

Identification_Information:

Citation:

Citation_Information:

Originator: Delaware Geological Survey, University of Delaware

Publication_Date: 2005

Title: Normwt: DGS Digital Product 05-04 New Castle County

Geospatial_Data_Presentation_Form: raster digital data

Series_Information:

Publication_Information:

Publisher: Delaware Geological Survey, University of Delaware

Publication_Place: Newark, Delaware

Online_Linkage: <http://www.dgs.udel.edu/data>

Description:

Abstract:

This digital product contains gridded estimates of water-table (wt) elevation under normal conditions for New Castle County, Delaware. Files containing the point data used to create the grids are also included. This work is the final component of a larger effort to provide estimates of water-table elevations and depths to water for the Coastal Plain portion of Delaware. Mapping was supported by the Delaware Department of Natural Resources and Environmental Control and the Delaware Geological Survey.

These grids were produced with the same multiple linear regression (MLR) method as Andres and Martin (2005). Briefly, this method consists of: identifying dry, normal, and wet periods from long-term observation well data (Hb14-01, Jd42-03, Mc51-01, Md22-01); estimating a minimum water table (Sepulveda, 2002) by fitting a localized polynomial surface to elevations of surface water features (e.g., streams, swamps, and marshes); and, computing a second variable in the regression from water levels observed in wells. A separate MLR equation was determined for dry, normal, and wet periods and these equations were used in ArcMap v.9 (ESRI, 2004) to estimate grids of water-table elevations and depths to water. New Castle County was divided into three regions (south, central, north). A minimum water-table surface was calculated for each of these areas and were merged together to create a single minimum water-table surface for the entire county. This grid was filtered and smoothed to eliminate edge effects that occurred at the boundaries between each of the three regions. Water-table elevation and depth to water grids for dry, normal, and wet conditions were then calculated for the county as a whole.

The grids have 30-m horizontal and 1-ft vertical resolutions. The map projection and coordinate system are Universal Transverse Mercator, Zone 18 North (UTM18) with an NAD83 Datum and units of meters. Grid values for elevations are in feet relative to the NAVD 1988 datum. Files are in ESRI, Inc., grid format.

REFERENCES CITED

Andres, A. S., and Martin, M. J., 2005, Estimation of the water-table surface for the Inland Bays watershed, Delaware: Delaware Geological Survey Report of Investigations No. 68, 20p.

ESRI, 2004, ArcMap v. 9, Redlands, California.

Sepulveda, N., 2003, A statistical estimator of the spatial distribution of the water-table altitude: Ground Water, vol. 41, p. 66-71.

Purpose: This work is part of a larger effort to provide estimates of water-table elevations and depths to water for the Coastal Plain portion of Delaware. These maps will be used in risk assessments and for environmental management decision-making.

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2005

Currentness_Reference: ground condition

Status:

Progress: Complete

Maintenance_and_Update_Frequency: As needed

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -75.792767

East_Bounding_Coordinate: -75.421964

North_Bounding_Coordinate: 39.841301

South_Bounding_Coordinate: 39.288254

Keywords:

Theme:

Theme_Keyword_Thesaurus: none

Theme_Keyword: inlandWaters

Theme_Keyword: Water Table

Theme_Keyword: groundwater

Theme_Keyword: Delaware Hydrology

Place:

Place_Keyword: Delaware

Place_Keyword: New Castle County

Place_Keyword: Arden

Place_Keyword: Ardencroft

Place_Keyword: Bellefonte

Place_Keyword: Claymont

Place_Keyword: Elsmere

Place_Keyword: Middletown

Place_Keyword: New Castle

Place_Keyword: Newark

Place_Keyword: Newport

Place_Keyword: Odessa

Place_Keyword: Townsend

Place_Keyword: Wilmington

Place_Keyword_Thesaurus: USGS GNIS

Access_Constraints: None

Use_Constraints: The Delaware Geological Survey (DGS) is constantly gathering data from multiple sources, interpreting data, and reflecting its interpretations in a variety of data formats. DGS's interpretations are conceptualized in these grids of Water-Table Elevation for New Castle County, DE. The water table is a continuous surface; however, observations of the surface exist at irregularly spaced locations. In this instance, regularly spaced grids of water-table elevations were

estimated from site-specific observational data and are the model used to represent the water-table surface. Reasonable efforts have been made by the DGS to verify that the digital data provided hereon accurately interpret the source data used in its preparation. These are estimated surfaces and they may be inappropriate for some applications. Detailed site-specific investigation may be required for evaluating individual sites. Persons wishing to apply the data in these grids to more detailed scales are encouraged to contact the DGS office for advisement. Nothing contained herein shall be deemed an expressed or implied waiver of the sovereign immunity of the State of Delaware or its duly authorized representatives, agents, or employees.

Point_of_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: Delaware Geological Survey

Contact_Person: Digital Data Coordinator

Contact_Address:

Address_Type: mailing and physical address

City: Newark

State_or_Province: Delaware

Postal_Code: 19716-7501

Country: USA

Address: Delaware Geological Survey, University of Delaware

Address: 257 Academy Street

Contact_Voice_Telephone: 302-831-2833

Contact_Facsimile_Telephone: 302-831-3579

Contact_Electronic_Mail_Address: DelGeoSurvey@udel.edu

Contact_Position: Digital Data Coordinator

Hours_of_Service: Mon - Fri; 8:00am to 4:30pm EST

Data_Set_Credit: Matthew J. Martin and A. Scott Andres

Native_Data_Set_Environment: Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 2; ESRI ArcCatalog 9.1.0.722

Data_Quality_Information:

Lineage:

Source_Information:

Positional_Accuracy:

Vertical_Positional_Accuracy:

Quantitative_Vertical_Positional_Accuracy_Assessment:

Vertical_Positional_Accuracy_Value: 0.5 foot

Vertical_Positional_Accuracy_Explanation: The raster grid cell has a 1-foot vertical resolution.

Horizontal_Positional_Accuracy:

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Explanation: 30-meter resolution based on the grid cell.

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Raster

Raster_Object_Information:

Raster_Object_Type: Grid Cell

Row_Count: 2039

Column_Count: 1048

Vertical_Count: 1

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Planar:

- Planar_Coordinate_Information:
 - Planar_Coordinate_Encoding_Method: row and column
 - Coordinate_Representation:
 - Abscissa_Resolution: 30.000000
 - Ordinate_Resolution: 30.000000
 - Planar_Distance_Units: meters
- Grid_Coordinate_System:
 - Grid_Coordinate_System_Name: Universal Transverse Mercator
 - Universal_Transverse_Mercator:
 - UTM_Zone_Number: 18
 - Transverse_Mercator:
 - Scale_Factor_at_Central_Meridian: 0.999600
 - Longitude_of_Central_Meridian: -75.000000
 - Latitude_of_Projection_Origin: 0.000000
 - False_Easting: 500000.000000
 - False_Northing: 0.000000
- Geodetic_Model:
 - Horizontal_Datum_Name: North American Datum of 1983
 - Ellipsoid_Name: Geodetic Reference System 80
 - Semi-major_Axis: 6378137.000000
 - Denominator_of_Flattening_Ratio: 298.257222
- Vertical_Coordinate_System_Definition:
 - Altitude_System_Definition:
 - Altitude_Datum_Name: North American Vertical Datum of 1988
 - Altitude_Distance_Units: feet
- Entity_and_Attribute_Information:
 - Detailed_Description:
 - Entity_Type:
 - Entity_Type_Label: normwt
 - Attribute:
 - Attribute_Label: ObjectID
 - Attribute_Definition: Internal feature number.
 - Attribute_Definition_Source: ESRI
 - Attribute_Domain_Values:
 - Unrepresentable_Domain: Sequential unique whole numbers that are automatically generated.
 - Attribute:
 - Attribute_Label: Value
 - Attribute_Definition: Water-table elevation in feet relative to North American Vertical Datum of 1988.
 - Attribute:
 - Attribute_Label: Count
 - Attribute_Definition: This refers to the total number of grid cells within the raster grid that have a particular "value" (see above).
 - Overview_Description:
- Distribution_Information:
 - Distributor:
 - Contact_Information:
 - Contact_Organization_Primary:
 - Contact_Organization: Delaware Geological Survey, University of Delaware
 - Contact_Person: Digital Data Coordinator
 - Contact_Address:

Address_Type: mailing and physical address
City: Newark
State_or_Province: Delaware
Postal_Code: 19716-7501
Country: USA
Address: Delaware Geological Survey, University of Delaware
Address: University of Delaware
Contact_Voice_Telephone: 302-831-2833
Contact_Facsimile_Telephone: 302-831-3579
Contact_Electronic_Mail_Address: DelGeoSurvey@udel.edu
Contact_Position: Digital Data Coordinator
Hours_of_Service: Mon - Fri; 8:00am to 4:30pm EST

Resource_Description: Downloadable Data

Distribution_Liability: The Delaware Geological Survey (DGS) is constantly gathering data from multiple sources, interpreting data, and reflecting its interpretations in a variety of data formats. DGS's interpretations are conceptualized in these grids of Water-Table Elevation for New Castle County, DE. The water table is a continuous surface; however, observations of the surface exist at irregularly spaced locations. In this instance, regularly spaced grids of water-table elevations were estimated from site-specific observational data and are the model used to represent the water-table surface. Reasonable efforts have been made by the DGS to verify that the digital data provided hereon accurately interpret the source data used in its preparation. These are estimated surfaces and they may be inappropriate for some applications. Detailed site-specific investigation may be required for evaluating individual sites. Persons wishing to apply the data in these grids to more detailed scales are encouraged to contact the DGS office for advisement. Nothing contained herein shall be deemed an expressed or implied waiver of the sovereign immunity of the State of Delaware or its duly authorized representatives, agents, or employees.

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Transfer_Size: 1.088

Metadata_Reference_Information:

Metadata_Date: 20101215

Metadata_Contact:

Contact_Information:

Contact_Address:

Address_Type: mailing and physical address

City: Newark

State_or_Province: Delaware

Postal_Code: 19716-7501

Country: USA

Address: Delaware Geological Survey, University of Delaware

Address: University of Delaware

Contact_Voice_Telephone: 302-831-2833

Contact_Facsimile_Telephone: 302-831-3579

Contact_Organization_Primary:

Contact_Organization: Delaware Geological Survey, University of Delaware

Contact_Person: Digital Data Coordinator

Contact_Position: Digital Data Coordinator

Contact_Electronic_Mail_Address: DelGeoSurvey@udel.edu
Hours_of_Service: Mon - Fri; 8:00am to 4:30pm EST
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial
Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile