Maryland CORE/Trend Water Quality Monitoring Program – 2013

Metadata:

Identification_Information:
Citation:
Citation_Information:
Originator: Maryland Department of Natural Resources (MD DNR), Resource Assessment Service
Publication_Date: 20140502
Title: MD DNR 2013 CORE/Trend Water Quality Monitoring Project
Online_Linkage:
[http://www.chesapeakebay.net/data/downloads/cbp_water_quality_database_1984_present]

Description:
Abstract: These are water quality monitoring data from a long term fixed location monitoring study of non-tidal stations located in the Chesapeake Bay and Ohio River watersheds. The data are collected from fifty-six stations for a time period beginning January 1986 and extending to the present.

Purpose: Provide metadata record for ongoing Chesapeake Bay Program Activity.

Supplemental_Information:
Two reports contain information that should be considered when CORE/Trend data are used for data analysis. The reports are named: DAITS 043: Comparability of parameter estimates from whole water and filtered samples for MD Department of Health and Mental Hygiene data (June 2006, revised April 2009) and DAITS 046: Comparison of chlorophyll and pheophytin analyzed at DHMH and CBL (May 2009). Copies of the reports may be downloaded. [http://www.chesapeakebay.net/documents/Completed_DAITS_as_of_9-21-10.pdf].

Data users who desire very detailed information about Water Quality Monitoring data definition, sampling procedures and data processing are encouraged to refer to two documents listed below. The documents may be obtained from The Chesapeake Bay Program Office.

Water Quality Database - Database Design and Data Dictionary, Prepared For: U.S. Environmental Protection Agency, Region III, Chesapeake Bay Program Office, January 2004. [http://archive.chesapeakebay.net/pubs/cbwqdb2004_RB.PDF].

The most current version of the Water Quality Data Dictionary - Online may be found at: [http://archive.chesapeakebay.net/data/data_dict.cfm?DB_CODE=CBP_WQDB].

The Quality Assurance Project Plan for the Maryland Department of Natural Resources Chesapeake Bay Water Quality Monitoring Program - Chemical and Physical Properties Component for the period July 1, 2013 - June 30, 2014 (DRAFT I)

[http://mddnr.chesapeakebay.net/eyesonthebay/documents/MdDNR_MT2013QAPPv1.4.pdf]

Guide to Using Chesapeake Bay Program Water Quality Monitoring Data, EPA 903-R-12-001, February 2012, CBP/TRS 304-12
[http://www.chesapeakebay.net/documents/3676/wq_data_userguide_10feb12_mod.pdf]

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20130107
Ending_Date: 20131217
Currentness_Reference: Ground Condition
Status:
Progress: In Work
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -79.4938
East_Bounding_Coordinate: -75.0405
North_Bounding_Coordinate: 39.7425
South_Bounding_Coordinate: 37.8713
Keywords:
Theme:
Theme_Keyword_Thesaurus: User Defined Keyword List
Theme_Keyword: Chesapeake Bay Program
Theme_Keyword: Monitoring
Theme_Keyword: Nitrogen
Theme_Keyword: Phosphorous
Theme_Keyword: Rivers
Theme_Keyword: Water quality
Theme_Keyword: Watershed

Place:
Place_Keyword_Thesaurus: User Defined Keyword List
Place_Keyword: Chesapeake Bay
Place_Keyword: Hydrologic Unit
Place_Keyword: Major Watershed/Basin
Place_Keyword: Maryland (MD)
Place_Keyword: Subbasin
Place_Keyword: Tributary
Temporal:
Temporal_Keyword_Thesaurus: Global Change Master Directory Science Keywords

Temporal_Keyword: 2013
Access_Constraints: NONE
Use_Constraints: Use At Your Own Risk

Point_of_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: William D. Romano
Contact_Position: Natural Resources Biologist
Contact_Address:
Address_Type: Mailing and physical
Address: 580 Taylor Avenue, D-2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Contact_Voice_Telephone: 410 260 8630
Contact_Electronic_Mail_Address: bill.romano_no_spam_@maryland.gov [remove _no_spam_ for valid email address]

Browse_Graphic:
Browse_Graphic_File_Name:
[http://mddnr.chesapeakebay.net/eyesonthebay/documents/metadata/MdDNR_2013_CORE_TrendStns.pdf]
Browse_Graphic_File_Description: Fifty-six Maryland Department of Natural Resources CORE/Trend water quality monitoring stations.
Browse_Graphic_File_Type: PDF
Data_Set_Credit:
Survey and calibration data were collected by MD DNR Resource Assessment Service (RAS) Annapolis Field Office staff.

The Maryland Department of Mental Health and Mental Hygiene (DHMH) analyzed samples for most of the CORE Trend sites.

The Nutrient Analytical Services Laboratory (NASL) at the Chesapeake Biological Laboratory (University of Maryland) analyzed samples for stations: PIS0033, TF1.0, and XGG8251.

The project was made possible with funding provided by the State of Maryland and the United States Environmental Protection Agency Chesapeake Bay Program.

Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report:
QUALITY ASSURANCE/QUALITY CONTROL
Maryland Department of Natural Resources followed specific procedures to ensure that the Tributary component of the Chesapeake Bay Water Quality Monitoring Program design was

properly implemented and managed with sufficient accuracy, precision and detection limits. Accuracy (closeness to the true value) of collected data was controlled and assured by proper use, calibration and maintenance of both field and laboratory equipment for the measurement of physical and chemical parameters.

The procedures to control and assure the accuracy of field measurements involved the calibration of field instruments, the verification of calibrations, and equipment maintenance. Most of the details of how data acquired with YSI sondes and Hydrolab sondes were quality assured and quality controlled are described in the process description elements in the Lineage portion of this metadata record.

Daily quality control checks which included the running of blanks and standards were used to control and assure laboratory accuracy.

Accuracy of Chesapeake Biological Laboratory, Nutrient Analytical Services Laboratory (CBL NASL) and Maryland Department of Health and Mental Hygiene (DHMH) results was also assessed through DNR's participation in the Chesapeake Bay Coordinated Split Sample Program (CSSP) a split sampling program in which five laboratories involved in Chesapeake Bay monitoring analyze the coordinated split samples. CSSP was established in June 1989 to establish a measure of comparability between sampling and analytical operations for water quality monitoring throughout the Chesapeake Bay and its tributaries. DNR followed the protocols in the Chesapeake Bay Coordinated Split Sample Program Implementation Guidelines (EPA 1991) and its revisions. Split samples were collected quarterly. Results were analyzed by appropriate statistical methods to determine if results differed significantly among labs. If a difference occurred, discussions began regarding techniques and potential methods changes to resolve discrepancies.

ADDITIONAL DETAILS

January 2013 - A comment on the station CON0005 field data sheet stated that debris was still built up against the bridge. At station LYO0044 it was noted that the temperature was well below minus10 Celsius, the lowest mark on the thermometer. The gage house at station MON0528 was not present due to bridge construction and a temporary gage had been installed on site.

February 2013 - The comment on the station CB1.0 field sheet stated: river high - dam releasing. River level high was also noted at station CAC0031. The presence of a large amount of debris was observed at station CON0005.

March 2013 - The pH 7 reading was 0.3 units high during post calibration at the following stations: CB1.0, DER0015, GUN0258, GUN0476, CAC0031, MON0020, MON0155, POT1471, POT1472, POT1595 and SEN0008. An extreme low tide level was noted at station ANA0082. Heavy road salting was done in preparation for a predicted storm a day before stations CJB0005 and RCM0111 were sampled. The center of the bridge at station CON0005 was still blocked with debris. High water levels were noted at stations: CON0180, NBP0023, NBP00103, NBP0326, NBP0461, POT2386 and

WIL0013. Very high water levels were noted at stations: LYO0004, CAS0479 and YOU0925. The water at station LYO004 was observed to be very brown. Very high flow as noted at station POT2766. Station GEO0009 was sampled during peak flow.

April 2013 - The bridge at station MON0528 was under construction. Station CON0180 filter pads were tinted green. High water was noted at stations NBP0461, NBP0534 and YOU0925. The presence of lots of dirt, ash and gravel was noted along the bridge at station CCR0001. Dust was reported in the parking lot at station NBP0103.

May 2013 - Bridge construction was occurring downstream when station MON0528 was sampled. Many fishermen were nearby in the stream when station CAS0479 was sampled. When station CCR0001 was sampled the lake had backed up into the creek due to high water levels. Construction on the bridge was noted at station YOU0925. Debris from the old bridge being torn down fell nearby when samples were collected at station NBP0461.The mine slightly downstream of station NBP0689 was being flushed. At station ANT0366, high murky water was noted and the pH was re-checked with a second meter when it was observed to be higher than normal. Murky, high water was also observed at stations CON0005 and CON0180. The center of the station CON0005 was still blocked. Very high water level was noted at station POT2386.

June 2013 - Very clear water was remarked at station BDK0000. Water was backed up from lake and running very slowly when station CCR0001 was sampled. A large amount of debris was piled up against the bridge at station NBP0023. The station NBP0326 temperature measurement was taken from the guardrail. Removal of the old bridge at station was complete when NBP0461 samples were collected from the gravel extension. Orange acid mine drainage precipitate was noted in the water at station GEO0009. A fisherman was under the bridge at station LYO0004.The parking lot at station NBP0534 was dusty due to trucks. Brown water was noted at station ANT0203. High water level and murky water were noted at station CON0180. Muddy waters and over-bank stream flow were seen at stations: GWN0115, PAT0176 and PAT0285. Muddy, high water and road construction was noted at station JON0184. No discharge and high muddy flow was remarked at station PAT0285. The water was slightly murky at station POT2386. A new USGS gage was installed on the station BPC0035 bridge. High water level and muddy water were noted at stations: CAC0031, MON0020, MON0155, POT1471, POT1472, POT1595, POT1596 and SEN0008. The water at station PXT0809 was high and fast moving. Station MON0269 bridge construction continued.

July 2013 - The comment on the station GEO0009 field data sheet was: very orange water, acid mine drainage. At station NBP0461 it was observed that the gravel extension was mostly removed and that the river bed was back to normal. A man asking questions who seemed nervous about what was being tested in the water was noted at station NBP0534. At station CCR0001 there was orange precipitate, very dark water was backed up due to high lake water levels. Station MON0528 bridge construction continued.

August 2013 - Canada geese were noted nearby when station ANT0203 was sampled. Very little flow, bridge construction and lots of aquatic life were station CON0005 observations. Lots of algae, covered with acid mine drainage precipitate, was observed at station GEO0005. The

temperature measurement at station NBP0326 was taken from the guardrail. The pipe upstream of NPA0165 was not discharging. Very little flow due to the creek being backed up from high lake level was noted at station CCR0001. There was bridge construction at station MON0528.

September 2013 - At station MON0528 bridge construction continued and there was very little flow. A fisherman was under the bridge at station CAS0479.

October 2013 - The low river level was noted at stations GUN0145, JON0184 and PAT0176. Murky water was observed at station CAS0479. The flow at station WIL0013 was heavily influenced by Braddock Run waters. A fishy smell and recent flooding were noted at station CON0180.

November 2013 - The pipe was not discharging upstream of station NPA0165.

December 2013 - The water was running very high, level with the weir at station ET5.0.

Logical_Consistency_Report:

January 2013 - Station MON0155 was sampled from Pinecliff Park boat ramp.

April 2013 - Station NBP0461 samples were collected downstream from the normal location due to high water conditions.

May 2013 - Sampling of station CAS0479 was conducted from the stream bank.

June 2013 - Station NBP0461 was sampled from the gravel extension. Stations LYO0004 and CON0005 were sampled from the bank. Station NBP0534 was sampled slightly upstream.

July 2013 - Station NBP0326 samples were taken from the downstream side of the bridge.

August 2013 - Station CON0005 samples were taken from the bank.

September 2013 - Ion matrix samples were collected up stream of the bridges at stations GEO0009 and NBP0326. The WIL0013 ion matrix sample was collected upstream of the convergence of Braddock Run. The CAS0479 samples were collected from the bank. Station POT2766 was sampled just downstream from the bridge eddy at the ramp.

October 2013 - Station PAT0176 samples were collected on the right bank looking downstream. It was noted that the CAS0479 gage had been discontinued 1-Aug-2013. Station POT2766 was sampled upstream from the bridge eddy at the ramp. The WIL0013 ion matrix sample was collected upstream of Braddock Run. The GEO0009 ion matrix sample was collected upstream of the bridge at Creekside Park. Station NBP0326 samples were collected from the bank upstream of the bridge.

November 2013 - Station POT2766 was sampled upstream from the bridge eddy at the ramp. The WIL0013 ion matrix sample was collected upstream of the convergence of Braddock Run. The GEO0009 ion matrix sample was collected upstream of the bridge at Creekside Park.

Station NBP0326 samples were taken from the bank upstream of the bridge. Station XGG8251 samples were collected from Narrow Bridge.

December 2013 - The GEO0009 ion matrix sample was collected upstream of the bridge at Creekside Park. Station NBP0326 samples were taken from the bank upstream of the bridge

No other known issues during sampling conducted during February or March 2013.

Completeness_Report:
Station PMS 10 is sampled quarterly and samples were not taken in January, February, April, May, July, August, October and November.

August 2013 - The first Marcellus samples were collected at stations YOU1139 and WIL0013.

October 2013 - Stations NBP0103, POT1595 and POT2386 were not accessible due to the Federal shutdown.

December 2013 - No total depth measurement was recorded at station XGG8251.

There were no other known completeness issues during January, February, March, April, May, June, July September and November 2013.

Lineage:
Process_Step:
Process_Description:
SONDE CALIBRATION and POST-CALIBRATION

HydroLab sondes were maintained and calibrated before and after each survey in accordance with manufacturer's recommendations.

HYDROLAB PROFILE SAMPLING PROTOCOLS:

Measurements of temperature, specific conductance, dissolved oxygen and pH were obtained from YSI or Hydrolab water quality sensors immersed just below the water surface.

GRAB SAMPLING DEPTH PROTOCOLS:

Grab samples of water for laboratory analysis were collected at stations at a depth of 0.0m.
Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Sally Bowen
Contact_Position: Project Chief, Monitoring Field Office, DNR
Contact_Address:

Address_Type: mailing and physical
Address: 1919 Lincoln Drive
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Country: USA
Contact_Voice_Telephone: 410 263-3369
Contact_Electronic_Mail_Address: sally.bowen_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
CORE/Trend DHMH ECDL LABORATORY ANALYSIS

Maryland Department of Health and Mental Hygiene, Environmental Chemistry Division Laboratory, Baltimore, MD, analyzed total dissolved nitrogen, particulate nitrogen, nitrite, nitrite + nitrate, ammonium, total dissolved phosphorus, particulate phosphorus, orthophosphate, dissolved organic carbon, particulate carbon, total suspended solids, biological oxygen demand, total alkalinity and turbidity for CORE/Trendstations.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Shahla Ameli
Contact_Position: Laboratory Scientist Supervisor
Contact_Address:
Address_Type: mailing and physical
Address: 201 West Preston Street
City: Baltimore
State_or_Province: Maryland
Postal_Code: 21201
Country: USA
Contact_Voice_Telephone: 410 767 6190
Contact_Electronic_Mail_Address: shahla.ameli_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
CORE/Trend NASL LABORATORY ANALYSIS

University of Maryland's Chesapeake Biological Laboratory (CBL), Nutrient Analytical Services Laboratory (NASL), Solomons, MD, analyzed chlorophyll, sulfate and chloride for a subset of CORE/Trend stations.

NASL began performing chlorophyll analyses in the year 2009. Prior to 2009, chlorophyll analyses were performed by the Maryland Department of Health and Mental Hygiene (DHMH)

laboratory in Baltimore, MD. Sulfate analyses were performed by DHMH WMRL until March 2011, no sulfate samples were analyzed in February 2011 due to a reduction in staff. NASL began performing sulfate analyses in April 2011 and chloride analyses in May 2011.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Jerry Frank
Contact_Position: Manager Nutrient Analytical Services Laboratory
Contact_Address:
Address_Type: mailing and physical
Address: Chesapeake Biological Laboratory, Center for Environmental and Estuarine Studies, The University of Maryland System, 146 Williams St; P.O. Box 38
City: Solomons
State_or_Province: Maryland
Postal_Code: 20688
Country: USA
Contact_Voice_Telephone: 410 326-7252
Contact_Electronic_Mail_Address: frank_nospam_@umces.edu[Remove _nospam_ for valid email address]

Process_Step:
Process_Description:
VERIFICATION AND DATA MANAGEMENT:

Each month DNR Tawes Office and Field Office personnel conducted data QA/QC procedures. All of the water quality calibration "grab" sample data were plotted. Outliers and anomalous values were thoroughly researched. Staff compared unusual values to historic values from the site and values from nearby sites. Weather events were considered, event logs were reviewed and CBL, DHMH and WMRL analytical laboratory staff and DNR field staff members were consulted regarding possible legitimate causes for outlying values. In cases where values were not considered to be legitimate, they were masked from the published dataset with the approval of the field staff and the Quality Assurance Officer.

Process_Date: Unknown
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Diana Domotor
Contact_Position: Administrator II
Contact_Address:
Address_Type: Mailing
Address: 580 Taylor Avenue, D2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401

Country: USA
Contact_Voice_Telephone: 410 260 8630
Contact_Electronic_Mail_Address: diana.domotor_nospam_@maryland.gov[Remove _nospam_ for valid email address]

Spatial_Data_Organization_Information:
Indirect_Spatial_Reference: Anacostia River, Antietam Creek, Big Pipe Creek, Braddock Run, Cabin John Branch, Catoctin Creek, Chester River, Choptank River, Conococheague Creek, Deer Creek, Georges Creek, Gunpowder River, Monocacy River, North Branch Patapsco River, North Branch Potomac River, Patapsco River, Patuxent River, Piscataway Creek, Potomac River, Rock Creek, Savage River, Seneca Creek, Susquehanna River, Town Creek, Wills Creek
Direct_Spatial_Reference_Method: point
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Geographic:
Latitude_Resolution: 0.0001
Longitude_Resolution: 0.0001
Geographic_Coordinate_Units: Decimal degrees
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1983
Ellipsoid_Name: Geodetic Reference System 80
Semi-major_Axis: 6378137
Denominator_of_Flattening_Ratio: 298.257

Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
This metadata record is a description of the Maryland Department of Natural Resources CORE Trend Water Quality Monitoring Program.

The data are contained in three related entities (tables): Station_Information, Monitoring_Event_Data and Water_Quality_Data. Each table contains attributes (fields).

The entity Station_Information is comprised of the attributes: STATION, DESCRIPTION, WATER_BODY, CBP_BASIN, TS_BASIN, BASIN, CBSEG_2003, CBSEG_2003_DESCRIPTION, HUC8, CATALOGING_UNIT_DESCRIPTION, HUC11, WATERSHED, FIPS, STATE, COUNTY/CITY, FALL_LINE, LATITUDE, LONGITUDE, LL_DATUM, UTM_X and UTM_Y

The entity Monitoring_Event_Data is comprised of the attributes: EVENT_ID, SOURCE, AGENCY, PROGRAM, PROJECT, STATION, EVENT_START_DATE, EVENT_START_TIME, CRUISE, TOTAL_DEPTH, UPPER_PYCNOCLINE, LOWER_PYCNOCLINE, AIR_TEMP, WIND_SPEED, WIND_DIRECTION, PRECIP_TYPE, TIDE_STAGE, WAVE_HEIGHT, CLOUD_COVER, GAGE_HEIGHT, PRESSURE, FLOW_STAGE, DETAILS and WATER_BODY.

The entity Water_Quality_Data is comprised of the attributes: EVENT_ID, SOURCE, PROJECT, STATION, SAMPLE_DATE, SAMPLE_TIME, DEPTH, LAYER, SAMPLE_TYPE, SAMPLE_ID, PARAMETER, QUALIFIER, VALUE, UNIT, METHOD, LAB, PROBLEM, DETAILS, TOTAL_DEPTH, UPPER_PYCNOCLINE, LOWER_PYCNOCLINE, LAT, and LONG.

Entity_and_Attribute_Detail_Citation:

Water Quality Database - Database Design and Data Dictionary, Prepared For: U.S. Environmental Protection Agency, Region III, Chesapeake Bay Program Office, January 2004. [http://archive.chesapeakebay.net/pubs/cbwqdb2004_RB.PDF].

The most current version of the Water Quality Data Dictionary - Online may be found at: [http://archive.chesapeakebay.net/data/data_dict.cfm?DB_CODE=CBP_WQDB].

Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Michael Mallonee
Contact_Position: Water Quality Database Manager
Contact_Address:
Address_Type: mailing and physical
Address: 410 Severn Avenue, Suite 109
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21403
Country: USA
Contact_Voice_Telephone: 800-968-5785
Contact_Electronic_Mail_Address: mmallone@_no_spam_chesapeakebay.net[Remove _nospam_ for valid email address]

Resource_Description: Downloadable data
Distribution_Liability: None of the Chesapeake Bay Program partners nor any of their employees, contractors, or subcontractors make any warranty, expressed or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or data contained within the web site. Reference to any specific commercial products, processes, or services or the use of any trade, firm, or corporation name is for the information and convenience of the public and does not constitute endorsement, recommendation or favoring by the Chesapeake Bay Program partners.
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Format_Name: ASCII Text File
Format_Information_Content: Station Information data, Monitoring Event data, and Water Quality data
File_Decompression_Technique: No compression applied

Transfer_Size: 2.8
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name:
[http://www.chesapeakebay.net/data/downloads/cbp_water_quality_database_1984_present]
Access_Instructions: Data are available through the Chesapeake Bay Programs CIMS data hub. Select Water Quality Database (1984-Present). Access the data by following web site (see network resource name) instructions.
Fees: None

Metadata_Reference_Information:
Metadata_Date: 20140604
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Ben Cole
Contact_Position: Natural Resources Biologist
Contact_Address:
Address_Type: mailing and physical
Address: 580 Taylor Avenue, D-2
City: Annapolis
State_or_Province: Maryland
Postal_Code: 21401
Country: USA
Contact_Voice_Telephone: 410 260 8630
Contact_Electronic_Mail_Address: benjamin.cole_no_spam_@maryland.gov[remove _no_spam_ for valid email address]
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998