

Identification\_Information:

Citation:

Citation\_Information:

Originator: Delaware Geological Survey, University of Delaware

Publication\_Date: 2005

Title: Dry\_dtw: 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 depth to water (dtw) under dry 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 a continuation of the Southern Delaware Water-Table Map and 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: None planned

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 Depth to Water 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

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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  
Depth\_System\_Definition:  
Depth\_Datum\_Name: Local surface  
Depth\_Resolution: 1-foot resolution  
Depth\_Distance\_Units: feet  
Entity\_and\_Attribute\_Information:  
Detailed\_Description:  
Entity\_Type:  
Entity\_Type\_Label: dry\_dtw  
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: Depth to water in feet below land surface.  
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

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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 Depth to Water 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: 1.087

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

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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