAKE BAY
VA09-0030	38.208611	-76.955694	POTOMAC RIVER
VA09-0031	37.501306	-76.314833	ATLANTIC OCEAN
VA09-0033	36.934972	-76.491111	JAMES RIVER
VA09-0034	37.871167	-76.412361	CHESAPEAKE BAY
VA09-0035	37.837889	-76.317083	CHESAPEAKE BAY
VA09-0036	36.807528	-76.55975	JAMES RIVER
VA09-0037	38.63225	-77.236	POTOMAC RIVER
VA09-0038	37.5595	-76.857833	YORK RIVER
VA09-0039	37.482056	-76.272444	ATLANTIC OCEAN
VA09-0040	37.152667	-76.37425	CHESAPEAKE BAY
VA09-0041	37.87975	-76.274944	CHESAPEAKE BAY
VA09-0042	38.057	-76.559361	POTOMAC RIVER
VA09-0043	37.357889	-76.407861	CHESAPEAKE BAY
VA09-0044	36.865944	-76.012944	CHESAPEAKE BAY
VA09-0045	37.8525	-75.671667	CHESAPEAKE BAY
VA09-0046	37.658056	-76.4045	RAPPAHANNOCK RIVER
VA09-0047	37.541611	-76.337583	ATLANTIC OCEAN
VA09-0048	36.890083	-76.291944	JAMES RIVER
VA09-0049	37.298861	-77.355028	JAMES RIVER
VA09-0050	37.651333	-76.494556	RAPPAHANNOCK RIVER
NC10-1491	37.292998	-76.893119	JAMES RIVER
NC10-1492	37.9426	-75.6426	CHESAPEAKE BAY
NC10-1493	37.381492	-76.010076	CHESAPEAKE BAY
NC10-1497	37.625195	-76.206706	CHESAPEAKE BAY
NC10-1500	37.678774	-76.26171	CHESAPEAKE BAY
NC10-1502	36.890729	-76.070741	CHESAPEAKE BAY
NC10-1504	37.398645	-76.166005	CHESAPEAKE BAY
NC10-1506	36.954903	-76.273423	JAMES RIVER
NC10-1511	37.620313	-76.079036	CHESAPEAKE BAY
NC10-1512	36.769025	-76.296674	ELIZABETH RIVER
NC10-1518	37.579874	-76.38591	RAPPAHANNOCK RIVER
NC10-1520	37.595558	-75.93731	CHESAPEAKE BAY
NC10-1524	37.115139	-76.001908	CHESAPEAKE BAY
NC10-1526	37.444198	-76.240961	CHESAPEAKE BAY
NC10-1528	36.899612	-76.458729	JAMES RIVER
NC10-1532	37.160072	-76.302152	CHESAPEAKE BAY
NC10-1533	37.23978	-76.043326	CHESAPEAKE BAY
NC10-1534	36.880434	-76.335006	ELIZABETH RIVER

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STATION	LATITUDE	LONGITUDE	BASIN
NC10-1535	37.293182	-76.327659	CHESAPEAKE BAY
NC10-1536	37.262276	-76.981807	JAMES RIVER
NC10-1637	37.364572	-75.723302	ATLANTIC OCEAN
NC10-2496	37.363803	-77.268424	JAMES RIVER
RE-1491	37.292998	-76.893119	JAMES RIVER
RE-1492	37.9426	-75.6426	CHESAPEAKE BAY
VA11-002	37.9566	-75.3229	ATLANTIC OCEAN
VA11-003	37.2822	-75.8989	ATLANTIC OCEAN
VA11-007	37.182	-75.9123	ATLANTIC OCEAN
VA11-008	36.5861	-75.9117	ATLANTIC OCEAN
VA11-009	37.6706	-75.6175	ATLANTIC OCEAN
VA11-010	37.9636	-75.3853	ATLANTIC OCEAN
VA11-012	36.5896	-75.9748	ATLANTIC OCEAN
VA11-013	37.9986	-75.3614	ATLANTIC OCEAN
VA11-015	37.4988	-75.7102	ATLANTIC OCEAN
VA11-017	37.1045	-76.3063	CHESAPEAKE BAY
VA11-019	37.433	-76.6745	YORK RIVER
VA11-020	37.2927	-76.8709	JAMES RIVER
VA11-022	37.449	-76.2693	CHESAPEAKE BAY
VA11-023	37.6691	-76.4802	RAPPAHANNOCK RIVER
VA11-025	37.3952	-75.9849	CHESAPEAKE BAY
VA11-028	36.8865	-76.4802	JAMES RIVER
VA11-029	38.3748	-76.3387	CHESAPEAKE BAY
VA11-030	37.9898	-76.4945	POTOMAC RIVER
VA11-032	37.3091	-77.327	JAMES RIVER
VA11-033	37.2071	-76.4215	CHESAPEAKE BAY
VA11-034	37.5067	-76.3506	CHESAPEAKE BAY
VA11-035	37.5582	-76.5562	CHESAPEAKE BAY
VA11-037	38.4085	-77.3366	ATLANTIC OCEAN

STATION	LATITUDE	LONGITUDE	BASIN
VA11-038	37.6108	-76.3575	RAPPAHANNOCK RIVER
VA11-039	37.8605	-76.3773	CHESAPEAKE BAY
VA11-040	36.8575	-76.3491	JAMES RIVER
VA11-042	37.8117	-76.3042	CHESAPEAKE BAY
VA11-043	37.9487	-75.6772	CHESAPEAKE BAY
VA11-044	36.9019	-76.457	JAMES RIVER
VA11-045	37.3229	-76.4309	CHESAPEAKE BAY
VA11-046	38.1616	-76.7704	POTOMAC RIVER
VA11-047	37.8876	-76.2821	CHESAPEAKE BAY
VA11-049	37.3219	-76.452	CHESAPEAKE BAY
VA11-051	36.6078	-75.9724	ATLANTIC OCEAN
VA11-053	37.9861	-75.4079	ATLANTIC OCEAN
VA11-060	37.5916	-75.6381	ATLANTIC OCEAN
VA11-066	37.4848	-75.6788	ATLANTIC OCEAN
VA11-067	36.5522	-75.907	ATLANTIC OCEAN
VA11-069	37.9668	-75.416	ATLANTIC OCEAN
VA11-111	37.7403	-76.6206	RAPPAHANNOCK RIVER
VA11-112	36.8654	-76.0088	CHESAPEAKE BAY
VA11-113	38.2424	-77.2931	RAPPAHANNOCK RIVER
VA11-115	37.3999	-76.8953	JAMES RIVER
VA11-116	36.8853	-76.2743	JAMES RIVER
VA11-117	37.671	-75.8595	CHESAPEAKE BAY
VA11-119	37.7945	-75.7153	CHESAPEAKE BAY
VA11-136	37.072	-76.3474	CHESAPEAKE BAY
VA11-157	37.7269	-75.818	CHESAPEAKE BAY
VA11-190	37.6572	-76.8802	CHESAPEAKE BAY
VA11-215	38.2311	-76.9654	POTOMAC RIVER

METHODOLOGY DESCRIBING CHAIN OF CUSTODY FOR LAB SAMPLES

All sample residues for benthic community analyses are washed into pre-labeled cloth bags. Each bag label consists of a code that identifies the sample as collected (1) from one of the tributaries or main bay, (2) the collection site with in the tributary or mainstem and (3) the replicate number. All samples from a particular tributary or mainstem are placed in to a 5 gallon bucket pre-labeled with a tributary or mainstem code. After each sampling station is completed the bucket is sealed. After all stations of each tributary or the mainstem are sampled the bucket is sealed and stored below deck until off loaded at the end of the cruise. Achieved samples are handled as above except that all archived samples are placed into a separate 5-gallon bucket that is pre-labeled to record the date of the cruise. Cruise dates are not indicated on the pre-labeled bags for buckets for the non-achieved replicates. All replicates from one cruise are completely analyzed prior to the next cruise and the pre-labeled bags are reused.

VAPROBMON

Sediment samples for particle size and total volatile solids analysis are placed into pre-labeled plastic bags that use the same labels as above. New pre-labeled bags are used for each cruise. All sediment samples are analyzed prior the next cruise. The chief scientist is responsible for ensuring that all samples are placed into the proper pre-labeled bags, into the proper pre-labeled sealed buckets and securely stored on shipboard. On return of the vessel to the dock the chief scientist is responsible for the loading of all samples onto the trucks, the transportation of the samples to the lab, and storage of samples upon arrival at the lab.

Water quality measurements of bottom salinity, temperature, and dissolved oxygen are collected prior to sediment sample collection. The chief scientist is responsible for ensuring that all sample information is recorded correctly on to field data sheets. On return of the vessel to the dock the chief scientist is responsible for the loading of all samples and field log onto the trucks the transportation of the samples to the lab and storage of samples upon arrival at the lab.

BIOLOGICAL ENUMERATION TECHNIQUES

In the lab, field samples are rinsed in fresh water and emptied onto a 0.5mm sieve. For coarse sediments an elutriation technique is used to wash out and concentrate small organisms. All macro benthic specimens are removed and placed into pre-labeled vials containing 70% Isopropyl alcohol. Organisms are then sorted using a dissecting microscope. All specimens are then identified to the lowest practical taxonomic level. Identification was aided by stereoscopic zoom dissecting microscopes, fiber optic illuminators, magnifying lamps and a phase contrast compound microscope.

#FORMULAS AND CALCULATIONS

Multiplication of organism count per taxon by gear conversion factor will give concentration of organisms per area value.

#INDEX OF BIOTIC INTEGRITY CALCULATIONS

All Chesapeake Bay Index of Biotic Integrity Data has been calculated using the protocol described in

Alden, R. W., III, D. M. Dauer, J. A. Ranasinghe, L. C. Scott, and R. J. Llansó. 2002. Statistical verification of the Chesapeake Bay Benthic Index of Biotic Integrity. *Environmetrics*, 13:473-498.

Further details can be found at

<http://www.chesapeakebay.odu.edu/Reports/Benthic/BIBIcalc.pdf>

BIOLOGICAL VARIABLE QA/QC PLAN FOR PROJECT

At each station, three replicate box core samples were collected and processed individually. At least 5% of all samples identified by each technician are reworked by the Benthic Ecology Lab manager for quality control of taxonomic identification, enumeration, and biomass estimation. If error exceeds 5%, as second sample is QC'd; if the second QC fails, all samples previously sorted by that technician are resorted. A discrepancy of less than 0.1% in ash free weight calculations is considered acceptable. The personnel sorting and identifying each sample are recorded on lab data sheets.

VARIABLE NAMES, MEASUREMENT UNITS, AND DESCRIPTIONS

>PARAMETER: COUNT (# of a benthic taxon per sample)

-COLLECTION METHODS: Each station had two petite ponar grabs taken and composited into one sample. The combined sample had a surface area of 500 square cm. collected. Any grab which appeared disturbed, was discarded. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trash can filled with water and shaken and swirled to suspend large material allowing silt and fine sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10 % buffered ambient water-formalin solution. A 1% solution of rose Bengal stain is premixed into the formalin solution.

-SAMPLE PRESERVATIVES: 10% buffeted formalin in ambient seawater, rose Bengal, isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag in sealed plastic bucket, held at room temperature.

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-TIME IN STORAGE: Until commencement of processing, no longer than 90 days.

-LAB TECHNIQUES WITH REFERENCES:

Each sample was sorted separately and the individuals identifier to the lowest practical taxon and enumerated.

>PARAMETER: AFDW (taxon ash free dry weight)

-COLLECTION METHODS: Each station had two petite ponar grabs taken and composited into one sample. The combined sample had a surface area of 500 square cm. collected. Any grab which appeared disturbed, was discarded. Samples are transferred in to a 0.5 mm sieve bucket. The bottom of the bucket is immersed in a 30-gallon trash can filled with water and shaken and swirled to suspend large material allowing silt and fine sand to pass through the sieve. The residual material is washed into the pre-labeled cloth sample bags. Samples are relaxed for 15 minutes in an Isopropyl alcohol solution. Samples are then fixed in a 10 % buffered ambient water-formalin solution. A 1% solution of rose Bengal stain is premixed into the formalin solution.

-SAMPLE PRESERVATIVES: 10% buffered formalin with rose Bengal, Isopropyl alcohol

-SAMPLE STORAGE ENVIRONMENT: Cloth bag inside a plastic bucket, at room temp

-TIME IN STORAGE: Until commencement of processing, no more than 90 days.

-LABORATORY TECHNIQUES WITH REFERENCES:

Sorted detritus-free samples are processed. Dried samples are ignited in a muffle furnace (550 C) for approximately eight hours. Samples are removed to a desiccator and weighed when cool. Weights are reported by species.

>PARAMETER: LATITUDE (decimal degrees-NAD83) and LONGITUDE (decimal degrees-NAD83)

-COLLECTION METHODS: GPS, NAD83 coordinates

-SAMPLE PRESERVATIVES: None

-SAMPLE STORAGE ENVIRONMENT: None

-TIME IN STORAGE: None

-LAB TECHNIQUES WITH REFERENCES: Random station positions are the actual GPS coordinates for each sampling event.

>PARAMETER: SAND (Sand content, %)

-COLLECTION METHODS: The second grab sample has a 60 ml sediment sample taken from the top 2 centimeters and the remainder is discarded.

-SAMPLE PRESERVATIVES: Frozen

-SAMPLE STORAGE ENVIRONMENT: Frozen

-TIME IN STORAGE: Until thawed for analysis, no more than 30 days.

-LAB TECHNIQUES WITH REFERENCES:

For each sample 15 ml of sediment is placed on a 63 um sieve. De-ionized water is used to pass fine particles through sieve. The material remaining on the sieve is the sand fraction. The sample is rinsed onto a dish and dried in the drying oven for 12 hours. The material is placed into a nested sieve series (2000,1000,500,250,125,63 um and a solid pad) and placed on a vibra-pad for 10 minutes. Materials retained in each sieve are then weighed and recorded for parameter calculations.

>PARAMETER: SAMPLE_DEPTH (Sample Depth, meters)

-COLLECTION METHODS: A Ship depth meter was used to determine sample depths, only bottom samples taken.

-SAMPLE PRESERVATIVES: N/A

-SAMPLE STORAGE ENVIRONMENT: N/A

-TIME IN STORAGE: N/A

-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: DO, (Dissolved Oxygen, ppm)

-COLLECTION METHODS: A YSI model 33 CTD is used for data collection.

-SAMPLE PRESERVATIVES: N/A

-SAMPLE STORAGE ENVIRONMENT: N/A

-TIME IN STORAGE: N/A

VAPROBMON

-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: SALINTY (Salinity, PSU)

-COLLECTION METHODS: AYSI model 33 CTD is used for data collection.

-SAMPLE PRESERVATIVES: N/A

-SAMPLE STORAGE ENVIRONMENT: N/A

-TIME IN STORAGE: N/A

-LAB TECHNIQUES WITH REFERENCES: N/A

>PARAMETER: SILTCLAY (Silt-Clay content, %), SILT (Silt content, %)

-COLLECTION METHODS: The second grab sample has a 60 ml sediment sample taken from the top 2 centimeters and the remainder is discarded.

-SAMPLE PRESERVATIVES: Frozen

-SAMPLE STORAGE ENVIRONMENT: Frozen

-TIME IN STORAGE: Until thawed for analysis, no more than 30 days.

-LAB TECHNIQUES WITH REFERENCES:

For each sample 15 ml of sediment is placed on a 63 um sieve. Deionized water is used to pass fine particles through sieve. The resultant water contains the silt-clay fraction. The water silt mixture poured into a one liter graduated cylinder and is brought up to a volume of one liter. The sample is mixed, and five 20 ml samples are drawn at timed intervals. The first sample is drawn immediately at depths of 20 cm below the surface and placed in a pre-weighed beaker. The remaining four samples are taken at 10 cm below water surface at times of one-minute min, 7 minutes and 44 seconds, 31 minutes and two hours and three minutes. All samples are placed in pre-weighed beakers. The water in the beakers is allowed to evaporate in a drying oven. Weights are recorded and parameters are calculated.

>PARAMETER: TOTAL_DEPTH (Total Depth, meters)

-COLLECTION METHODS: YSI CTD or Ships depth meter

-SAMPLE PRESERVATIVES: None

-SAMPLE STORAGE ENVIRONMENT: None

-TIME IN STORAGE: None

-LAB TECHNIQUES WITH REFERENCES: Water column salinity, temperature and depth is recorded prior to benthic sampling.

>PARAMETER: WTEMP (Temperature, centigrade)

-COLLECTION METHODS: A YSI model 33 CTD was used for data collection.

-SAMPLE PRESERVATIVES: N/A

-SAMPLE STORAGE ENVIRONMENT: N/A

-TIME IN STORAGE: N/A

-LAB TECHNIQUES WITH REFERENCES: N/A

>DATA ENTRY METHOD: Raw data files are created by an in-house data entry program entitled Benthic. The program has numerous steps in the program to insure data verification. Data sets are then transported to the Old Dominion University mainframe. Hard copies of the data sets on the main frame are then compared to field sheets for errors. Project files are then converted into SAS data sets.

>DATA VERIFICATION: Visually verified twice and checked by computer programs.

SPECIES IN HOUSE CODE AND SCIENTIFIC NAME

Old Dominion University Benthic Species Codes

> IN HOUSE SPECIES LIST

The current list of IN HOUSE codes and Latin Names used by Old Dominion University are as follows:

SPEC_CODE	SOURCE_LBL	TSN	SPEC_CODE	SOURCE_LBL	TSN
1	SPIOPHANES BOMBYX	0066897	2	AOPRIONOSPIO PYGMAEA	0066847

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SPEC_CODE	SOURCE_LBL	TSN
3	NEPHTYS PICTA	0066030
4	POLYGORDIUS SPP.	0068419
5	ARICIDEA WASSI	0066673
6	ARICIDEA CATHERINAE	0066765
7	OLIGOCHAETA SPP.	0068422
8	CIRRATULIDAE SPP.	0067116
9	SPIO SETOSA	0066868
10	MAGELONA SP.	0067043
11	AMASTIGOS CAPERATUS	BAY0003
12	TELLINA AGILIS	0081088
13	AMPELISCA VERRILLI	0093331
14	PROTOHAUSTORIUS SPP.	0094008
15	SPISULA SOLIDISSIMA	0080944
16	NEMERTEA SPP.	0057411
17	NASSARIUS TRIVITTATUS	0074109
18	PROTODORVILLEA KEFERSTEINI	0066496
19	SCHISTOMERINGOS CAECA	0066527
20	ANTHOZOA SPP.	0051938
21	TURBELLARIA SPP.	0053964
22	AMPHARETE ACUTIFRONS	0067735
23	AMPHARETE AMERICANA	0067738
24	ASABELLIDES OCULATA	0067786
25	AMPHINOMIDAE SP.	0065164
26	ARABELLIDAE SPP.	0066422
27	DRILONEREIS LONGA	0066426
28	DRILONEREIS MAGNA	0066431
29	CAPITELLA CAPITATA	0067415
30	CAPITELLA SPP.	0067414
31	CAPITELLIDAE SPP.	0067413
32	MEDIOMASTUS AMBISETA	0067439
33	NOTOMASTUS HEMIPODUS	0067431
34	NOTOMASTUS LATERICEUS	0067429
35	SPIOCHAETOPTERUS COSTARUM	0067107
36	SCHISTOMERINGOS RUDOLPHI	0066523
37	MARPHYSA BELLI	0066302
38	PHERUSA EHLERSI	0067248
39	GLYCERA AMERICANA	0066106
40	GLYCERA CAPITATA	0066103
41	GLYCERA DIBRANCHIATA	0066107
42	GLYCERA ROBUSTUS	0066108
43	GLYCERA SPP.	0066102
44	HEMIPODUS ROSEUS	0066124
45	GONIADELLA GRACILIS	0066148
46	MICROPHTHALMUS SCZELKOWII	0065477
47	LUMBRINERIDES ACUTA	0066408
48	LUMBRINERIS FRAGILIS	0066338
49	LUMBRINERIS TENUIS	0066351

SPEC_CODE	SOURCE_LBL	TSN
50	NINOE NIGRIPES	0066405
51	CLYMENELLA TORQUATA	0067528
52	CLYMENELLA SPP.	0067526
53	MACROCLYMENE ZONALIS	0067632
54	AGLAOPHAMUS CIRCINATA	0066053
55	AGLAOPHAMUS VERRILLI	0066052
56	WEBSTERNEREIS TRIDENTATA	0065972
57	DIOPATRA CUPREA	0066180
58	ONUPHIS EREMITA	0066164
59	OPHELIA SP.	0067353
60	TRAVISIA PARVA	0067372
61	LEITOSCOLOPLOS FRAGILIS	0066656
62	LEITOSCOLOPLOS ROBUSTUS	0182728
63	SCOLOPLOS RUBRA	0066603
64	SCOLOPLOS SPP.	0066594
65	OWENIA FUSIFORMIS	0067647
66	BHAWANIA HETEROSETA	0065159
67	AEDICIRA SP.	0066660
68	ARICIDEA FRAGILIS	0066678
69	CIRROPHORUS FURCATUS	0066714
70	PARADONEIS LYRA	0066743
71	PARAONIS FULGENS	0066697
72	PARAONIS PYGOENIGMATICA	0066699
73	PARAONIDAE SPP.	0066659
74	PECTINARIA GOULDII	0067709
75	ETEONE HETEROPODA	0065266
76	ETEONE LACTEA	0065267
77	ETEONE LONGA	0065263
78	EUMIDA SANGUINEA	0065343
79	PARANAITIS POLYNOIDES	0065324
80	PARANAITIS SPECIOSA	0065321
81	PHYLLODOCE ARENAE	0065366
82	PHYLLODOCE CASTANEA	0065319
83	PHYLLODOCE MUCOSA	0065239
84	ANCISTROSYLLIS HARTMANAE	0065543
85	SIGAMBRA BASSI	0065554
86	SIGAMBRA TENTACULATA	0065552
87	PISIONE REMOTA	0065143
88	ANTINOELLA SARSII	0064411
89	HARMOTHOE EXTENUATA	0064509
90	SABELLARIA VULGARIS	0067671
91	POTAMILLA SPP.	0068126
92	SCALIBREGMA INFLATUM	0067313
93	PHOLOE MINUTA	0065074
94	SIGALION ARENICOLA	0065094
95	STHENELAIS BOA	0065084
96	STHENELAIS LIMICOLA	0065086

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SPEC_CODE	SOURCE_LBL	TSN
97	BOCCARDIA SP.	0066878
98	MINUSPIO CIRRIFFERA	0067027
99	PARAPRIONOSPIO PINNATA	0066937
100	POLYDORA COMMENSALIS	0066800
101	POLYDORA CORNUTA	0204501
102	POLYDORA SOCIALIS	0066791
103	SCOLELEPIS BOUSFIELDI	0066944
104	SCOLELEPIS SQUAMATA	0066943
105	STREBLOSPIO BENEDICTI	0066939
106	AUTOLYTUS SPP.	0065588
107	BRANIA PUSILLA	0065765
108	PARAPIONOSYLLIS LONGICIRRATA	0065824
109	PIONOSYLLIS SP.	0065616
110	PROCERAEA SP.	0065589
111	STREPTOSYLLIS PETTIBONEAE	0065822
112	SYLLIDES CONVOLUTA	0065807
113	PISTA PALMATA	0067947
114	POLYCIRRUS EXIMIUS	0067963
115	TEREBELLIDAE SPP.	0067899
116	RICTAXIS PUNCTOSTRIATUS	0076083
117	HAMINOEA SOLITARIA	0076258
118	CREPIDULA FORNICATA	0072623
119	CREPIDULA PLANA	0072627
120	ANACHIS LAFRESNAYI	0073631
121	MITRELLA LUNATA	0073552
122	HYALINA SP.	0074415
123	MARGINELLA ROSCIDA	0074408
124	LUNATIA HEROS	0072924
125	NATICA PUSILLA	0072888
126	POLINICES DUPLICATUS	0072918
127	PLEUROBRANCHAEA TARDA	0078130
128	ODOSTOMIA SP. A	0075447
129	ODOSTOMIA SP. B	0075447
130	TURBONILLA INTERRUPTA	0075687
131	CYLICHNELLA BIDENTATA	0076141
132	MANGELIA CERINA	0074567
133	TURRIDAE SPP.	0074555
134	ANADARA TRANSVERSA	0079340
135	CERASTODERMA PINNULATUM	0080900
136	PARVILUCINA MULTILINEATA	0080388
137	LYONSIA HYALINA	0081926
138	CRASSINELLA LUNULATA	0080851
139	MULINIA LATERALIS	0080959
140	MYSELLA PLANULATA	0080661
141	MYTILUS EDULIS	0079454
142	YOLDIA LIMATULA	0079273
143	YOLDIA SP.	0079258

SPEC_CODE	SOURCE_LBL	TSN
144	NUCULA PROXIMA	0079132
145	CRASSOSTREA VIRGINICA	0079872
146	PANDORA BUSHIANA	0081900
147	PANDORA GOULDIANA	0081896
148	PANDORA TRILINEATA	0081895
149	ENSIS DIRECTUS	0081022
150	SILIOUA COSTATA	0081012
151	MACOMA TENTA	0081055
152	GEMMA GEMMA	0081511
153	MERCENARIA MERCENARIA	0081496
154	AMPELISCA VADORUM	0093330
155	BYBLIS SERRATA	0093364
156	LEMBOS WEBSTERI	0093459
157	PSEUDUNCIOLA OBLIQUUA	0093640
158	UNCIOLA DISSIMILIS	0093635
159	UNCIOLA SERRATA	0093633
160	UNCIOLA SPP.	0093629
161	BATEA CATHARINENSIS	0093528
162	CAPRELLIDAE SPP.	0095375
163	COROPHIUM SPP.	0093589
164	ERICHTHONIUS BRASILIENSIS	0093613
165	ACANTHOHAUSTORIUS MILLSI	0093982
166	BATHYPOREIA PARKERI	0193514
167	BATHYPOREIA SP.	0093990
168	HAUSTORIUS CANADENSIS	0094019
169	LILJEBORGIA SP.	0094209
170	LISTRIELLA BARNARDI	0094213
171	LISTRIELLA CLYMENELLAE	0094214
172	AMEROCULODES SPECIES COMPLEX	0656551
173	SYNCHELIDIUM AMERICANUM	0094567
174	GAMMEROPSIS SP. CF. SUTHERLANDI	0656919
175	MICROPROTOPUS RANEYI	0094122
176	RHEPOXYNIUS EPISTOMUS	0094728
177	TRICHOPHOCUS FLORIDANUS	0094701
178	PARAMETOPELLA STELLERI	0094926
179	STENOTHOE MINUTA	0094936
180	SYNOPIIDAE. SP.	0094989
181	CYATHURA SPP.	0092148
182	PTILANTHURA TENUIS	0092155
183	EDOTEA TRILOBA	0092627
184	PSEUDOLEPTOCUMA MINOR	0091040
185	DIASTYLIS SP.	0090836
186	OXYUROSTYLIS SMITHI	0090923
187	EUDORELLA TRUNCATULA	0090803
188	EUDORELLA SPP.	0090799
189	LEPTOGNATHA CAECA	BAY0138
190	ALBUNEA PARETTI	0098122

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SPEC_CODE	SOURCE_LBL	TSN
191	CANCER IRRORATUS	0098679
193	LIBINIA EMARGINATA	0098455
194	MAJIDAE SPP.	0098417
195	PAGURUS SPP.	0097775
196	MYSIDOPSIS BIGELOWI	0090139
197	PHASCOLION STROMBI	0154734
198	PHORONIS SPP.	0155462
199	ASTERIAS FORBESII	0157217
200	ECHINARACHNIUS PARMA	0158016
201	MELLITA QUINQUIESPERFORATA	0158020
202	LEPTOSYNAPTA INHAERENS	0158431
203	BRANCHIOSTOMA VIRGINIAE	0206924
204	BIVALVIA SPP.	0079118
205	SPIONIDAE SPP.	0066781
206	DRILONEREIS SPP.	0066423
207	PHYLLODOCIDAE SPP.	0065228
208	STHENELAIS SPP.	0065082
209	CERIANTHUS AMERICANUS	0051987
210	CHAETOGNATHA SPP.	0158650
211	UNCIOLA IRRORATA	0093632
212	NOTOCIRRUS SPINIFERUS	0066450
213	SPHAERODOROPSIS SP.	0066073
214	MICROPHTHALMUS FRAGILIS	0204411
215	SACCOGLOSSUS SPP.	0158624
216	CAUDINA ARENATA	0158527
217	GASTROPODA SPP.	0069459
218	CHIRODOTEA SPP.	0092637
219	LISTRIELLA SP.	0094212
220	PARAMETOPELLA CYPRIS	0094927
221	AMPHARETE PARVIDENTATA	0067739
222	AMPHARETIDAE SPP.	0067718
223	AMPHARETE ARCTICA	0067728
224	SCOLELEPIS SP.	0066942
225	DIADUMENE LEUCOLENA	0052749
226	SYLLIDAE SPP.	0065587
227	NEREIDAE SPP.	0065870
228	PISTA CRISTATA	0067941
229	SOLEMYA VELUM	0079316
230	CYCLASPIS VARIANS	0091033
231	NEPHTYS INCISA	0066028
232	POLYDORA WEBSTERI	0066802
233	NEPHTYS BUCERA	0066027
234	OPHIUROIDEA SPP.	0157325
235	ARBACIA PUNCTUATA	0157906
236	CHAETOPLEURA APICULATA	0078958
237	ASTEROIDEA SPP.	0156862
238	CRENELLA DECUSSATA	0079459

SPEC_CODE	SOURCE_LBL	TSN
239	SIGAMBRA SPP.	0065551
240	POLYDORA SPP.	0066789
241	DORVILLEIDAE SPP.	0066478
242	PSEUDEURYTHOE PAUCIBRANCHIATA	0065176
243	NEREIS ACUMINATA	0065926
244	SYLLIDES FULVA	0065811
245	BRANIA WELFLEETENSIS	0065762
246	SYLLIDES JAPONICA	0065804
247	SHAEROSYLLIS SP.	BAY0250
248	NEPHTYIDAE SPP.	0066010
249	SCAPHOPODA SP.	0082115
250	ABRA SPP.	0081301
251	PISTA QUADRILOBATA	0067951
252	PERIPLOMA SPP.	0081941
253	ACANTHODORIS PILOSA	0078359
254	SPHAEROSYLLIS HYSTRIX	0065739
255	SYLLIDES PAPILLOSA	BAY0262
256	OVALIPES OCELLATUS	0098714
257	EUCERAMUS PRAELONGUS	0098081
258	ACTEOCINA CANALICULATA	0076117
259	PINNOTHERES OSTREUM	0098976
260	DISSODACTYLUS MELLITAE	0098966
261	GAMMARUS DAIBERI	0093779
262	SABACO ELONGATUS	BAY0341
263	HIRUDINEA SP.	0069290
264	PODARKEOPSIS LEVIFUSCINA	0555698
265	LEPIDONOTUS SUBLEVIS	0064610
266	POLYDORA CAULLERYI	0066794
267	CIROLINA POLITA	0092231
268	EXOGONE HEBES	0065730
269	ONUPHIDAE SPP.	0066157
270	DORIDELLA OBSCURA	0078439
271	NEOMYSIS AMERICANA	0090062
272	PODARKE OBSCURA	0065517
273	THOR FLORIDANUS	0096918
274	ONCHIDORIS ASPERA	0078377
275	MALDANIDAE SPP.	0067515
276	LEMBOS SMITHI	0093458
277	RILDARDANUS SPP.	0093490
278	ASYCHIS CAROLINAE	0067524
279	EPITONIUM HUMPHREYSI	0072259
280	PANDORA SPP.	0081889
281	CYCLASPIS PUSTULATA	0091032
282	MELITA SPP.	0093806
283	HYPERIIDAE SPP.	0095108
284	MICROPHTHALMUS SIMILIS	0065480

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SPEC_CODE	SOURCE_LBL	TSN
285	ARMANDIA MACULATA	0067347
286	NUDIBRANCHIA SPP.	0078156
287	ELASMOPUS LEVIS	0093761
288	TURBONILLA SPP.	0075676
289	LUMBRINERIDAE SPP.	0066335
290	ANCINUS DEPRESSUS	0092334
291	BATHYPOREIA QUODDYENSIS	0093991
292	PARAPHOXUS SPINOSUS	0094756
293	EUPLEURA CAUDATA	0073300
294	OPHELIA DENTICULATA	0067358
295	NANNOSQUILLA GRAYI	0099156
296	POTAMILLA RENIFORMIS	0068136
297	LOIMIA MEDUSA	0068015
298	GLYCINDE SOLITARIA	0066132
299	HETEROMASTUS FILIFORMIS	0067420
300	BRANIA CLAVATA	0065761
301	SYLLIDES VERRILLI	0065813
302	HYDROIDES DIANTHUS	0068282
303	CAPITOMASTUS ACICULATUS	0204558
304	PHERUSA SP.	0067241
305	MARENZELLERIA VIRIDIS	0573739
306	MICROPHTHALMUS SP.	0065476
307	POTAMILLA NEGLECTA	0068127
308	GYPTIS VITTATA	0065470
309	PARAHESIONE LUTEOLA	0065493
310	POLYNOIDAE SP.	0064397
311	ANACHIS OBESA	0073622
312	NASSARIUS VIBEX	0074107
313	CYCLOSTREMISCUS BEALLI	0071115
314	EPITONIUM SP.	0072233
315	EPITONIUM MULTISTRIATUM	0072247
316	EPITONIUM RUPICOLA	0072249
317	BUSYCON CARICA	0074071
318	CORYPHELLA SP.	0078645
319	POLYCERA SP.	0078312
320	MACOMA BALTHICA	0081052
321	MACOMA MITCHELLI	0081054
322	MYA ARENARIA	0081692
323	CHIONE CANCELLATA	0081523
324	ALIGENA ELEVATA	0080685
325	ANADARA OVALIS	0079342
326	ISCHADIUM RECURVUM	0079561
327	EUCRASSATELLA SPECIOSA	0080856
328	PYCNOGONIDA SPP.	0083545
329	CYATHURA POLITA	0092149
330	ERICHSONELLA FILIFORMIS	0092619
331	AMPELISCA ABDITA	0093329

SPEC_CODE	SOURCE_LBL	TSN
332	MELITA NITIDA	0093812
333	MELITA APPENDICULATA	0093813
334	PARAPLEUSTES AESTUARIUS	BAY0199
335	PLEUSTIDAE SP.	0094768
336	LEPTOCHEIRUS PLUMULOSUS	0093486
337	CERAPUS TUBULARIS	0093587
338	GAMMARUS MUCRONATUS	0093783
339	PHOTIS MACROCOXA	0094069
340	STENOTHOE SP.	0094934
341	LEUCON AMERICANUS	0090790
342	DECAPODA SPP.	0095599
343	PINNIXA SAYANA	0099002
344	PINNIXA CHAETOPTERANA	0098998
345	PINNOTHERIDAE SPP.	0098964
346	PANOPEUS HERBSTII	0098778
347	HEXAPANOPEUS ANGUSTIFRONS	0098764
348	PINNIXA CRISTATA	0099004
349	CALLINECTES SAPIDUS	0098696
350	UPOGEBIA AFFINIS	0098209
351	OGYRIDES ALPHAEROSTRIS	0096737
352	XANTHIDAE SPP.	0098748
353	CNEMIDOCARPA MOLLIS	0159254
354	ECHIURA SPP.	0154972
355	PRIAPULIDA SPP.	0155153
356	NEANTHES SUCCINEA	0065918
357	EPITONIUM ANGULATUM	0072252
358	GAMMARUS SP.	0093773
359	FLABELLIGERA SP.	0067236
360	SPHAEROSYLLIS SP.	0065735
361	DIASTYLIS POLITA	0090858
362	SABELLIDAE SP.	0068076
363	CHIRODOTEA STENOPS	BAY0068
364	HESSIONURA ELONGATA	0065334
365	POLYCHAETA SP. JUVENILE	0064358
366	PERIPLOMA SP. JUVENILE	0081941
367	ARICIDEA CERRUTII	0066749
368	FLABELLIGERA AFFINIS	0067238
369	HOLOTHUROIDEA SPP.	0158140
370	NEPHTYS SP.	0066011
371	LEPIDAMETRIA COMMENSALIS	0064703
372	TUBIFICOIDES SPP	0068687
373	ODOSTOMIA SPP.	0075447
374	CYRTOPLEURA COSTATA	0081796
375	MONOCOROPHIUM TUBERCULATUM	0656762
376	SACCOGLOSSUS KOWALEVSKII	0158626
377	CHAETOPTERUS VARIOPEATUS	0067097
378	CIRRIFORMIA GRANDIS	0067122

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SPEC_CODE	SOURCE_LBL	TSN
379	AULODRILUS PIGUETI	0068680
380	QUISTADRILUS MULTISSETOSUS	0068794
381	OLIGOCHAETA SP. X (NO SETAE)	0068422
382	CASSIDINIDEA LUNIFRONS	0092347
383	EURYPANOPEUS DEPRESSUS	0098759
384	PARACAPRELLA TENUIS	0095434
385	MICROPHIOPHOLIS ATRA	BAY0346
386	EUPLANA GRACILIS	0054139
387	STYLOCHUS ELLIPTICUS	0054089
388	TURBELLARIA SP. 1 (PIGMENTED FORM)	0053964
389	AMPHITRITE ORNATA	0067902
390	ANCISTROSYLLIS JONESI	0065544
391	ARABELLA IRICOLOR	0066441
392	CAULLERIELLA KILLARIENSIS	0067131
393	CHAETOZONE SETOSA	0067157
394	EXOGONE DISPAR	0065722
395	EXOGONE VERUGERA	0065727
396	HOBSONIA FLORIDA	0067755
397	LEVINSENIA GRACILIS	0066729
398	MELINNA MACULATA	0067766
399	MINUSPIO CIRROBRANCHIATA	0067032
400	NEREIS SPP.	0065902
401	NOTOMASTUS LOBATUS	0067432
402	NOTOMASTUS SP. A EWING	0067423
403	ORBINIID SPP. (JUVENILES)	0066570
404	PHYLLODOCE SP. (JUVENILES)	0065359
405	PRIONOSPIO STEENSTRUPI	0066845
406	DEMONAX MICROPHthalmus	0068222
407	SCOLELEPIS TEXANA	0066949
408	MONTICELLINA DORSOBRANCIALIS	0204530
409	THARYX SETIGERA	0067145
410	LIMNODRILUS HOFFMEISTERI	0068639
411	LIMNODRILUS PROFUNDICOLA	0068649
412	LIMNODRILUS SP. JUV.	0068638
413	NAIS VARIABILIS	0068959
414	TUBIFICOIDES BENEDENI	0068592
415	TUBIFICOIDES GABRIELLAE	0068590
416	TUBIFICOIDES HETEROCHAETUS	0068595
417	TUBIFICOIDES WASELLI	0068692
418	TUBIFICOIDES SP. A	0068687
419	TUBIFICOIDES SP. B	0068687
420	BUSYCON SP. (JUVENILES)	0074070
421	ODOSTOMIA BISUTURALIS	0075988
422	UROSALPINX CINEREA	0073264
423	GEUKENSIA DEMISSA	0079555
424	PISIDIUM SP.	0081400

SPEC_CODE	SOURCE_LBL	TSN
425	RANGIA CUNEATA	0080962
426	CHIRODOTEA COECA	0092640
427	CHIRODOTEA NIGRESCENS	0092642
428	CAPRELLA EQUILIBRA	0095410
429	CAPRELLA PENANTIS	0095419
430	COROPHIUM ACHERUSICUM	0093590
431	COROPHIUM LACUSTRE	0093594
432	COROPHIUM SIMILE	0093595
433	IDUNELLA SP.	0094206
434	MONOCULODES INTERMEDIUS	0094536
435	PLEUSYMTES GLABER	0094797
436	NEOPANOPE SAYI	0098775
437	PINNIXA RETINENS	0099001
438	PINNIXA SPP.	0098993
439	RHITHROPANOPEUS HARRISII	0098790
440	ABLABEYMIA PARAJANTA	0128112
441	CHAOBORUS ALBATUS	0125905
442	CHAOBORUS PUNCTIPENNIS	0125923
443	CLINOTANYPUS PINGUIS	0127998
444	CRYPTOCHIRONOMUS FULVUS	0129376
445	DICROTENDIPEUS NERVOSUS	0129452
446	PROCLADIUS SUBLETTEI	0128316
447	TANYTARSINI SP.	0129872
448	TRICHOPTERA SP.	0115095
449	LEPTOSYNAPTA TENUIS	0158432
450	THYONELLA PERVICAX	0158269
451	BALANOGLOSSUS AURANTICUS	0158629
452	MOLGULA LUTULENTA	0159581
453	POLYCHAETE FRAGMENTS	0064358
454	DOSINIA DISCUS	0081489
455	TAGELUS DIVISUS	0081274
456	LIMNODRILUS CERVIX	0068652
457	BRANCHIURA SOWERBYI	0068621
458	POLYPEDILUM FALLAX	0129676
459	ARGULUS SP.	0089407
460	GAMMARUS PALUSTRIS	0093782
461	GILVOSSIUS SETIMANUS	0552843
462	LYSIDICE NINETTA	0066320
463	CORBICULA FLUMINEA	0081387
464	CABIRA INCERTA	0065565
465	HARMOTHOE SP. A	0064502
466	NEREIDAE SP. A	0065870
467	THALASSEMA SP.	0155118
468	ANACHIS TRANSLINATA	0073621
469	PHOTIS SP.	0094061
470	CALLIANASSA BIFORMIS	0097744
471	CRICOTOPUS SP.	0128575

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SPEC_CODE	SOURCE_LBL	TSN
472	AMPELISCA SPP. JUVENILES	0093321
473	BALCIS INTERMEDIA	0072453
474	PHOTIS REINHARDI	0094063
475	MYSTIDES BOREALIS	0065307
476	CHIRONOMUS DECORUS	0129280
477	PARATENDIPES SP.	0129623
478	PHYLLODOCE FRAGILIS	0065337
479	ANCISTROSYLLIS SPP.	0065541
480	SKENEOPSIS PLANORBIS	0071217
481	ILYANASSA OBSOLETA	0074169
482	HALOCLAVA PRODUCTA	0052513
483	THALASSINOIDEA SPP.	0097699
484	ECHINOIDEA SPP.	0157821
485	PAGURUS LONGICARPUS	0097807
486	LIBINIA DUBIA	0098454
487	SPIO PETTIBONEAE	0066870
488	POLYPEDILUM CONVICTUM	0129671
489	LAONEREIS CULVERI	0065965
490	ARICIDEA SPP.	0066666
491	AMPHIPODA SPP.	0093294
492	HUTCHINONIELLA MACRACANTHA	0083682
493	CRANGONIDAE SPP.	0097106
494	LEPTALPHEUS FORCEPS	0096732
495	MANGELIA PLICOSA	0074568
496	PRIONOSPIO PERKINSI	0066854
497	BOCCARDIA HAMATA	0066886
498	LEPIDONOTUS VARIABILIS	0064611
499	TUBIFICOIDES BROWNAE	0068688
500	IDUNELLA SMITHI	BAY0133
501	TUBIFICOIDES DIAZI	0068689
502	HEMICHORDATA SPP.	0158616
503	AORIDAE SPP.	0093440
504	GYPTIS SPP.	0065468
505	CHIRONOMUS ATTENUATUS	0129268
506	CHIRONOMUS RIPARIUS	0129313
507	DJALMABETISTA PULCHER	0128272
508	CRYPTOCHIRONOMOUS PARAFULVUS	0129382
509	ALMYRACUMA PROXIMOCULI	0090979
510	LEITOSCOLOPLOS SPP.	0066653
511	COROPHIUM ACUTUM	0093602
512	ISOCHAETIDES FREYI	0068810
513	CHIRONOMIDAE SPP. LARVAE	0127917
514	SQUILLA EMPUSA	0099143
515	LIMNODRILUS UDEKEMIANUS	0068644
516	TUBIFICOIDES SPP. GROUP I	0068687
517	CRANGON SEPTEMSPINOSA	0097110

SPEC_CODE	SOURCE_LBL	TSN
518	TAGELUS PLEBEIUS	0081272
519	ANOMIA SIMPLEX	0079798
520	ENCHYTRAEIDAE SPP.	0068510
521	GLYPTOTENDIPES SPP.	0129483
522	XENOCHIRONOMUS SPP.	0129837
523	ETEONE SPP.	0065258
524	POTAMOTHRIX VEJDOVSKYI	0068790
525	PSUEDOCHIRONOMUS FULVIVENTRIS	0129858
526	CAPITELLA JONESI	0067450
527	NUCULANA MESSANENSIS	0079212
528	PRISTINELLA JENKINAE	0069030
529	WAPSA MOBILIS	0068866
530	COROPHIUM VOLUTATOR	0093601
531	MACOMA SPP.	0081033
532	AMPHICTEIS FLORIDUS	0067753
533	PSYCHODIDAE SPP.	0125351
534	PRISTINELLA SIMA	0069028
535	XENOCHIRONOMUS FESTIVUS	0129841
536	PILARGIDAE SPP.	0065540
537	OECETIS INCONSPICUA	0116613
538	PALPOMYIA SPP.	0127859
539	CHIRONOMUS SPP.	0129254
540	SAMYTHELLA ELONGATA	0067802
541	SABELLIDES OCTOCIRRA	0067773
542	HYDROIDES PROTULICOLA	0068283
543	HYDROBIA SPP.	0070494
544	PRISTINELLA OSBORNI	0069026
545	GAMMARUS TIGRINUS	0093781
546	COROPHIUM INSOSIDIUM	0093600
547	CHIRONOMINI SPP.	0129229
548	MARPHYSA SANQUINEA	0066301
549	SABELLARIA GRACILIS	0067678
550	SERPULIDAE SPP.	0068232
551	BOCCARDIELLA LIGERICA	0067012
552	SPHAERIUM SPP.	0081391
553	EPHEMPTERA SPP.	0100502
554	PENTAMERA PULCHERIMA	0158230
555	PETRICOLA PHOLADIFORMIS	0081627
556	POLYPEDILUM SPP.	0129657
557	NAIS SPP.	0068946
558	CERITHIOPSIS GREENI	0072032
559	COELOTANYPUS SPP.	0128010
560	HARNISCHIA SPP.	0129516
561	OLIGOCHAETA SP A(SERRATE CHAETAE)	0068422
562	CAPITELLIDES SPP.	0067449
563	TELLINA SP. 1	0081074

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SPEC_CODE	SOURCE_LBL	TSN
564	ARMANDIA AGILIS	0067346
565	CAULLERIELLA SPP.	0067126
566	TELLINA SPP.	0081074
567	AOPRIONOSPIO DAYI	0067024
568	TELLINA SP. 2	0081074
569	OPHELINA CYLINDRICAUDATA	0067387
570	PRIONOSPIO SPP.	0066838
571	PRIONOSPIO CRISTATA	0066849
572	OLIVELLA MUTICA	0074253
573	DONAX VARIABILIS	0081248
574	EXOSPHAEROMA SPP.	0092301
575	NASSARIUS SPP.	0074103
576	POLYCIRRUS SPP.	0067959
577	ODONTOSYLLIS FULGURANS	0065789
578	ANACHIS SPP.	0073616
579	ANACHIS AVARA	0073617
580	PARACEREIS CAUDATA	0092290
581	HIPPOLYTIDAE SPP.	0096746
582	SIPUNCULA SPP.	0154520
583	GYRINIDAE SPP.	0112653
584	TROPISTERNUS SPP.	0112938
585	PELTODYTES SPP.	0111923
586	BEROSSUS SPP.	0112812
587	LACCOBIUS SPP.	0112858
588	SCIRTES SPP.	0113929
589	HELODIDAE SPP.	0113923
590	AESHINIDAE SPP.	BAY0002
592	CALLIBAETIS SPP	0100903
593	ENGALLAGMA SPP.	BAY0097
594	CAENIS SPP.	0101478
595	OCHTERUS SPP.(NYMPH)	0103788
596	TABANUS SPP.	0131527
598	PROCLADIUS SPP.	0128277
599	PENTANEURA SPP.	0128215
600	CERATOPOGONIDAE SPP.	0127076
601	ERIOPTERA SPP.	0120503
602	TIPULIDAE SPP. (PUPAE)	0118840
603	PSILOTRETA SPP. (PUPAE)	0116497
604	SIGARA SPP.	0103369
605	NOTONECTA SPP.	0103558
606	RANATRA SPP.	0103748
607	PELOCARIS FEMORATUS	0103667
608	PSEUDOSUCCINEA COLUMELLA	0076529
609	NEOPLANORBIS SPP.	0076649
610	MYTILOPSIS SPP.	0081333
611	PALAEOMONETES PUGIO	0096390
612	DERO SPP.	0068898

SPEC_CODE	SOURCE_LBL	TSN
613	ILYODRILUS TEMPLETONI	0068662
614	TANYPUS SPP.	0128324
615	PSECTROTANYPUS SPP.	0128048
616	HEXAGENIA SPP.	0101537
617	CIRROPHORUS SPP.	0066708
618	ALPHEUS HETEROCHAEELIS	0096602
619	AMPITHOIDAE SPP.	0093408
620	CERATONEREIS IRRITABILIS	0065874
621	SEMELE PURPURASCENS	0081295
622	CHIRONOMIDAE SPP. PUPAE	0127917
623	AEGATHOA MEDIALIS?	0092440
624	SPHAERIIDAE SPP.	0112737
625	POLYONYX GIBBESI	0098083
626	ORTHOCLADIINAE SPP.	0128457
627	TUBIFICIDAE SPP.	0068585
628	CARAZZIELLA HOBSONAE	0067003
629	CHIRIDOTEA ALMYRA	0092638
630	BARNEA TRUNCATA	0081798
631	PARANAIS FRICI	0068865
632	PAGURUS PUBESCENS	0097811
633	CRASSISPIRA OSTREARUM	0074901
634	PROCERAEA CORNUTA	0065591
635	MODIOLUS AMERICANUS	0079506
636	ODONATA SPP.	0101593
637	CIRROPHOROUS LYRIFORMIS	0066709
638	TANAIDACEA SPP.	0091061
639	PROTOHAUSTORIUS DEICHMANNAE	0094009
640	PARAHAUSTORIUS HOLMESI	0094005
641	PLATYNEREIS DUMERILII	0065950
642	LYSIANOPSIS ALBA	0094466
643	CYATHURA BURBANKI	0092150
644	GAMMARUS FASCIATUS	0093780
645	EUPOLYMNIA SPP.	0067906
646	BUSYCON CANALICULATUM	0074097
647	AEDICIRA ALBATROSSAE	0066663
648	HYDRPSYCHE SPP.	0115453
649	MALMGRENIELLA TAYLORI	BAY0335
650	MYTILOPSIS LEUCOPHAETA	0081335
651	MANAYUNKIA SPECIOSA	0068172
652	KURTZIELLA ASTROSTYLA	0074804
653	JASSA FALCATA	0094171
654	MICROSPPIO PIGMENTATA	0066972
655	NATARSIA SPP.	0128070
656	TELLINIDAE SPP.	0081032
657	EPOICOCLADIUS SPP.	0128682
658	ANCISTROSYLLIS COMMENSALIS	0065548
659	PARANAIS LITORALIS	0068863

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SPEC_CODE	SOURCE_LBL	TSN
660	TANYSTYLUM ORBICULARE	0083618
661	IDOTEIDAE SPP.	0092564
662	DROMOGOMPHUS ARMATUS	0101731
663	OPTIOSERVUS SPP.	0114177
664	EDWARDSIA ELEGANS	0052489
665	NEOTEA PONDEROSA	BAY0295
666	IDUNELLA BOWENAE	0094208
667	SERPULA SPP.	0068243
668	PAGURUS ANNULIPES	0097804
669	PTILANTHURA TRICARINA	0092156
670	FLABELLIGERIDAE SPP.	0067224
671	CALLIANASSIDAE SPP.	0097732
672	GLYCERA SPHYRABRANCHA	0066118
673	SEILA ADAMSI	0072111
674	PYRAMIDELLA SPP.	0075947
675	LOIMIA VIRIDIS	0068016
676	AUTOLYTUS PROLIFER	0065595
677	EUNICEA SPP.	0052183
678	SCLERODACTYLA BRIAREUS	0158297
679	MELANELLA SPP.	0072440
680	GLYCERA SP. A	0066102
681	STEGOPHRYXUS HYPTIUS	0093152
682	ACANTHOHAUSTORIUS SPINOSUS	0093983
683	SPIO SPP.	0066864
684	LOIMIA SPP.	0068014
685	ANOPLODACTYLUS PETIOLATUS	0083646
686	PIROMIS ROBERTI	0067272
687	SOLENI VIRIDIS	0081017
688	PISANIA TINCTA	0073844
689	PYRAMIDELLA CREMULATA	0075950
690	LYSILLA SPP.	0068002
691	ABRA AEQUALIS	0081302
692	POLYDORA QUADRILOBATA	0066798
693	MODIOLUS MODIOLUS	0079501
694	UNCINAIIS UNCINATA	0068990
695	NANOCLADIUS SPP.	0128844
696	TUBIFEX SPP.	0068622
697	CAULLERIELLA SP. A	0067126
698	OLIGOCHAETA SP. M	0068422
699	PARAHAUSTORIOUS LONGIMERUS	0094006
700	IDOTEA SPP.	0092588
701	LEPIDOPA WEBSTERI	0098104
702	STREPTOSYLLIS ARENAE	0065818
703	STREPTOSPINIGERA HETEROSETA	BAY0296
704	MARGINELLA SPP.	0074384
705	LYSIANASSIDAE SPP.	0094224
706	ODIOSTOMIA IMPRESSA	0075990

SPEC_CODE	SOURCE_LBL	TSN
707	CUMINGIA TELLINOIDES	0081317
708	BOREOTROPHON SPP.	0073330
709	CERITHIIDAE SPP.	0071975
710	COSSURA SOYERI	0067210
711	DONAX SPP.	0081245
712	NUCULANA SPP.	0079188
713	STREPTOSYLLIS ARENAE	0065818
714	CHIRIDOTEA ARENICOLA	0092639
715	MANCOCUMA STELLIFERA	0091030
716	LEPIDACTYLUS DYTISCUS	0093998
717	KIEFFERULUS SPP.	0129522
718	PRIONOSPION HETEROBRANCHIA	0066843
719	AMPITHOE LONGIMANA	0093423
720	AMPITHOE VALIDA	0093424
721	SIALIS SPP.	0115002
722	PALAEMONETES VULGARIS	0096391
723	HESIONIDAE SPP.	0065467
724	AMEROCULODES SPECIES COMPLEX	0656551
725	SYLLIDES FLORIDANUS	0065815
726	PROTOHAUSTORIUS WIGLEYI	0094010
727	TRAVISIA SPP.	0067364
728	ACANTHOHAUSTORIUS INTERMEDIUS	0093981
729	PSEUDOHAUSTORIUS CAROLINIENSIS	0094015
730	UNIONIDAE SPP.	0079913
731	POLYMESODA CAROLINIANA	0081383
732	BRATISLAVIA UNIDENTATA	0069023
733	SPHAEROSYLLIS TAYLORI	0065747
734	DERO DIGITATA	0068904
735	TASSERKIDRILUS HARMANI	0068806
736	PAGURUS ACADIANUS	0097803
737	LEUCOTHOIDAE SPP.	0094196
738	DIPTERA SPP.	0118831
739	TEREDO NAVALIS	0081862
740	BRACHYURA	0098276
741	SPHAEROMA QUADRIDENTATUM	0092339
742	SPHAEROSYLLIS TAYLORI	0065747
743	CYDADUSA COMPTA	0093430
744	AUTOMATE EVERMANNI	0096679
745	ISOPODA SPP	0092120
746	LIMNODRILUS SPP.	0068638
747	GOMPHIDAE SPP.	0101664
748	STICTOCHIRONOMUS SPP.	0129785
749	MONOPYLEPHORUS RUBRONIVEUS	0068728
750	ASELLUS SPP.	0092658
751	ANCYLIDAE SPP.	0076568
752	SYNIDOTEA SPP.	0092564

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SPEC_CODE	SOURCE_LBL	TSN
753	CYRNELLUS FRATERNUS	0117092
754	SYLLIDES SPP.	0065803
755	BIVALVIA SP. B	0079118
756	STYLARIA LACUSTRIS	0068872
757	TEREBRA DISLOCATA	0075409
758	PLEUROCERA SPP.	0071549
759	HARGERIA RAPAX	0092068
760	MARSHALLORA NIGROCINCTA	0567862
761	NEOHAUSTORIUS SCHMITZI	0094002
762	AULODRILUS LIMNOBIUS	0068682
763	KURTZIELLA CERINA	0074806
764	SIMULIUM SPP.	0126774
765	COLUMBELLIDAE SPP.	0073532
766	HIPPOLYTE PLEURACANTHUS	0096750
767	ODONTOSYLLIS LONGISETA	0065791
768	HAUCHIELLA SP.	0068034
769	PINNIXA LUNZI	0099000
770	PALAEMONIDAE SPP.	0096213
771	BITTIOLUM ALTERNATUM	0567282
772	TRACHYPENAEUS CONSTRICTUS	0095648

SPEC_CODE	SOURCE_LBL	TSN
773	ELMIDAE SPP.	0114093
774	ERICHSONELLA ATTENUATA	0092618
775	LYMNAEA SPP	0076484
776	PENAEIDAE SPP	0095602
777	METAMYSIDOPSIS MUNDA	0090700
778	TANYTARSUS SPP.	0129978
779	GRANDIDIERELLA SPP.	0093641
780	EXOgone SPP.	0065721
781	PARANDALIA TRICUSPIS	BAY0451
782	PARACHIRONOMUS SPP.	0129564
783	STEPHENSONIANA SPP.	0069017
784	CLADOTANYTARSUS SPP.	0129873
785	CIPANGOPALUDINA CHINENSIS	0070329
786	AMYGDALUM PAPHIUM	0079529
787	LABRUNDINIA SPP.	0128173
788	GITANOPSIS SPP.	0093397
999	NO ORGANISMS FOUND	BAY0291

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VARIABLES NAMES AND DESCRIPTIONS FOR DATA FILES
Structures for data files on <http://www.chesapeakebay.net>

> BENTHIC SURVEY EVENT DATA

Field Name	Type	Width	Descriptions
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_DATE	Text	8	Sampling Date (MM/DD/YYYY)
LATITUDE	Number	8.5	Latitude (Decimal Degrees- NAD83)
LONGITUDE	Number	8.5	Longitude (Decimal Degrees-NAD83)
R_DATE	Text	8	Data Version Date (MM/DD/YYYY)
SITETYPE	Text	4	Sampling Site Type
STATION	Text	15	Sampling Station
TOTAL_DEPTH	Number	8.1	Total Station Depth (Meters)
SAMPLE_TIME	Text	5	Sample Collection Time (HHMM)

> BENTHIC WATER QUALITY SURVEYS

Field Name	Type	Width	Descriptions
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	2	Sample Collection Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Text	8	Sampling Date (MM/DD/YYYY)
SAMPLE_DEPTH	Number	8.1	Sampling Depth
SAMPLE_NUMBER	Number	8.0	Sample Number
REPORTED_PARAMETER	Text	15	Sampling Parameter
REPORTED_VALUE	Number	8.4	Sampling Parameter Value
REPORTED_UNITS	Text	15	Reporting Units of Value
WQ_METHOD	Text	8	Chesapeake Bay Program Parameter Analysis Code
R_DATE	Text	8	Data Version Date (MM/DD/YYYY)

>BENTHIC SEDIMENT SURVEY DATA

Field Name	Type	Width	Descriptions
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	2	Sample Collection Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Text	8	Sampling Date (MM/DD/YYYY)
TOTAL_DEPTH	Number	8.1	Total Station Depth
SAMPLE_NUMBER	Number	8.0	Sample Number
REPORTED_PARAMETER	Text	15	Sampling Parameter
REPORTED_VALUE	Number	8.4	Sampling Parameter Value
REPORTED_UNITS	Text	15	Reporting Units of Value
R_DATE	Text	8	Data Version Date (MM/DD/YYYY)

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> BENTHIC SURVEY BIOTA EVENT DATA

Field Name	Type	Width	Description
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_DATE	Date/Time	8	Sampling Date (MM/DD/YYYY)
LATITUDE	Number	8.5	Latitude (Decimal Degrees-NAD83)
LONGITUDE	Number	8.5	Longitude (Decimal Degrees-NAD83)
PENETR	Number	8.4	Sampling Gear Penetration Depth (cm)
R_DATE	Date/Time	8	Data Version Date (MM/DD/YYYY)
SAMPLE_NUMBER	Number	8.0	Sample Number
SITE_TYPE	Text	10	Sampling Site Type
STATION	Text	15	Sampling Station
TOTAL_DEPTH	Number	8.1	Total Station Depth (Meters)
SAMPLE_TIME	Date/Time	8	Sample Collection Time (HHMM)

>BENTHIC TAXONOMIC SURVEY DATA

Field Name	Type	Width	Descriptions
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	7	Sample Collection Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (MM/DD/YYYY)
SAMPLE_NUMBER	Number	8.0	Sample Number
GMETHOD	Text	3	Chesapeake Bay Program Gear Method Code
CONVFACT	Number	8.2	Conversion Factor (# Individual/Sample to # Individuals/Meter Squared)
NET_MESH	Number	8.2	Screen Mesh Width (Millimeters)
TSN	Text	7	ITIS Taxon Serial Number
LIFE_STAGE	Text	45	Species Life Stage
LATIN_NAME	Text	45	Species Latin Name
REPORTING_VALUE			
	Number	12	Total Count of Given Taxa in Sample
REPORTING_UNITS	Text	15	Reporting Units of Value
NODCCODE	Text	12	National Oceanographic Data Center Species Code
SPEC_CODE	Text	14	Agency Species Code
SER_NUM	Text	12	Sample Serial Number
R_DATE	Date/Time	8	Data Version Date (MM/DD/YYYY)

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>BENTHIC BIOMASS SURVEY DATA

Field Name	Type	Width	Descriptions
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_TYPE	Text	7	Sample Collection Type
STATION	Text	15	Sampling Station
SAMPLE_DATE	Date/Time	8	Sampling Date (MM/DD/YYYY)
SAMPLE_NUMBER	Number	8.0	Sample Number
GMETHOD	Text	3	Chesapeake Bay Program Gear Method Code
CONVFACT	Number	8.2	Conversion Factor (# Individual/Sample to # Individuals/Meter Squared)
NET_MESH	Number	8.2	Screen Mesh Width (Millimeter)
TSN	Text	7	ITIS Taxon Serial Number
LIFESTAGE	Text	45	Organisms Life Stage
LATIN_NAME	Text	45	Species Latin Name
VALUE_TYPE	Text	10	Actual or Estimated Parameter Value
REPORTING_VALUE	Number	8.4	Taxon Biomass
REPORTING_UNITS	Text	15	Sampling Parameter Reporting Units
NODCCODE	Text	12	National Oceanographic Data Center Species Code
SPEC_CODE	Text	14	Agency Species Code
SER_NUM	Text	12	Agency Sample Serial Number
R_DATE	Date/Time	8	Data Version Date (MM/DD/YYYY)

>BENTHIC INDEX OF BIOTIC INTEGRITY DATA

Field Name	Type	Width	Description
EVENT_ID	Number	8	Database Generated Event Identification Number
SOURCE	Text	6	Data Collection Agency
SAMPLE_DATE	Date/Time	8	Sampling Date (MM/DD/YYYY)
LATITUDE	Number	8.5	Latitude (Decimal Degrees-NAD83)
LONGITUDE	Number	8.5	Longitude (Decimal Degrees-NAD83)
R_DATE	Date/Time	8	Data Version Date (MM/DD/YYYY)
SITE_TYPE	Text	10	Sampling Site Type
STATION	Text	15	Sampling Station
TOTAL_DEPTH	Number	8.1	Total Station Depth (Meters)
SAMPLE_TIME	Date/Time	8	Sample Collection Time (HHMM)
IBI_PARAMETER	Text	15	IBI Parameter
IBI_VALUE	Number	8.4	Parameter Value
IBI_SCORE	Number	8.0	Value Reporting Units

> The following fields may also appear in a downloaded data set:

Name	Type	Width	Description
BASIN	Text	20	Chesapeake Bay Basin Designation
HUC8	Text	8	USGS Eight Digit Hydrologic Unit Code
CATALOGING_UNIT_DESCRIPTION	Text	50	USGS Cataloging Unit Code Description
FIPS	Text	5	Federal Information Processing Code
STATE	Text	3	Federal Information Processing Code State Designation
COUNTY_CITY	Text	30	Federal Information Processing Code City/County Designation
CBSEG_2003	Text	6	2003 Chesapeake Bay Segment Designation
CBSEG_2003_DESCRIPTION	Text	50	2003 Chesapeake Bay Segment Designation Description

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VARIABLE NAMES AND DESCRIPTIONS FOR SPECIES KEY

These tables cross references investigator species codes and spellings with current Integrated Taxonomic Information System (ITIS) and National Oceanographic Data Center taxonomic codes and spellings. Web address: <http://www.chesapeakebay.net/>

Name	Type	Width	Description
SOURCE	Text	8	Data Provider Identifier
SPECCODE	Text	14	Data provider Species Code
SPEC_LBL	Text	45	SOURCE Species Latin Name
LBL	Text	45	ITIS Latin Name
NODC_LBL	Text	45	National Oceanographic Data Center Latin Name
NODCCODE	Text	12	National Oceanographic Data Center Species Code
TSN	Text	7	ITIS Taxon Serial Number
R_DATE	Date/Time	8	Version Date of Data (YYYYMMDD)

REFERENCE CODES IN DATA FILES AND TAXONOMIC KEY

See 2012 Users Guide to Chesapeake Bay Program Biological Data for full listing.

>SOURCE: Data Collection Agency
ODU-Old Dominion University

>A/EAFDW: Actual or Estimated Ash Free Dry Weight
A - Actual Determination of Ash Free Dry Weight

>COLTYPE: Collection Type
D - Discrete Sample

>GMETHOD- Sampling Gear Codes
20-Box Corer Grab
97-Young Modified Box Core
83- Double Petite Ponar Grab

>INS_CODE- Sampling Instrument Codes
YSI58- Yellow Springs Instruments, Model 58 Oxygen Meter
YSI33- Yellow Springs Instruments, Model 33 CTD

>REP_TYPE: Replicate Type
FLD - Field Replicate

>STATION- Station Names-Please See Station Names and Positions for details on name designation.

>NODCCODE: National Oceanographic Data Center Species Code
NOTE: For current listing of Chesapeake Bay species and their codes, see 1998 Chesapeake Bay Basin Species List

>SITETYPE- Sampling Station Site Type
R- Randomly Selected Site within a habitat area

>STRATA - Sampling Station Tributary or Mainstem Code
RAP- Rappahanock River
JAM- James River
YRK- York River
ELZ- Elizabeth River
BAY- Chesapeake Bay
VACB-Virginia Coastal Bays

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>TSN: Interagency Taxonomic Identification System, Taxon Serial Numbers Note for current listing of Chesapeake Bay Program Species and their codes. Organisms without current serial numbers have ALL been assigned TSN of BAYXXXX.

>FIPS: Federal Information Processing Codes

FIPS	NAME	STATE
51001	ACCOMACK	VA
51036	CHARLES CITY	VA
51057	ESSEX	VA
51073	GLOUCESTER	VA
51087	HENRICO	VA
51093	ISLE OF WIGHT	VA
51095	JAMES CITY	VA
51097	KING AND QUEEN	VA
51099	KING GEORGE	VA
51101	KING WILLIAM	VA
51103	LANCASTER	VA
51115	MATHEWS	VA
51119	MIDDLESEX	VA
51127	NEW KENT	VA
51131	NORTHAMPTON	VA
51133	NORTHUMBERLAND	VA
51149	PRINCE GEORGE	VA
51159	RICHMOND	VA
51181	SURRY	VA
51193	WESTMORELAND	VA
51199	YORK	VA
51550	CHESAPEAKE CITY	VA
51650	HAMPTON CITY	VA
51700	NEWPORT NEWS CITY	VA
51710	NORFOLK CITY	VA
51735	POQUOSON CITY	VA
51800	SUFFOLK CITY	VA
51810	VIRGINIA BEACH CITY	VA

>HUC8: USGS Hydrologic Unit Codes

HUC8	CATALOGING_UNIT_DESCRIPTION
02080101	LOWER CHESAPEAKE BAY
02080102	GREAT WICOMICO-PIANKATANK
02080104	LOWER RAPPAHANNOCK
02080105	MATTAPONI
02080106	PAMUNKEY
02080107	YORK
02080206	LOWER JAMES
02080208	HAMPTON ROADS
02060010	CHINCOTEAGUE
02080110	EASTERN LOWER DELMARVA

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>METHOD: Chesapeake Bay Program Lab Method Code Designation
F01 Unspecified Field Method

> CBSEG_1998: Chesapeake Bay Program Monitoring Segment

CBSEG_1998	DESCRIPTION
APPTF	APPOMATTOX RIVER-TIDAL FRESH REGION
CB5MH	CHESAPEAKE BAY-MESOHALINE REGION
CB6PH	CHESAPEAKE BAY-POLYHALINE REGION
CB7PH	CHESAPEAKE BAY-POLYHALINE REGION
CB8PH	CHESAPEAKE BAY-POLYHALINE REGION
CHKOH	CHICKAHOMINY RIVER-OLIGOHALINE REGION
CHNPH	CHINCOTEAU BAY-POLYHALINE REGION
CRRMH	CORROTOMAN RIVER-MESOHALINE REGION
EBEMH	EAST BRANCH ELIZABETH RIVER-MESOHALINE REGION
ELIMH	ELIZABETH RIVER-MESOHALINE REGION
ELIPH	ELIZABETH RIVER-POLYHALINE REGION
JMSMH	JAMES RIVER-MESOHALINE REGION
JMSOH	JAMES RIVER-OLIGOHALINE REGION
JMSPH	JAMES RIVER-POLYHALINE REGION
JMSTF	JAMES RIVER-TIDAL FRESH REGION
LAFMH	LAFAYETTE RIVER-MESOHALINE REGION
LYNPH	LYNNHAVEN RIVER-POLYHALINE REGION
MOBPH	MOBJACK BAY-POLYHALINE REGION
MPNOH	MATTAPONI RIVER-OLIGOHALINE REGION
MPNTF	MATTAPONI RIVER-TIDAL FRESH REGION
PIAMH	PIANKATANK RIVER-MESOHALINE REGION
PMKOH	PAMUNKEY RIVER-OLIGOHALINE REGION
PMKTF	PAMUNKEY RIVER-TIDAL FRESH REGION
POCMH	POCOMOKE RIVER-MESOHALINE REGION
POCOH	POCOMOKE RIVER-OLIGOHALINE REGION
RPPMH	RAPPAHANNOCK RIVER-MESOHALINE REGION
RPPOH	RAPPAHANNOCK RIVER-OLIGOHALINE REGION
RPPTF	RAPPAHANNOCK RIVER-TIDAL FRESH REGION
SBEMH	SOUTH BRANCH ELIZABETH RIVER-MESOHALINE REGION
SVCPH	SOUTHERN VIRGINIA COASTAL BAYS-POLYHALINE REGION
TANMH	TANGIER SOUND-MESOHALINE REGION
WBEMH	WEST BRANCH ELIZABETH RIVER-MESOHALINE REGION
YRKMH	YORK RIVER-MESOHALINE REGION
YRKPH	YORK RIVER-POLYHALINE REGION

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>PROGRAM- Chesapeake Bay Program Monitoring Program Designation

PROGRAM	PROGRAM_DESCRIPTION
EPA\NCAS	EPA EMAP NATIONAL COASTAL ASSESSMENT PROGRAM

> PROJECT - Chesapeake Bay Program Monitoring Project Designation

PROJECT	PROJECT_DESCRIPTION
VA/EPMP	VADEQ ESTUARINE PROBABILISTIC MONITORING PROGRAM

>PARAMETER and UNIT: Measured Parameter and reporting units.

PARAMETER	UNITS
AFDW_TAX	GRAMS/SAMPLE
CLAY	PERCENT
COUNT	NUMBER/SAMPLE
DO	MG/L
SALINITY	PSU
SAND	PERCENT
SECCHI	METERS
SILT	PERCENT
SILTCLAY	PERCENT
WTEMP	DEG C

IBI_PARAMETER	DESCRIPTION
GRAND_SCORE	FIXED STATION REPLICATE AVERAGED TOTAL IBI SCORE
PCT_BIO_DP05	PERCENT TOTAL BIOMASS FOUND GREATER THAN 5 CM BELOW SEDIMENT WATER INTERFACE
PCT_CARN_OMN	PERCENT CARNIVORES AND OMNIVORES
PCT_DEPO	PERCENT DEEP DEPOSIT FEEDERS
PCT_PI_ABUND	PERCENT POLLUTION INDICATIVE SPECIES ABUNDANCE
PCT_PI_BIO	PERCENT POLLUTION INDICATIVE SPECIES BIOMASS
PCT_PI_F_ABUND	PERCENT POLLUTION INDICATIVE SPECIES ABUNDANCE-FRESH WATER
PCT_PI_F_BIO	PERCENT POLLUTION INDICATIVE SPECIES BIOMASS-FRESH WATER
PCT_PI_O_ABUND	PERCENT POLLUTION INDICATIVE SPECIES ABUNDANCE-OLIGOHALINE WATER
PCT_PI_O_BIO	PERCENT POLLUTION INDICATIVE SPECIES BIOMASS- OLIGOHALINE WATER
PCT_PS_ABUND	PERCENT POLLUTION SENSITIVE SPECIES ABUNDANCE
PCT_PS_BIO	PERCENT POLLUTION SENSITIVE SPECIES BIOMASS
PCT_PS_O_ABUND	PERCENT POLLUTION SENSITIVE SPECIES ABUNDANCE- OLIGOHALINE WATER
PCT_PS_O_BIO	PERCENT POLLUTION SENSITIVE SPECIES BIOMASS- OLIGOHALINE WATER
PCT_TANYPODINI	PERCENT TANYPODINAE TO CHIRONOMIDAE
SW	SHANNON-WEINER SPECIES DIVERSITY INDEX
TOLARANCE	POLLUTION TOLARANCE INDEX
TOT_ABUND	TOTAL SPECIES ABUNDANCE (NUMBER PER METER SQUARED)
TOT_BIOMASS	TOTAL SPECIES BIOMASS IN (GRAMS PER METER SQUARED)
TOT_TXA_DP05	SPECIES ABUNDANCE FOUND GREATER THAN 5 CM BELOW SEDIMENT WATER INTERFACE
TOTAL_SCORE	TOTAL BENTHIC IBI SCORE FOR SINGLE SAMPLE

VARIABLE NAMES - WARNING AND ERROR BOUNDS

Variable	Valid Ranges
SAND	0-100
SECCHI	0-5
SILT	0-1000

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SILTCLAY	0-100
DISOXY	0-15.0
SALINITY	0 - 32.0
WTEMP	0-35

#IMPORTANT DATA REVISIONS

06/01/2007- GMETHOD For an extensive list of Chesapeake Bay Program assigned codes please see The Guide to Living Resources Data Sets.

06/01/2007- LBL all Latin Names and spelling for names have been corrected to the Interagency Taxonomic Identification System accepted spelling.

06/01/2007- TSN all Species have been given their assigned Interagency Taxonomic Identification System accepted taxon serial number. The taxon serial number is a permanent number assigned to a species and does not change with changes in taxonomic classification.

06/01/2007- Nine new taxa added. EPA National Coastal Assessment Monitoring begins in conjunction with on going monitoring program. This includes sampling sites in the Virginia coastal bay. See station information for details.

06/01/2007- Eight new taxa added. EPA National Coastal Assessment Monitoring continues. See station information for details.

05/15/2008- Three new taxa added. EPA National Coastal Assessment Stations not co-listed stations in 2007 data. See station information for details.

#KEY WORDS (EXCLUDING VARIABLE NAMES)

Benthic Taxon Counts
Benthic Organism Densities
Benthic Monitoring
Benthic Biomass
Benthic Organism Biomass
Benthic Sediments
Sediment Characterization
Benthic Water Quality
Benthic Habitat Characterization
Benthic Sampling Event
Benthic Monitoring Surveys

**THIS IS THE END OF THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
ESTUARINE PROBABILISTIC MONITORING PROGRAM
DATA DICTIONARY**
