

Department of Natural Resources
Resource Assessment Service
MARYLAND GEOLOGICAL SURVEY
Richard A. Ort, Jr., Director

SELECTED GROUNDWATER LEVEL RECORDS
FROM OBSERVATION WELLS IN
QUEEN ANNE'S COUNTY, MARYLAND

Compiled by
Isabel L. Glasman



Prepared in cooperation with the
Queen Anne's County Department of Public Works

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SUMMARY

This report presents water-level data for 27 observation wells in Queen Anne's County. Water-levels are tabulated from July 2020 through June 2021. Water-level hydrographs are shown for the entire period of record at each site. Data, collected by the Maryland Geological Survey (MGS), are stored in the National Water Information System (Groundwater Site Inventory database), maintained by the U.S. Geological Survey. Current and historical groundwater data may be obtained from the U.S. Geological Survey website at <http://waterdata.usgs.gov/nwis/gw> or through an interactive map on the MGS website at http://www.mgs.md.gov/groundwater/water_level_mapper.html.

Surficial (Columbia) aquifer. Water levels were measured in two wells in the unconfined surficial aquifer (at Barclay and Grasonville). Water levels fluctuate seasonally up to approximately five feet, and tend to be very responsive to precipitation and drought. Current water levels range from 68.09 ft above sea level at Barclay (QA Cg 69) to 16.52 ft above sea level at Grasonville (QA Ec 1). Water-level trends show a continuing increase at Barclay (QA Cg 69) while remaining flat at Grasonville (QA Ec 1).

Aquia aquifer. Water levels were measured in seventeen wells in this aquifer, thirteen of which are located on Kent Island. Most wells show less than 2 feet of seasonal fluctuation, with the lower water levels recorded in late summer and higher water levels in spring. Current water levels range from 17.13 ft above sea level at Kingstown (QA Be 17) to 24.46 ft below sea level at Prospect Plantation (QA Fc 7). Recently, water levels at Centerville (QA De 27) have fluctuated by as much as 12 feet, likely as a response to regional irrigation withdrawals. Overall, long-term trends are stable to slightly increasing.

Magothy aquifer. Water levels were measured in one well in the Magothy aquifer (Natural Resources Academy in Matapeake [QA Ea 27]). The most recent water level was 20.81 ft below sea level. Water levels in this well appear have stabilized since about 2014.

Upper Patapsco aquifer. Water levels were measured in three wells completed in this aquifer. Current water levels range from about 19.34 ft below sea level at Kingstown (QA Be 16) to about 24.50 ft below sea level at QA Ef 29 (Tuckahoe State Park). Overall water levels continue to decline at a rate of approximately 1 foot per year due to regional pumping in Anne Arundel, Queen Anne's, and Talbot (Easton) counties.

Lower Patapsco aquifer. Water levels were measured in three wells completed in this aquifer. Current water levels range from about 7.64 ft below sea level at Kingstown (QA Be 15) to about 40.61 ft below sea level at Stevensville (QA Eb 182). Two of the wells, located at Kingstown (QA Be 15) and Chester (QA Eb 112), continue to decline at a rate of approximately 1 foot per year. The water level trend at Stevensville (QA Eb 182) is relatively flat; however, the well is likely affected by local withdrawals, making an assessment of trends difficult.

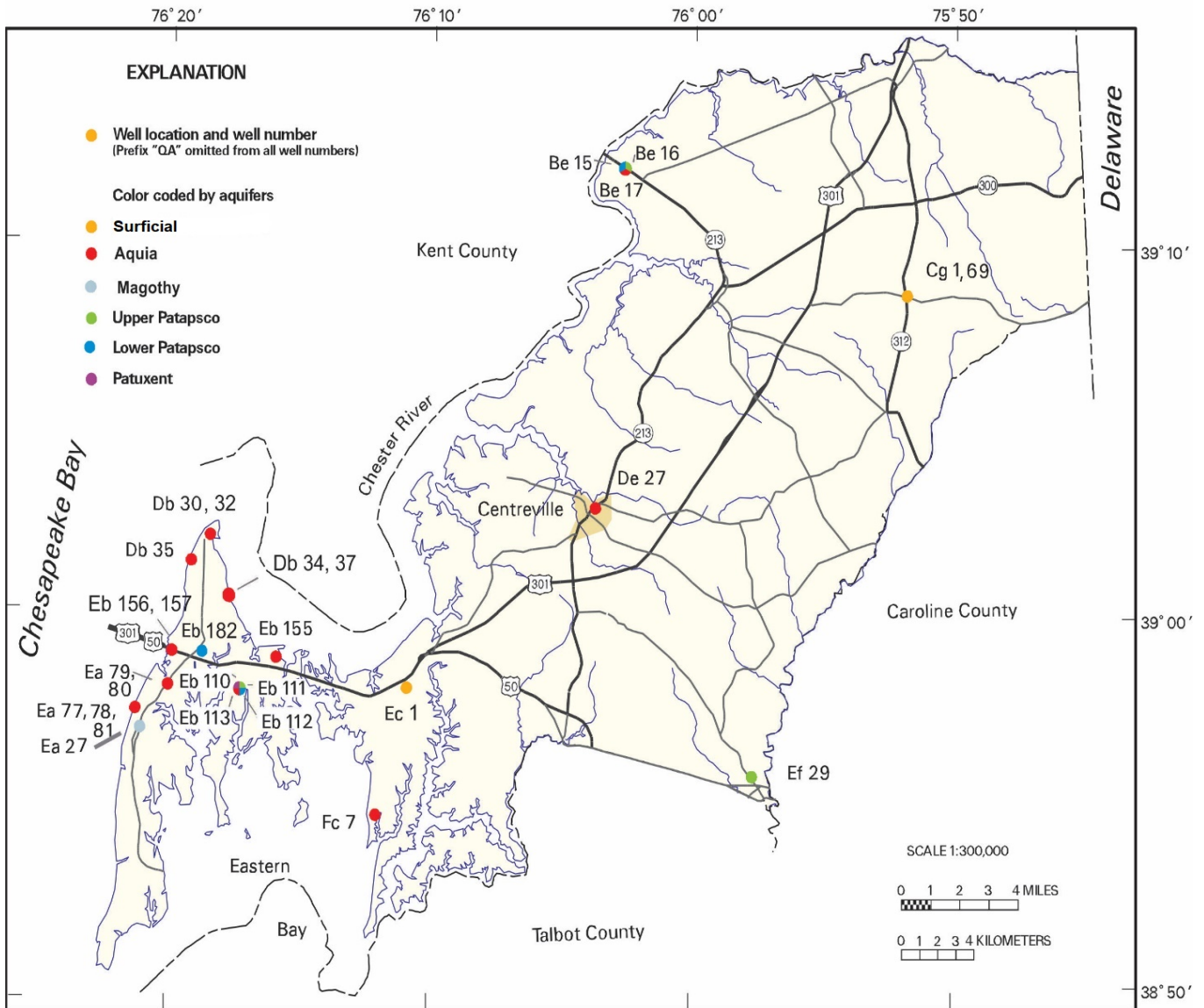
Patuxent aquifer. Water levels were measured in one well in the Patuxent aquifer at Chester (QA Eb 110). The current water level was about 14.81 ft below sea level. The steep decline starting in 2012 was a result of withdrawals from the Arnold well field in Anne Arundel County. Recently, water levels have declined about 3 feet since 2019.

GROUNDWATER MONITORING WELLS

| <u>Well Number</u> | <u>Location</u> | <u>Aquifer</u> |
|-------------------------------------|----------------------------------------|----------------|
| QA Be 15 | Kingstown | Lower Patapsco |
| QA Be 16 | Kingstown | Upper Patapsco |
| QA Be 17 | Kingstown | Aquia |
| QA Cg 69 (replaces QA Cg 1) | Barclay | Surficial |
| QA Db 30 | Love Point | Aquia |
| QA Db 32 | Love Point | Aquia |
| QA Db 34 | Cloverfields | Aquia |
| QA Db 37 | Cloverfields | Aquia |
| QA Db 35 | Maylander Farm | Aquia |
| QA De 27 | Centreville | Aquia |
| QA Ea 27 | Natural Resources Academy in Matapeake | Magothy |
| QA Ea 77 | Natural Resources Academy in Matapeake | Aquia |
| QA Ea 78 | Natural Resources Academy in Matapeake | Aquia |
| QA Ea 79 | Mowbray Park | Aquia |
| QA Ea 80 | Mowbray Park | Aquia |
| QA Ea 81 | Natural Resources Academy in Matapeake | Aquia |
| QA Eb 110 | Chester | Patuxent |
| QA Eb 111 | Chester | Upper Patapsco |
| QA Eb 112 | Chester | Lower Patapsco |
| QA Eb 113 | Chester | Aquia |
| QA Eb 155 | Piney Creek | Aquia |
| QA Eb 156 | Terrapin Beach Park, Bay Bridge | Aquia |
| QA Eb 157 | Terrapin Beach Park, Bay Bridge | Aquia |
| QA Eb 182 (resume since April 2015) | Stevensville Water Treatment | Lower Patapsco |
| QA Ec 1 | Grasonville | Surficial |
| QA Ef 29 | Tuckahoe State Park | Upper Patapsco |
| QA Fc 7 | Prospect Plantation | Aquia |

Selected Observation Wells Monitoring Ground-Water Levels in Queen Anne's County

Measured periodically by the Maryland Geological Survey / U. S. Geological Survey



Base map compiled from U. S. G. S. 1:100,000 scale Digital Line Graphs, 1985

WELL NUMBER: QA Be 15

PERMIT NUMBER: QA-70-0130

LOCATION: Kingstown, southwest side of MD Rte. 213

LAT. 39° 12' 03", LONG. 76° 02' 43"

AQUIFER: Lower Patapsco Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 1,171 ft;

Casing diameter: 4 in. to 1,161 ft;

Screen diameter: 4 in. from 1,161 ft to 1,171 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 25 ft above NGVD of 1929, from topographic map.

MEASURING POINT: Top of casing is 2.52 ft above land surface.

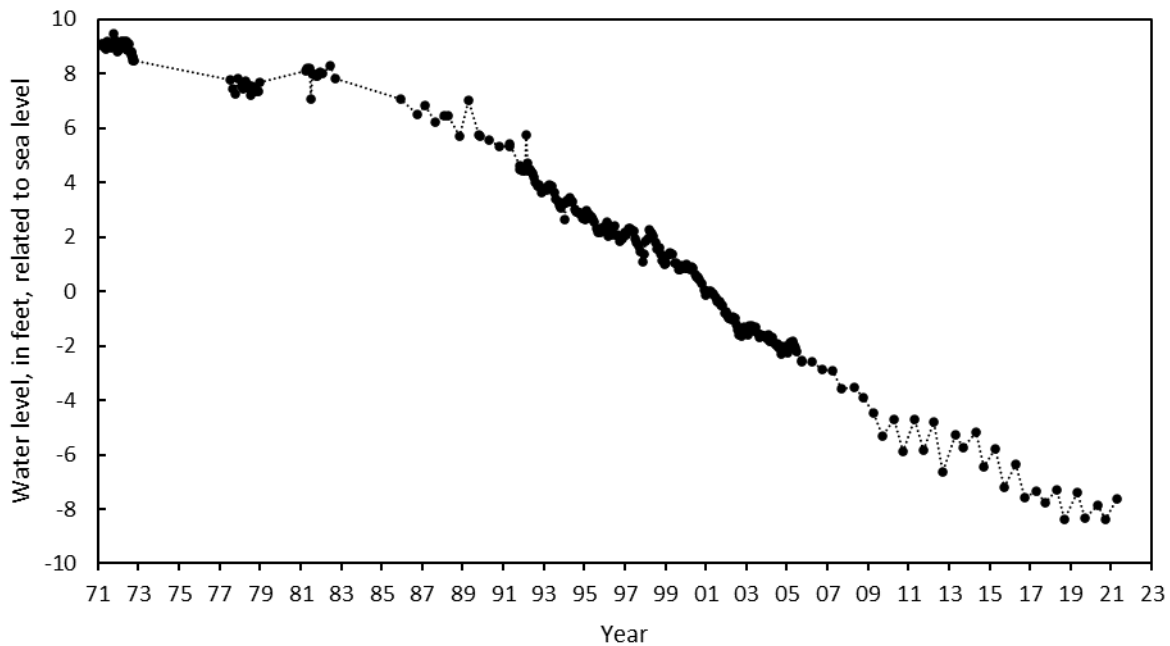
PERIOD OF RECORD: March 1971 to current year.

EXTREMES FOR RECORD: Highest water level measured, 15.52 ft below land surface, on October 10, 1971; lowest measured, 33.38 ft below land surface, on September 6, 2018.

REMARKS: Water levels are affected by regional groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 24, 2020 | 33.37 |
| Apr 22, 2021 | 32.64 |



WELL NUMBER: QA Be 16

PERMIT NUMBER: QA-70-0130

LOCATION: Kingstown, southwest side of MD Rte. 213

LAT. 39° 12' 03", LONG. 76° 02' 43"

AQUIFER: Upper Patapsco Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 495 ft;

Casing diameter: 6 in. to 475 ft;

Screen diameter: 6 in. from 475 to 495 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 25 ft above NGVD of 1929, from topographic map.

MEASURING POINT: Top of casing is 2.70 ft above land surface.

PERIOD OF RECORD: March 1971 to current year.

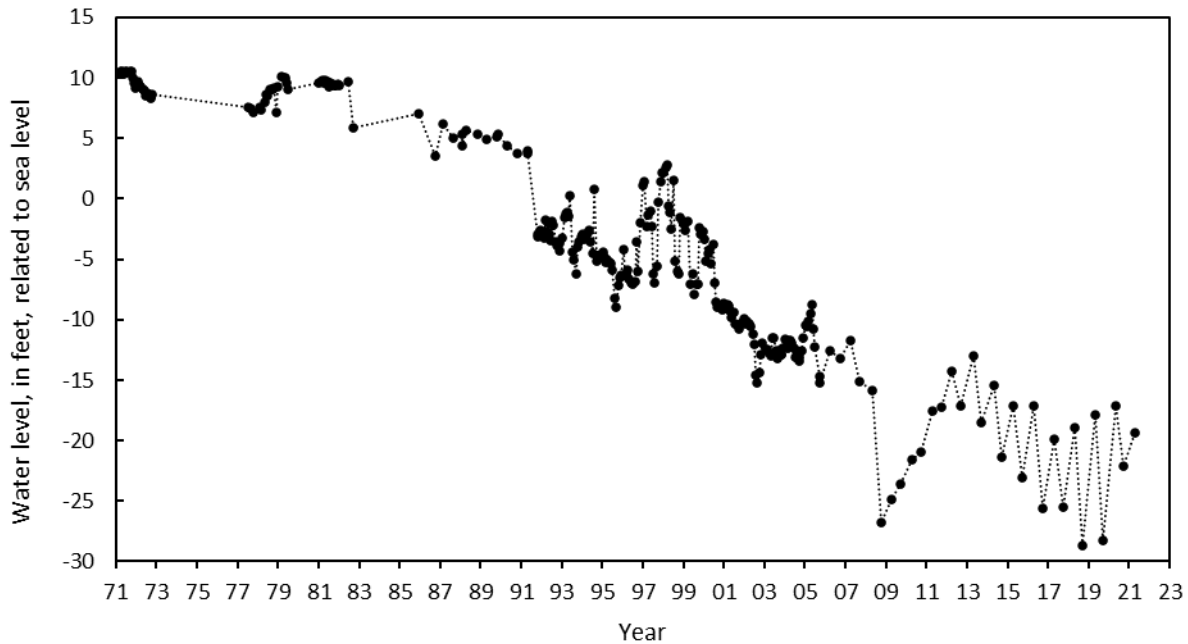
EXTREMES FOR RECORD: Highest water level measured, 14.41 ft below land surface, on

September 11, 1971; lowest measured, 53.64 ft below land surface, on September 6, 2018.

REMARKS: Water levels may be affected by nearby pumping.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 25, 2020 | 47.09 |
| Apr 22, 2021 | 44.34 |



WELL NUMBER: QA Be 17

PERMIT NUMBER: None

LOCATION: Kingstown, southwest side of MD Rte. 213

LAT. 39° 12' 03", LONG. 76° 02' 43"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 120 ft;

Casing diameter: 6 in. to 100 ft;

Screen diameter: 6 in. from 100 to 120 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 25 ft above NGVD of 1929, from topographic map.

MEASURING POINT: Top of casing is 2.50 ft above land surface.

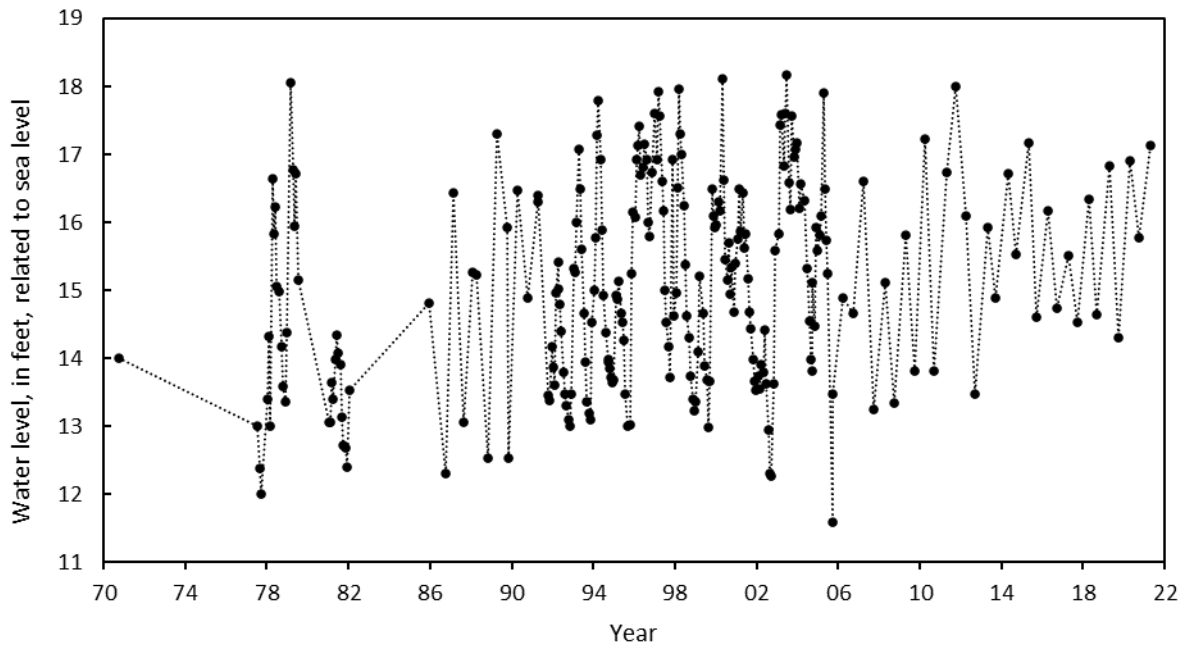
PERIOD OF RECORD: September 1970 to current year.

EXTREMES FOR RECORD: Highest water level measured, 6.83 ft below land surface, on June 24, 2003; lowest measured, 13.40 ft below land surface, on September 20, 2005.

REMARKS: Water levels may be affected by nearby pumping.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 24, 2020 | 9.22 |
| Apr 22, 2021 | 7.87 |



WELL NUMBER: QA Cg 69

PERMIT NUMBER: QA-94-2072

LOCATION: Town of Barclay, north side of MD Rte. 302

LAT. 39° 08' 39", LONG. 75° 51' 50"

AQUIFER: Columbia Aquifer of Late Miocene (?) to Pleistocene age.

WELL CHARACTERISTICS: Drilled, unused, water-table well. Reported depth is 69 ft, measured depth is 69 ft;

Casing diameter: 6 in. to 29 ft;

Screen diameter: 4 in. from 29 to 69 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 69.75 ft above NAVD of 1988, from topographic map.

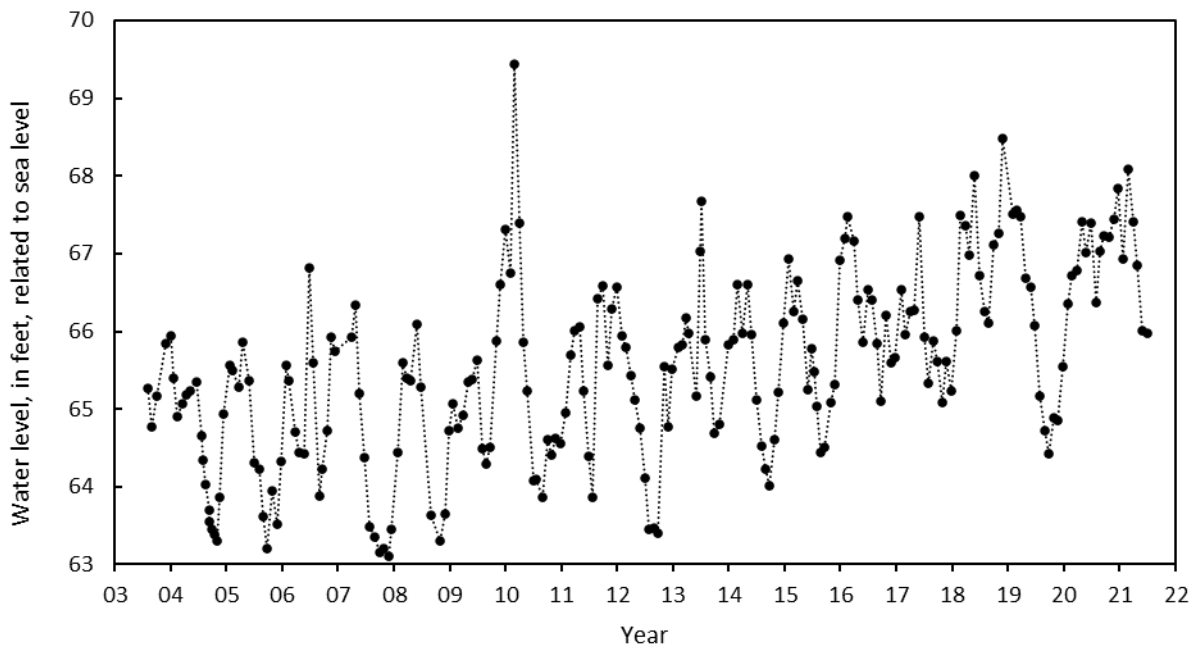
MEASURING POINT: Lip of hose connector is 1.0 ft above land surface.

PERIOD OF RECORD: August 2003 to current year.

EXTREMES FOR RECORD: Highest water level measured, 0.32 ft below land surface, on February 25, 2010; lowest measured, 6.64 ft below land surface, on November 30, 2007.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL | DATE | WATER LEVEL | DATE | WATER LEVEL |
|--------------|-------------|--------------|-------------|--------------|-------------|
| Jul 28, 2020 | 3.38 | Nov 23, 2020 | 2.30 | Mar 29, 2021 | 2.34 |
| Aug 26, 2020 | 2.72 | Dec 21, 2020 | 1.91 | Apr 26, 2021 | 2.90 |
| Sep 22, 2020 | 2.52 | Jan 25, 2021 | 2.82 | May 24, 2021 | 3.74 |
| Oct 26, 2020 | 2.54 | Feb 23, 2021 | 1.66 | Jun 28, 2021 | 3.77 |



WELL NUMBER: QA Db 30

PERMIT NUMBER: QA-81-0473

LOCATION: Love Point, north side of Pier Ave., Kent Island

LAT. 39° 02' 01", LONG. 76° 18' 27"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 220 ft;

Casing diameter: 4 in. to 210 ft;

Screen diameter: 4 in. from 210 to 220 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 17.80 ft above NGVD of 1929.

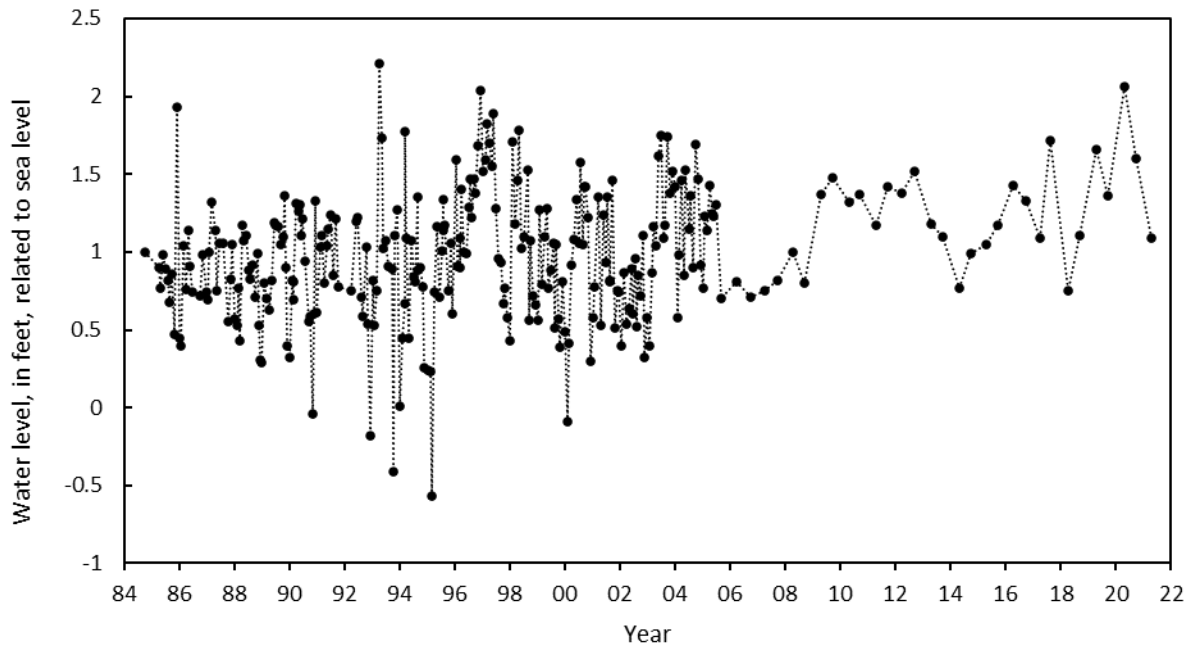
MEASURING POINT: Top of casing is 2.40 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 15.59 ft below land surface, on April 9, 1993; lowest measured, 18.37 ft below land surface, on March 3, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Oct 01, 2020 | 16.20 |
| Apr 23, 2021 | 16.71 |



WELL NUMBER: QA Db 32

PERMIT NUMBER: QA-81-0473

LOCATION: Love Point III, north side of Pier Ave., Kent Island

LAT. 39° 02' 01", LONG. 76° 18' 27"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 116 ft;

Casing diameter: 4 in. to 116 ft;

Screen diameter: 4 in. from 106 to 116 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 18.0 ft above NGVD of 1929.

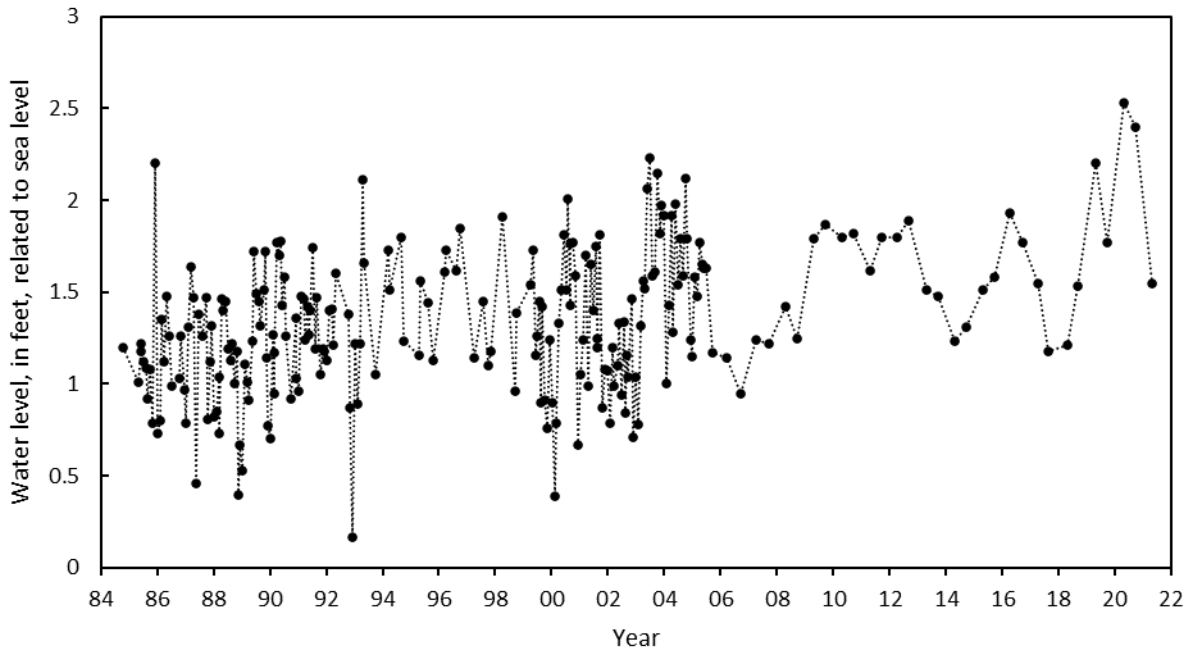
MEASURING POINT: Top of casing is 2.10 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 15.47 ft below land surface, on April 29, 2020; lowest measured, 17.83 ft below land surface, on December 8, 1992.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 15.60 |
| Apr 23, 2021 | 16.45 |



WELL NUMBER: QA Db 34

PERMIT NUMBER: QA-81-0473

LOCATION: Cloverfields II, north of harbor, Kent Island

LAT. 39° 00' 23", LONG. 76° 17' 43"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 180 ft;

Casing diameter: 4 in. to 180 ft;

Screen diameter: 4 in. from 170 to 180 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 7.4 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 2.50 ft above land surface.

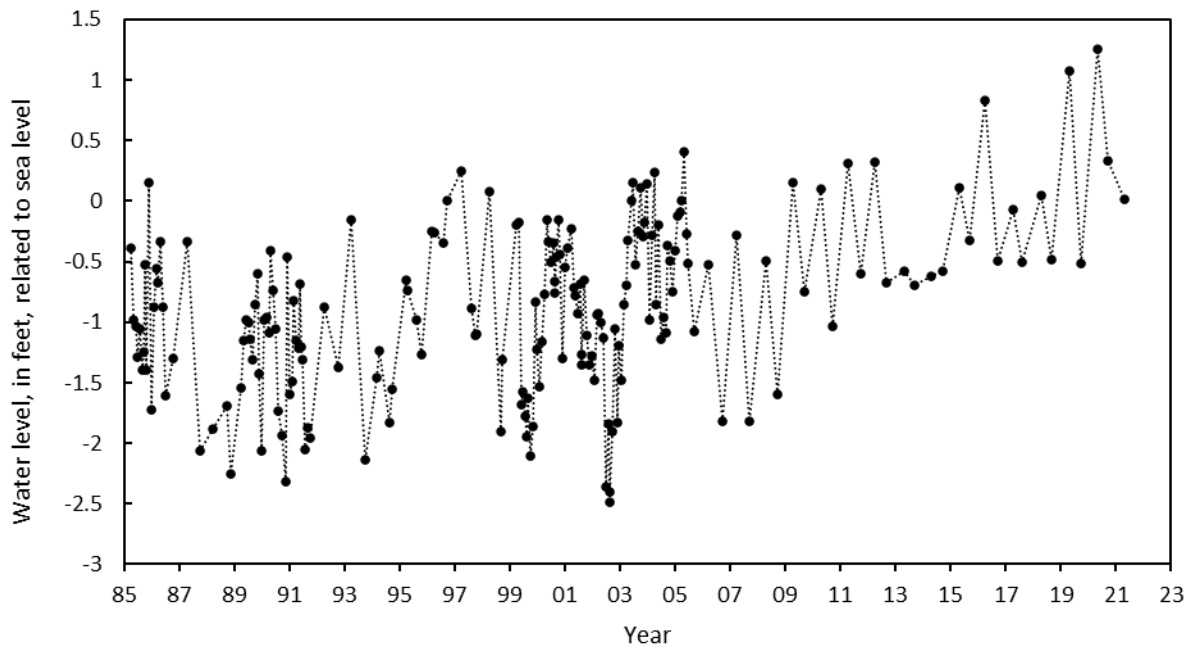
PERIOD OF RECORD: April 1985 to current year.

EXTREMES FOR RECORD: Highest water level measured, 6.14 ft below land surface, on April 29, 2020; lowest measured, 9.89 ft below land surface, on August 22, 2002.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 7.07 |
| Apr 23, 2021 | 7.38 |



WELL NUMBER: QA Db 35

PERMIT NUMBER: QA-18-0472

LOCATION: Mylander Farm, 0.5 mi W. Rte. 18, Kent Island.

LAT. 39° 01' 19", LONG. 76° 19' 10"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 200 ft;

Casing diameter: 4 in. to 190 ft;

Screen diameter: 4 in. from 190 to 200 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 7.50 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 2.20 ft above land surface.

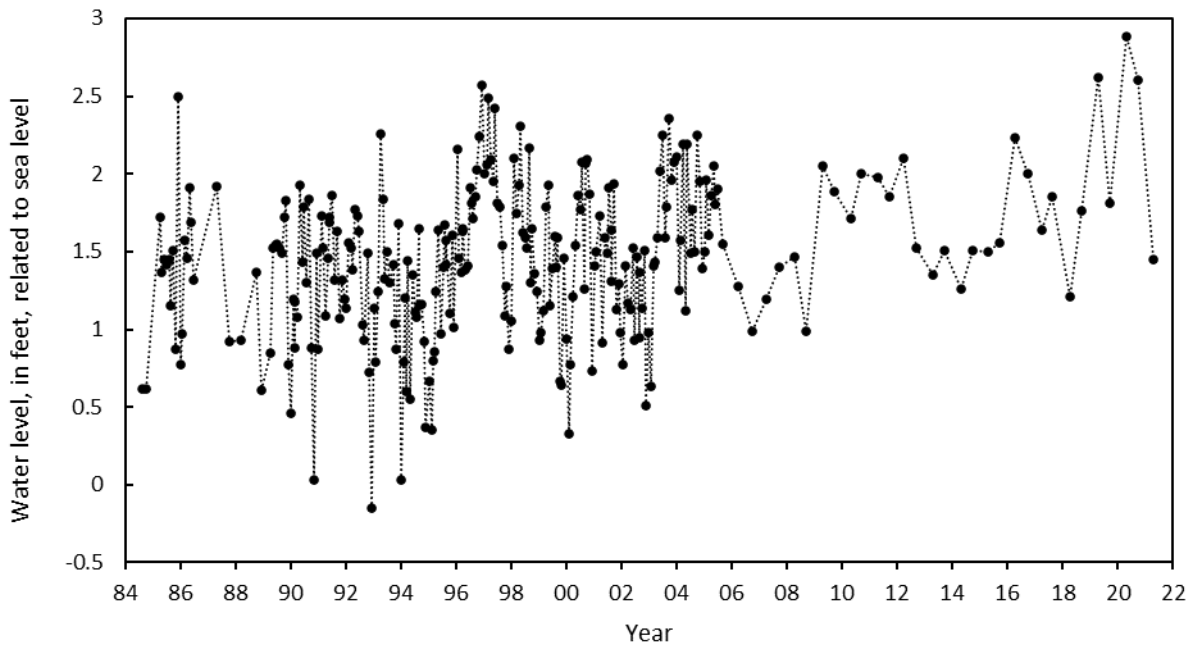
PERIOD OF RECORD: August 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 4.62 ft below land surface, on April 29, 2020; lowest measured, 7.65 ft below land surface, on December 8, 1992.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 4.90 |
| Apr 23, 2021 | 6.05 |



WELL NUMBER: QA Db 37

PERMIT NUMBER: QA-81-0471

LOCATION: Cloverfields, north of harbor, Kent Island

LAT. 39° 00' 23", LONG. 76° 17' 43"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 250 ft;

Casing diameter: 4 in. to 240 ft;

Screen diameter: 4 in. from 240 to 250 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 7.10 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 2.50 ft above land surface.

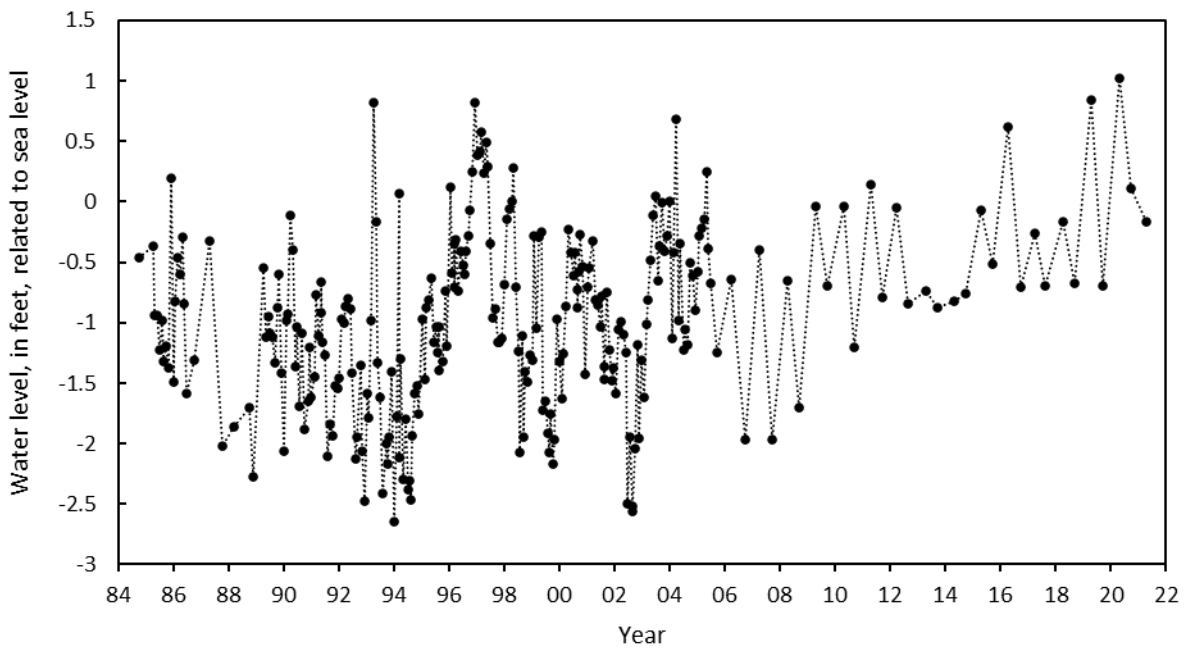
PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 6.08 ft below land surface, on April 29, 2020; lowest measured, 9.74 ft below land surface, on January 11, 1994.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 6.99 |
| Apr 23, 2021 | 7.27 |



WELL NUMBER: QA De 27

PERMIT NUMBER: None

LOCATION: Town of Centreville, near Sheriff's Office

LAT. 39° 00' 51", LONG. 76° 03' 44"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, unused, artesian well. Reported depth is 665 ft,

Depth of geophysical log is 380 ft;

Casing diameter: unknown diameter to 170 ft;

Screen diameter: unknown.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 10.19 ft above NGVD of 1929.

MEASURING POINT: Top of shelter platform is 2.03 ft above land surface.

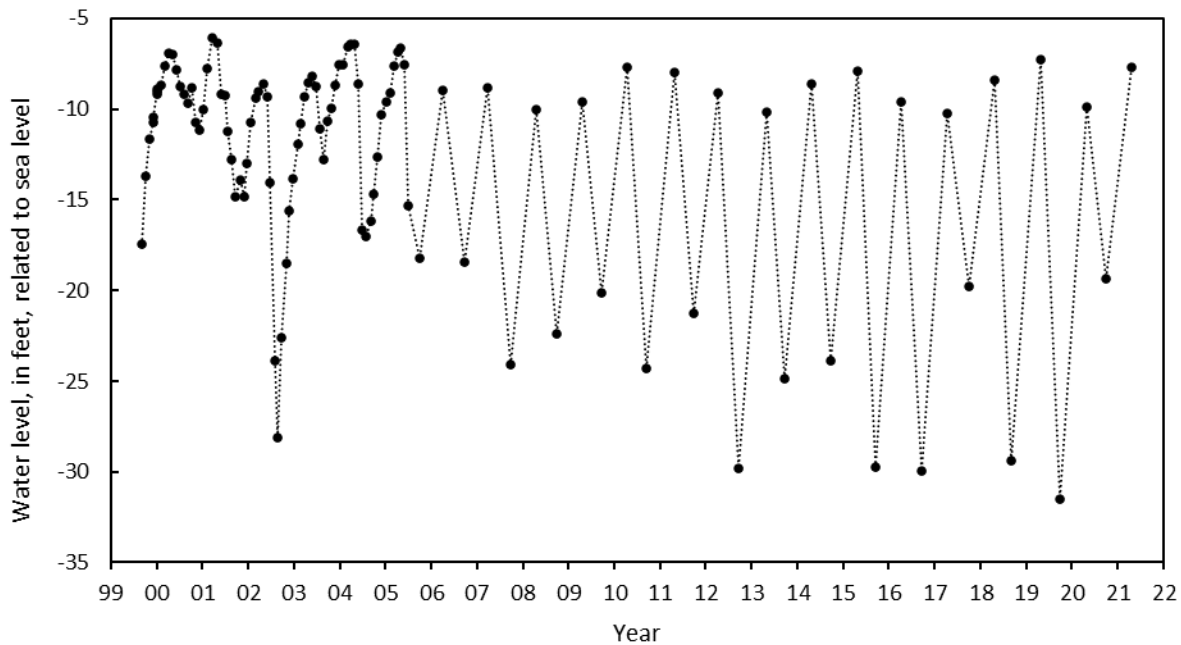
PERIOD OF RECORD: September 1999 to current year.

EXTREMES FOR RECORD: Highest water level measured, 16.28 ft below land surface, on March 22, 2001; lowest measured, 41.72 ft below land surface, on September 25, 2019.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 24, 2020 | 29.53 |
| Apr 22, 2021 | 17.89 |



WELL NUMBER: QA Ea 27

PERMIT NUMBER: None

LOCATION: Natural Resources Police Academy in
Matapeake, Kent Island.

LAT. 38° 57' 14", LONG. 76° 20' 54"

AQUIFER: Magothy Aquifer of Upper Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 661 ft;

Casing diameter: 6 in. to 661 ft;

Screen diameter: 6 in. from 625 to 661 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface was 18.27 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 1.7 ft above land surface. Re-measurement on August 24, 2012

Top of casing is 3.25 ft above land surface.

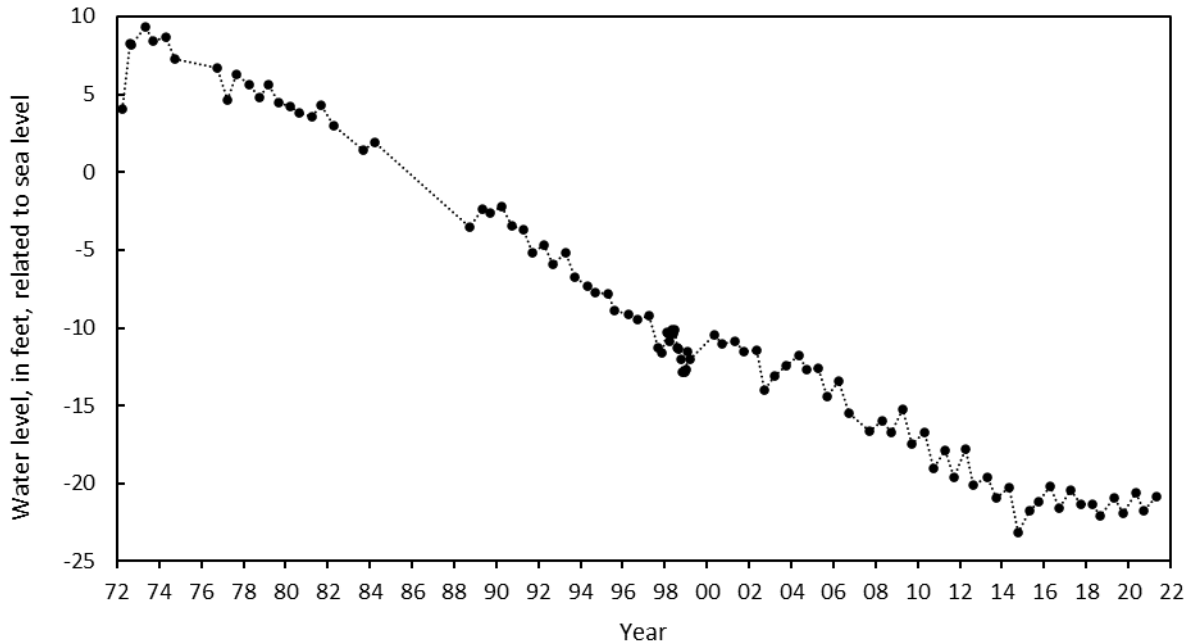
PERIOD OF RECORD: April 1972 to current year.

EXTREMES FOR RECORD: Highest water level measured, 8.97 ft below land surface, on May 10, 1973; lowest measured, 41.41 ft below land surface, on September 26, 2014.

REMARKS: Water levels are affected by regional groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 39.99 |
| Apr 23, 2021 | 39.08 |



WELL NUMBER: QA Ea 77
LOCATION: Natural Resources Police Academy in
Matapeake, Kent Island.

PERMIT NUMBER: QA-81-0474
LAT. 38° 57' 18", LONG. 76° 21' 15"

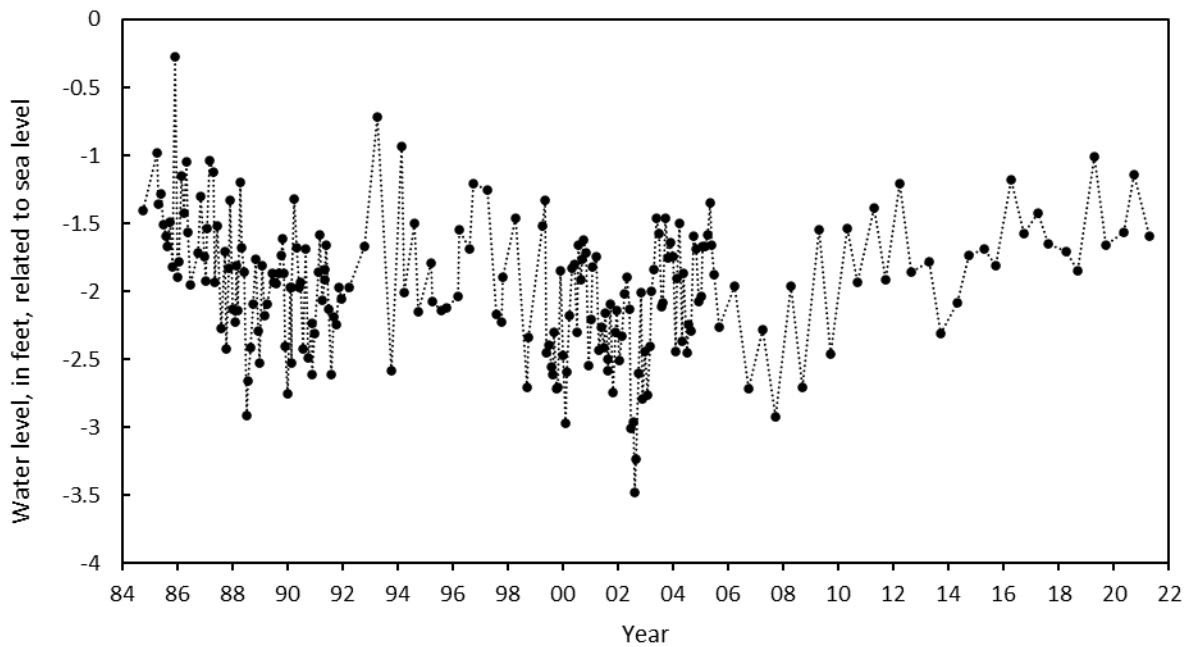
AQUIFER: Aquia Aquifer of Early to Late Paleocene age
WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 205 ft;
Casing diameter: 4 in. to 205 ft;
Screen diameter: 4 in. from 195 to 205 ft.

INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 10.80 ft above NGVD of 1929.
MEASURING POINT: Top of casing is 2.24 ft above land surface.
PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 11.07 ft below land surface, on
December 2, 1985; lowest measured, 14.28 ft below land surface, on August 20, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 11.94 |
| Apr 23, 2021 | 12.39 |



WELL NUMBER: QA Ea 78
LOCATION: Natural Resources Police Academy in
Matapeake, Kent Island.

PERMIT NUMBER: QA-81-0474
LAT. 38° 57' 18", LONG. 76° 21' 15"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 135 ft;

Casing diameter: 4 in. to 125 ft;

Screen diameter: 4 in. from 125 to 135 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 11.80 ft above NGVD of 1929.

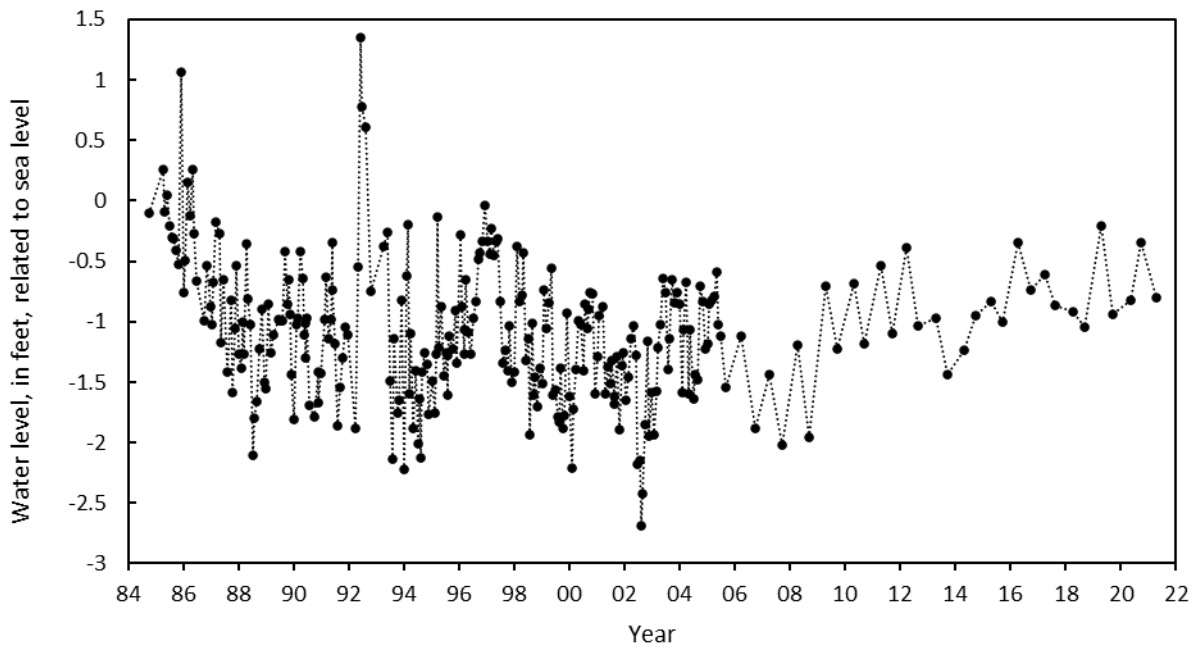
MEASURING POINT: Top of casing is 1.91 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 10.45 ft below land surface, on June 4, 1992; lowest measured, 14.49 ft below land surface, on August 20, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 12.15 |
| Apr 23, 2021 | 12.60 |



WELL NUMBER: QA Ea 79

PERMIT NUMBER: QA-81-0469

LOCATION: Mowbray Park, Kent Island

LAT. 38° 57' 57", LONG. 76° 20' 01"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 298 ft;

Casing diameter: 4 in. to 288 ft;

Screen diameter: 4 in. from 288 to 298 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 8.30 ft above NGVD of 1929.

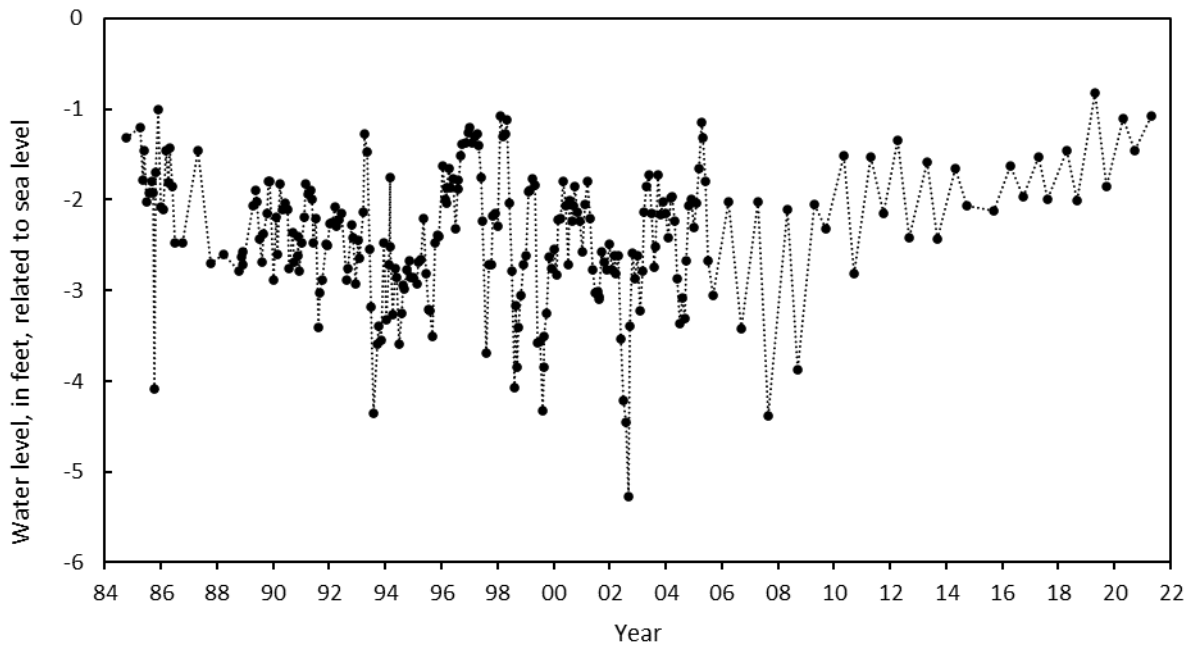
MEASURING POINT: Top of casing is 2.31 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 9.12 ft below land surface, on April 24, 2019; lowest measured, 13.57 ft below land surface, on August 27, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 9.75 |
| Apr 23, 2021 | 9.38 |



WELL NUMBER: QA Ea 80

PERMIT NUMBER: QA-81-0469

LOCATION: Mowbray Park II, Kent Island

LAT. 38° 57' 57", LONG. 76° 20' 01"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 130 ft;

Casing diameter: 4 in. to 130 ft;

Screen diameter: 4 in. from 120 to 130 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 8.50 ft above NGVD of 1929.

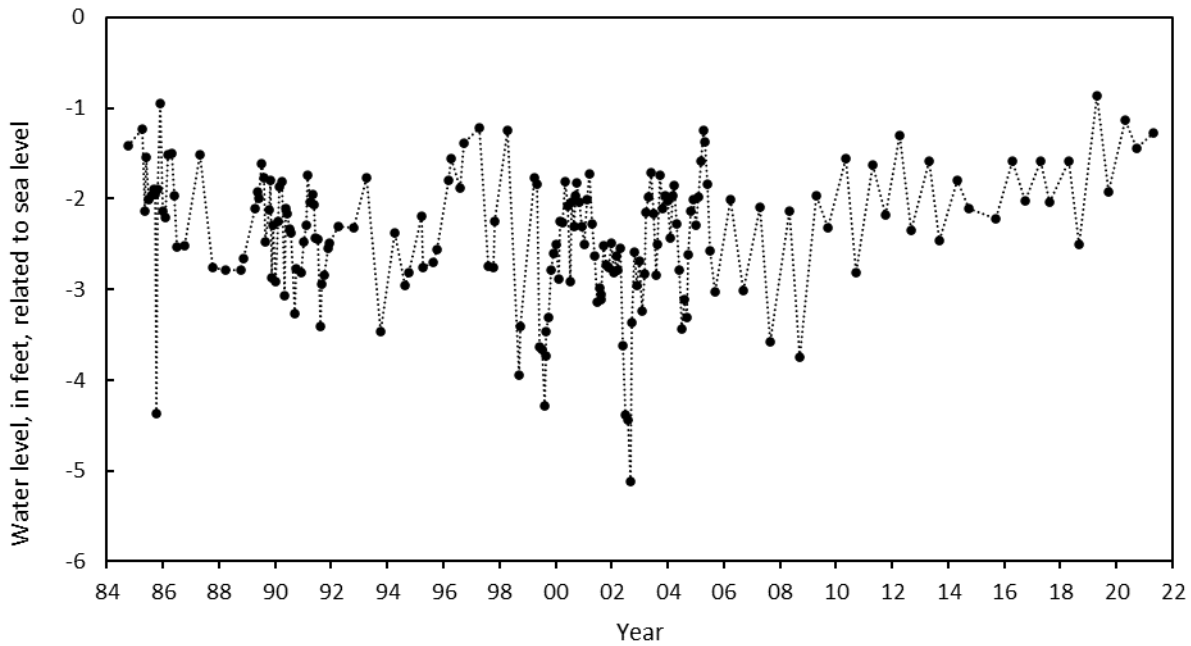
MEASURING POINT: Top of casing is 2.51 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 9.36 ft below land surface, on April 25, 2019; lowest measured, 13.61 ft below land surface, on August 27, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 9.94 |
| Apr 23, 2021 | 9.77 |



WELL NUMBER: QA Ea 81
LOCATION: Natural Resources Police Academy in
Matapeake, Kent Island.

PERMIT NUMBER: QA-81-0474
LAT. 38° 57' 18", LONG. 76° 21' 15"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 310 ft;

Casing diameter: 4 in. to 300 ft;

Screen diameter: 4 in. from 300 to 310 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 12.40 ft above NGVD of 1929.

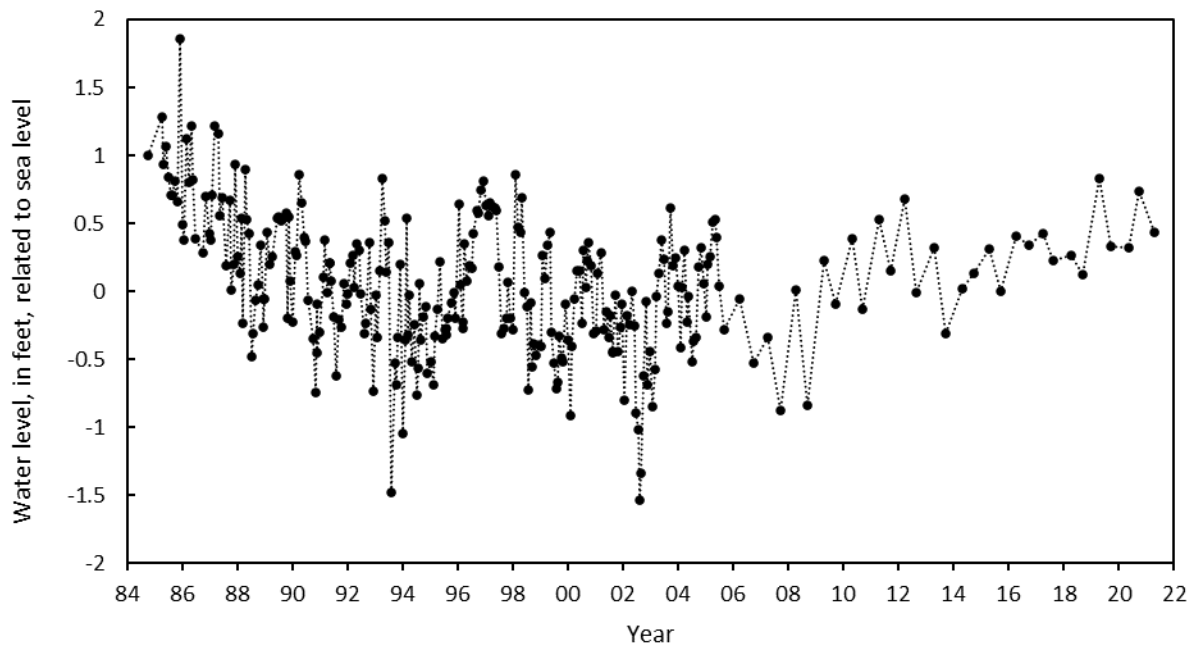
MEASURING POINT: Top of casing is 2.16 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 10.54 ft below land surface, on
December 2, 1985; lowest measured, 13.93 ft below land surface, on August 20, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|----------------|
| Sep 23, 2020 | 11.66 |
| Apr 23, 2021 | 11.96 |



WELL NUMBER: QA Eb 110

PERMIT NUMBER: QA-73-2979

LOCATION: Near Chester, east side of Cox Neck Road

LAT. 38° 57' 51", LONG. 76° 17' 16"

AQUIFER: Patuxent Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 2,485 ft;

Casing diameter: 4 in. to 2,413 ft, from 2,423 to 2,465 ft, and from 2,475 to 2,485 ft;

Screen diameter: 4 in. from 2,413 to 2,423 ft and from 2,465 to 2,475 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 13.98 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 3.36 ft above land surface.

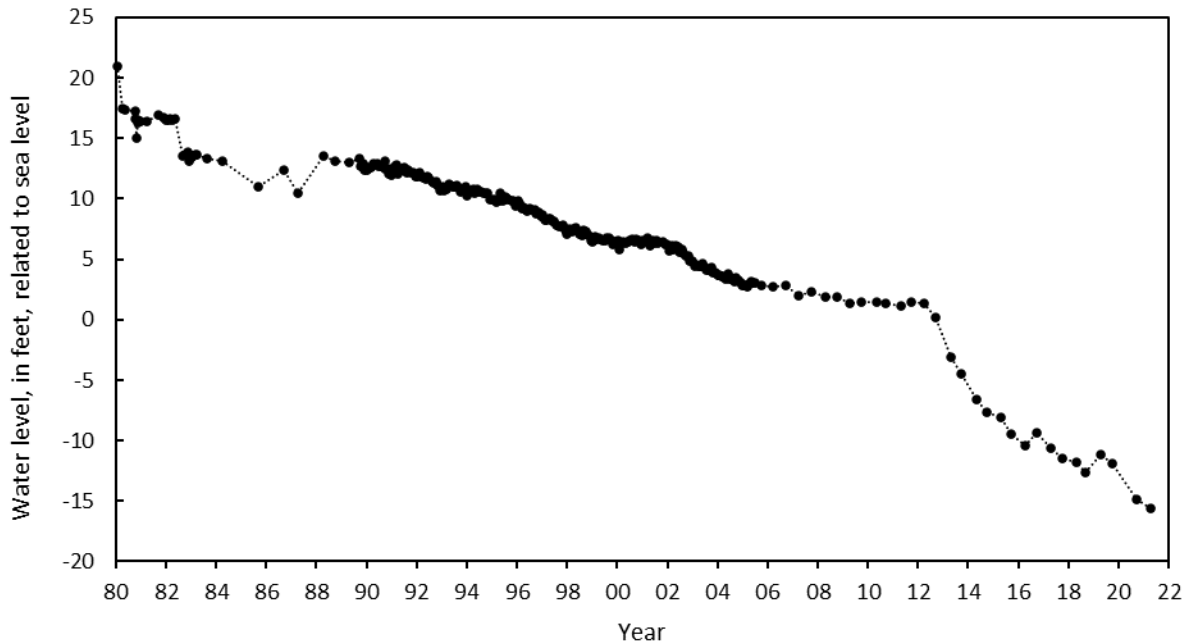
PERIOD OF RECORD: January 1980 to current year.

EXTREMES FOR RECORD: Highest water level measured 6.99 ft above land surface, on January 21, 1980; lowest measured, 29.62 ft below land surface, on April 23, 2021.

REMARKS: Water levels are affected by regional groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 28.79 |
| Apr 23, 2021 | 29.62 |



WELL NUMBER: QA Eb 111

PERMIT NUMBER: QA-73-3122

LOCATION: Near Chester, east side of Cox Neck Road

LAT. 38° 57' 51", LONG. 76° 17' 16"

AQUIFER: Upper Patapsco Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 985 ft;

Casing diameter: 4 in. to 955 ft and from 965 to 975 ft;

Screen diameter: 4 in. from 955 to 965 ft and from 975 to 985 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 14.03 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 1.41 ft above land surface.

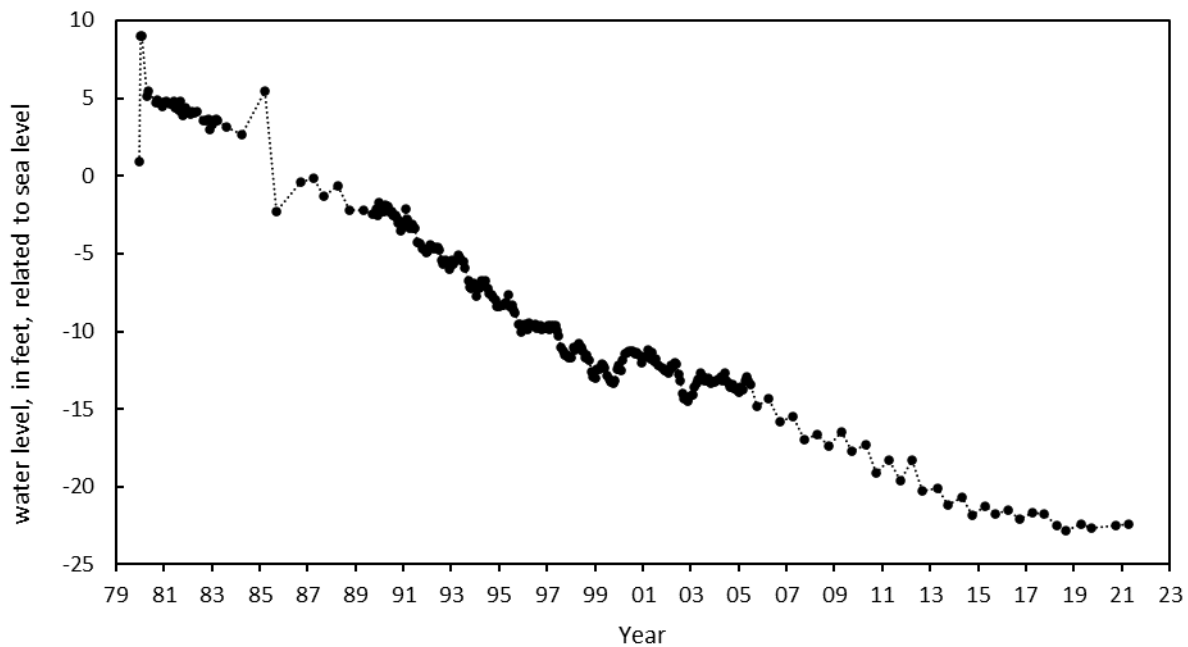
PERIOD OF RECORD: December 1979 to current year.

EXTREMES FOR RECORD: Highest water level measured, 5.02 ft below land surface, on January 21, 1980; lowest measured, 36.83 ft below land surface, on September 5, 2018.

REMARKS: Water levels are affected by local and regional groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 36.49 |
| Apr 23, 2021 | 36.45 |



WELL NUMBER: QA Eb 112

PERMIT NUMBER: QA-73-3123

LOCATION: Near Chester, east side of Cox Neck Road

LAT. 38° 57' 51", LONG. 76° 17' 16"

AQUIFER: Lower Patapsco Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 1,679 ft;

Casing diameter: 4 in. to 1,652 ft and from 1,662 to 1,669 ft;

Screen diameter: 4 in. from 1,652 to 1,662 ft and from 1,669 to 1,679 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 13.92 ft above NGVD of 1929.

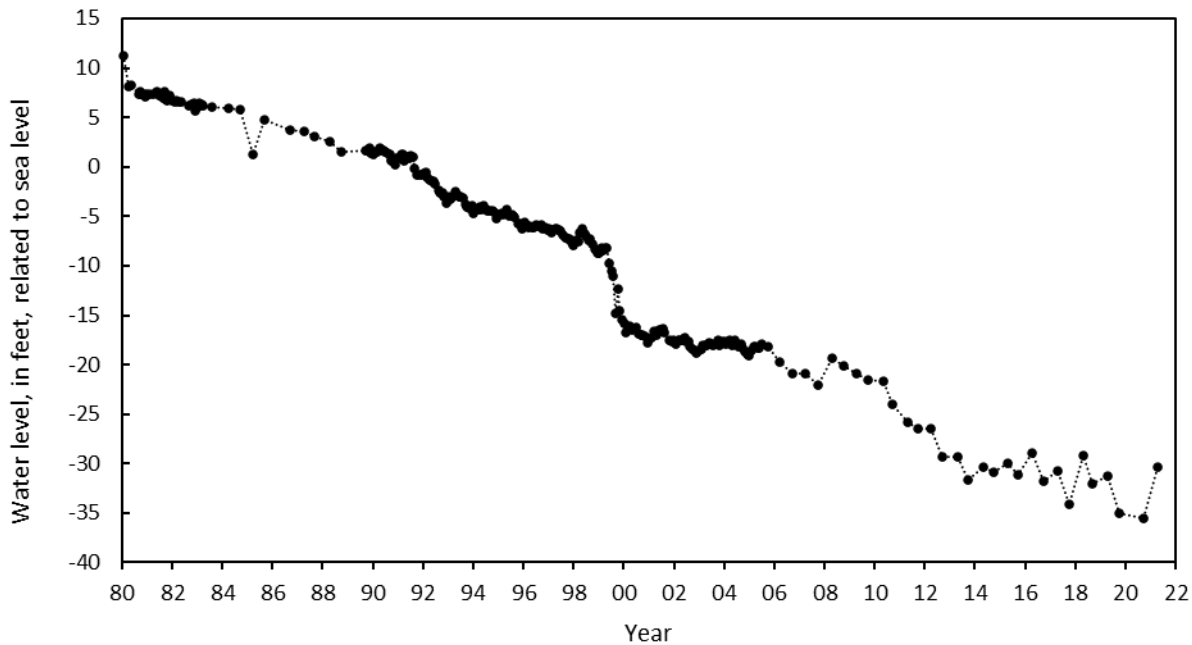
MEASURING POINT: Top of casing is 1.36 ft above land surface.

PERIOD OF RECORD: January 1980 to current year.

EXTREMES FOR RECORD: Highest water level measured, 2.69 ft below land surface, on January 21, 1980; lowest measured, 49.39 ft below land surface, on September 23, 2020.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 49.39 |
| Apr 23, 2021 | 44.25 |



WELL NUMBER: QA Eb 113

PERMIT NUMBER: QA-73-3172

LOCATION: Near Chester, east side of Cox Neck Road

LAT. 38° 57' 48", LONG. 76° 17' 20"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 216 ft;

Casing diameter: 6 in. to 176 ft;

Screen diameter: 6 in. from 176 to 216 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 11.34 ft above NGVD of 1929.

MEASURING POINT: Since October 2003 top of casing is 1.6 ft above land surface, which is 1 ft lower than before. Water levels measured after October 2003 were corrected accordingly.

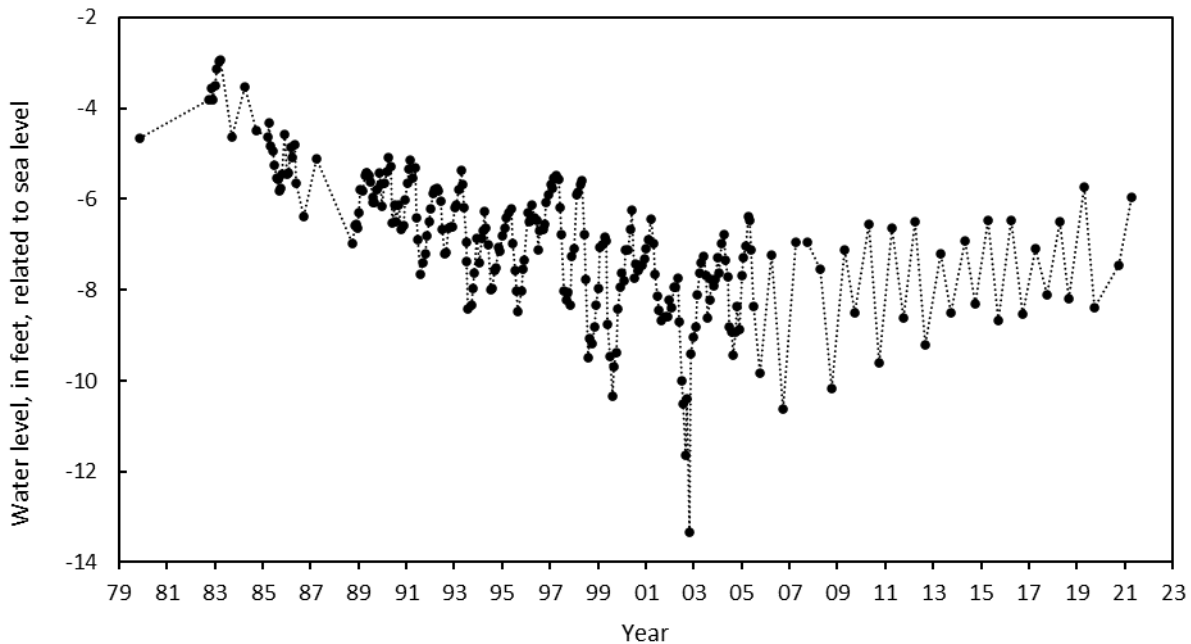
PERIOD OF RECORD: November 1979 to current year.

EXTREMES FOR RECORD: Highest water level measured, 14.28 ft below land surface, on April 1, 1983; lowest measured, 24.68 ft below land surface, on October 29, 2002.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 18.81 |
| Apr 23, 2021 | 17.29 |



WELL NUMBER: QA Eb 155

PERMIT NUMBER: QA-81-0470

LOCATION: At north end of Piney Creek Road, Kent Island

LAT. 38° 58' 43", LONG. 76° 15' 53"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 245 ft;

Casing diameter: 4 in. to 235 ft;

Screen diameter: 4 in. from 235 to 245 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 3.90 ft above NGVD of 1929.

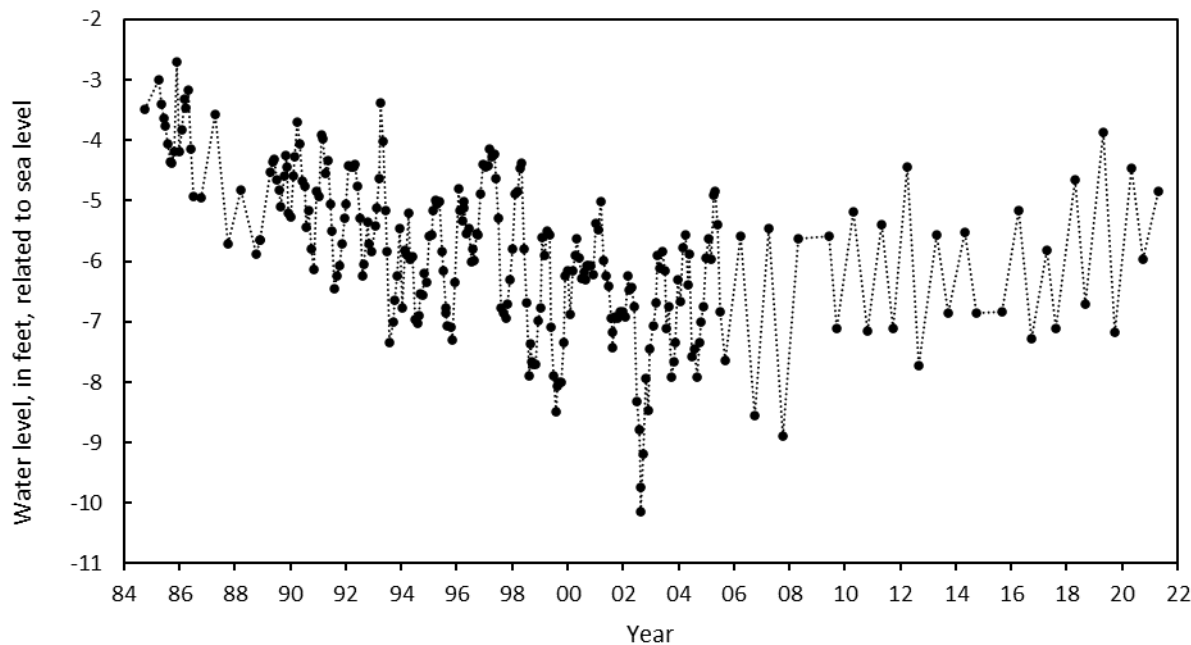
MEASURING POINT: Top of casing is 2.50 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 6.60 ft below land surface, on December 2, 1985; lowest measured, 14.05 ft below land surface, on August 27, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 9.86 |
| Apr 22, 2021 | 8.74 |



WELL NUMBER: QA Eb 156
LOCATION: At Terrapin Beach Park, north of US Rte. 50,
Kent Island.

PERMIT NUMBER: QA-81-0475
LAT. 38° 58' 52", LONG. 76° 19' 52"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 220 ft;
Casing diameter: 4 in. to 210 ft;
Screen diameter: 4 in. from 210 to 220 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 12.01 ft above NGVD of 1929.

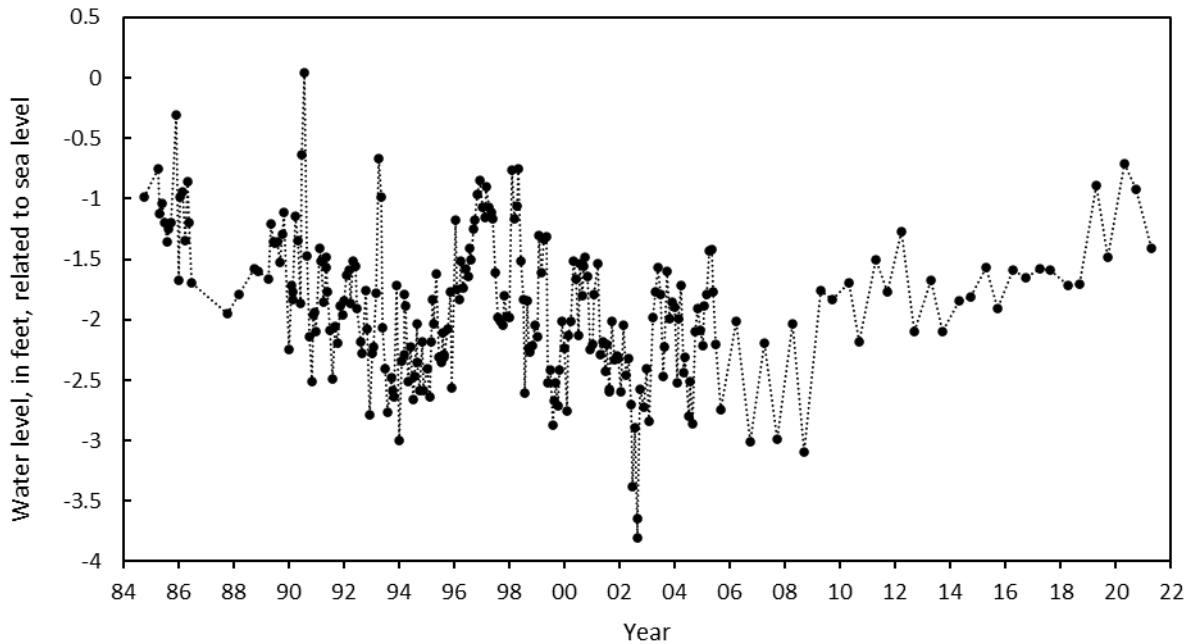
MEASURING POINT: Top of casing is 2.20 ft above land surface.

PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 11.97 ft below land surface, on
August 1, 1990; lowest measured, 15.81 ft below land surface, on August 22, 2002.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 12.93 |
| Apr 23, 2021 | 13.42 |



WELL NUMBER: QA Eb 157

PERMIT NUMBER: QA-81-0475

LOCATION: At Terrapin Beach Park, north of US Rte. 50,
Kent Island.

LAT. 38° 58' 52", LONG. 76° 19' 52"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 120 ft;

Casing diameter: 4 in. to 110 ft;

Screen diameter: 4 in. from 110 to 120 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 11.92 ft above NGVD of 1929.

MEASURING POINT: Top of casing is 2.50 ft above land surface.

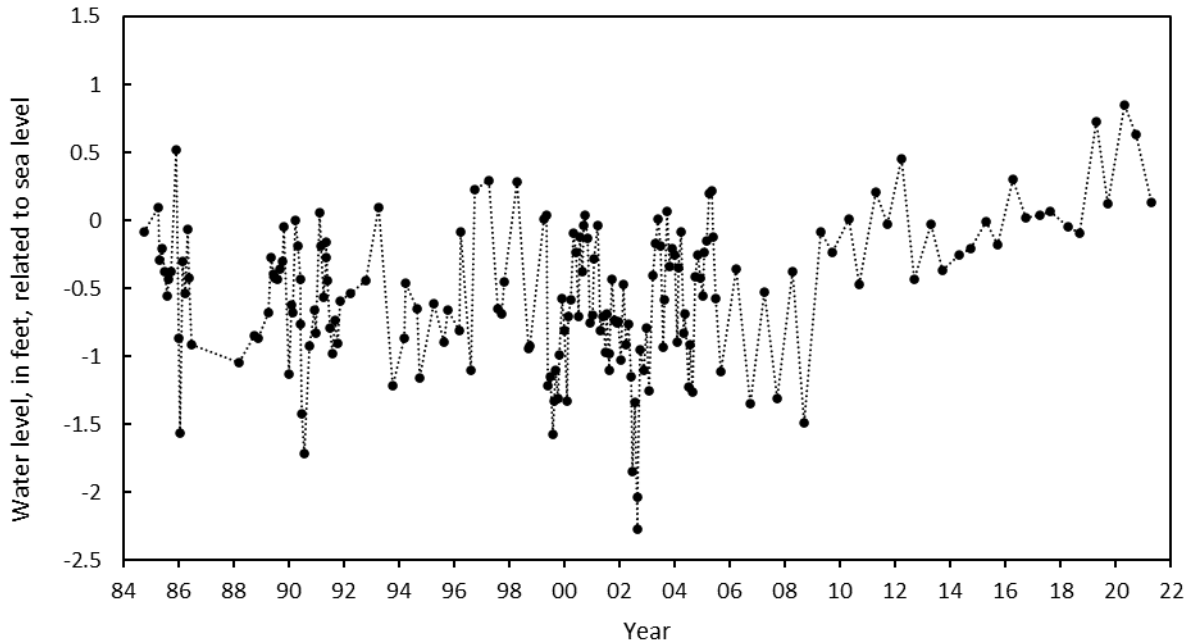
PERIOD OF RECORD: October 1984 to current year.

EXTREMES FOR RECORD: Highest water level measured, 11.07 ft below land surface, on April 29,
2020; lowest measured, 14.19 ft below land surface, on August 22, 2002.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 11.29 |
| Apr 23, 2021 | 11.79 |



WELL NUMBER: QA Eb 182
 LOCATION: At 208 Church Street, Stevensville Water Treatment Plant, Stevensville, Kent Island.

PERMIT NUMBER: QA-81-0475
 LAT. 38° 58' 50", LONG. 76° 18' 35"

AQUIFER: Lower Patapsco Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 1,580 ft;
 Casing diameter: 5 in. to 280 ft; 4 in. from 280 ft to 1460 ft;
 Screen diameter: 4 in. from 1,460 ft to 1,480 ft, from 1,520 ft to 1,530 ft, and from 1,550 ft to 1,580 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 14.0 ft above NGVD of 1929.

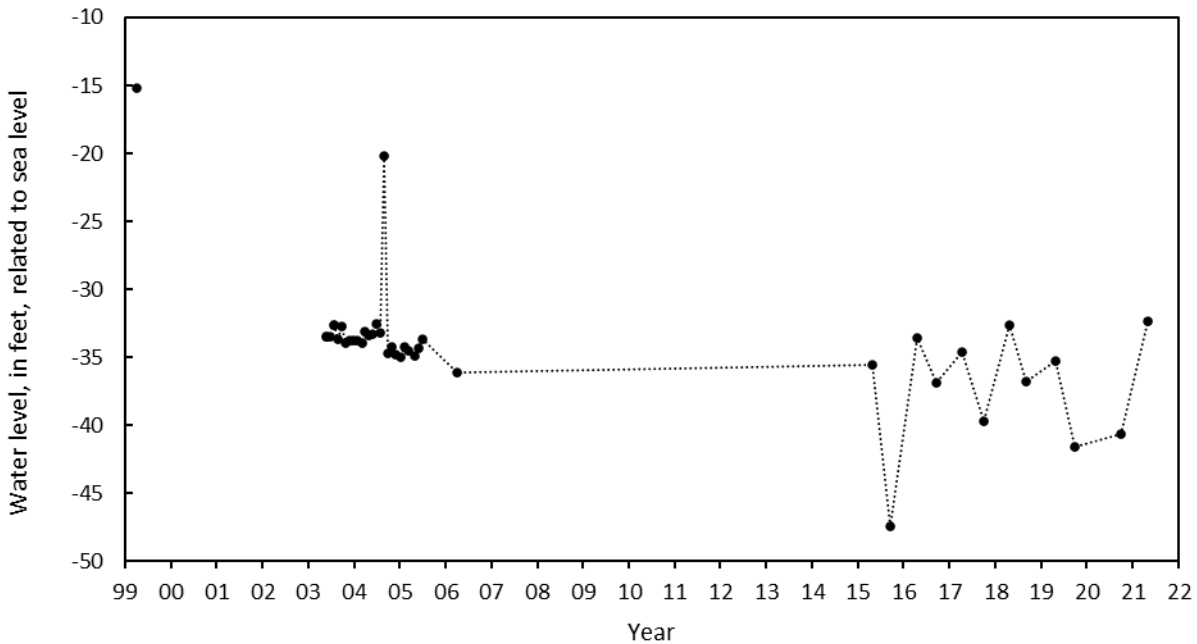
MEASURING POINT: Top of casing is 1.80 ft above land surface.

PERIOD OF RECORD: April 1999, May 2003 to March 28, 2006, and from April 2015 to April 2016.

EXTREMES FOR RECORD: Highest water level measured, 29.20 ft below land surface, on April 1, 1999; lowest measured, 61.43 ft below land surface, on September 18, 2015.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|-------------|
| Sep 23, 2020 | 54.61 |
| Apr 26, 2021 | 46.29 |



WELL NUMBER: QA Ec 1
 LOCATION: Near Grasonville, south side of MD Rte. 18
 and northeast of Nesbit Rd.

PERMIT NUMBER: None
 LAT. 38° 57' 56", LONG. 76° 10' 53"

AQUIFER: Columbia Aquifer of Pleistocene age.

WELL CHARACTERISTICS: Drilled, unused, water-table well. Depth is 21 ft;
 Casing diameter: 1.25 in. to 21 ft; no screen.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 20 ft above NGVD of 1929, from topographic map.

MEASURING POINT: Top of casing is 0.27 ft above land surface.

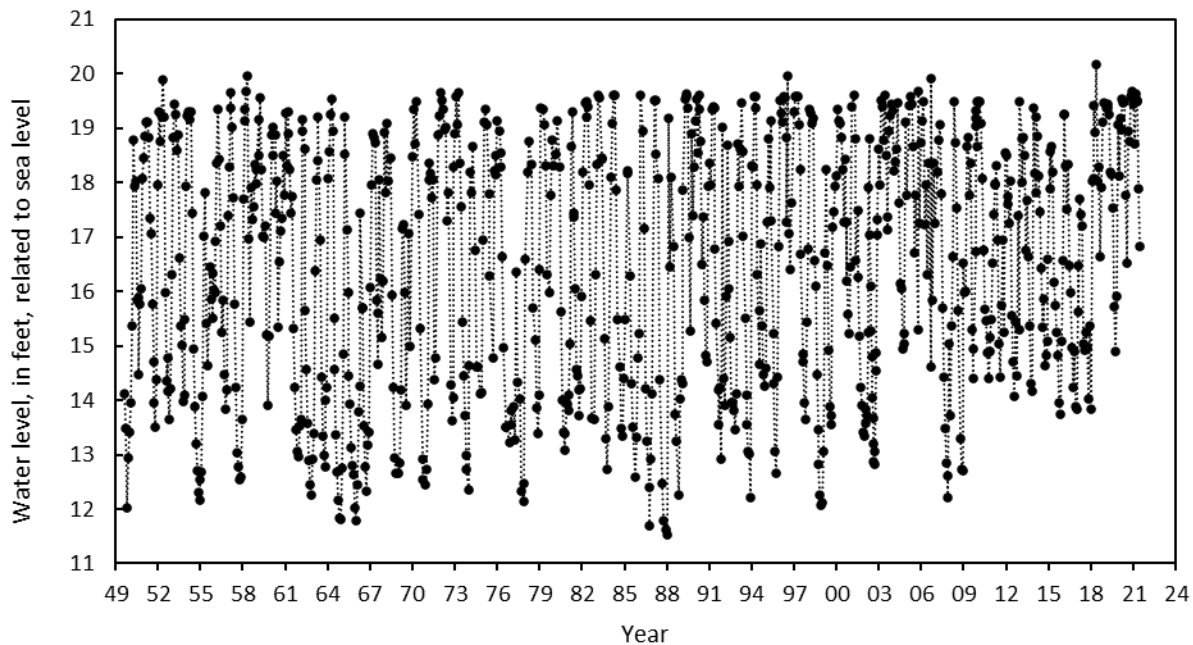
PERIOD OF RECORD: September 1949 to current year.

EXTREMES FOR RECORD: Highest water level measured 0.18 ft above land surface, on May 23,
 2018; lowest measured, 8.46 ft below land surface, on January 7, 1988.

REMARKS: Water levels are affected by local groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL | DATE | WATER LEVEL | DATE | WATER LEVEL |
|--------------|-------------|--------------|-------------|--------------|-------------|
| Jul 28, 2020 | 3.48 | Nov 23, 2020 | 0.33 | Mar 29, 2021 | 0.51 |
| Aug 26, 2020 | 1.05 | Dec 21, 2020 | 0.56 | Apr 27, 2021 | 0.49 |
| Sep 22, 2020 | 1.23 | Jan 25, 2021 | 1.28 | May 24, 2021 | 2.10 |
| Oct 26, 2020 | 0.41 | Feb 23, 2021 | 0.36 | Jun 28, 2021 | 3.16 |



WELL NUMBER: QA Ef 29
LOCATION: Tuckahoe State Park, off east side of MD
Rte. 309.

PERMIT NUMBER: QA-81-1593
LAT. 38° 55' 38", LONG. 75° 57' 40"

AQUIFER: Upper Patapsco Aquifer of Early Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 1,325 ft;
Casing diameter: 14 in. to 500 ft and 8 in. from 500 to 1,110 ft, from 1,120 to 1,135 ft, from
1,180 to 1,195 ft, from 1,210 to 1,230 ft, from 1,270 to 1,285 ft, and from 1,315 to 1,325
ft;
Screen diameter: 8 in. from 1,110 to 1,120 ft, from 1,135 to 1,180 ft, from 1,195 to 1,210 ft, from
1,230 to 1,270 ft, and from 1,285 to 1,315 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 61.69 ft above NGVD of 1929.

MEASURING POINT: Top of 2 in. riser pipe is 3.80 ft above land surface.

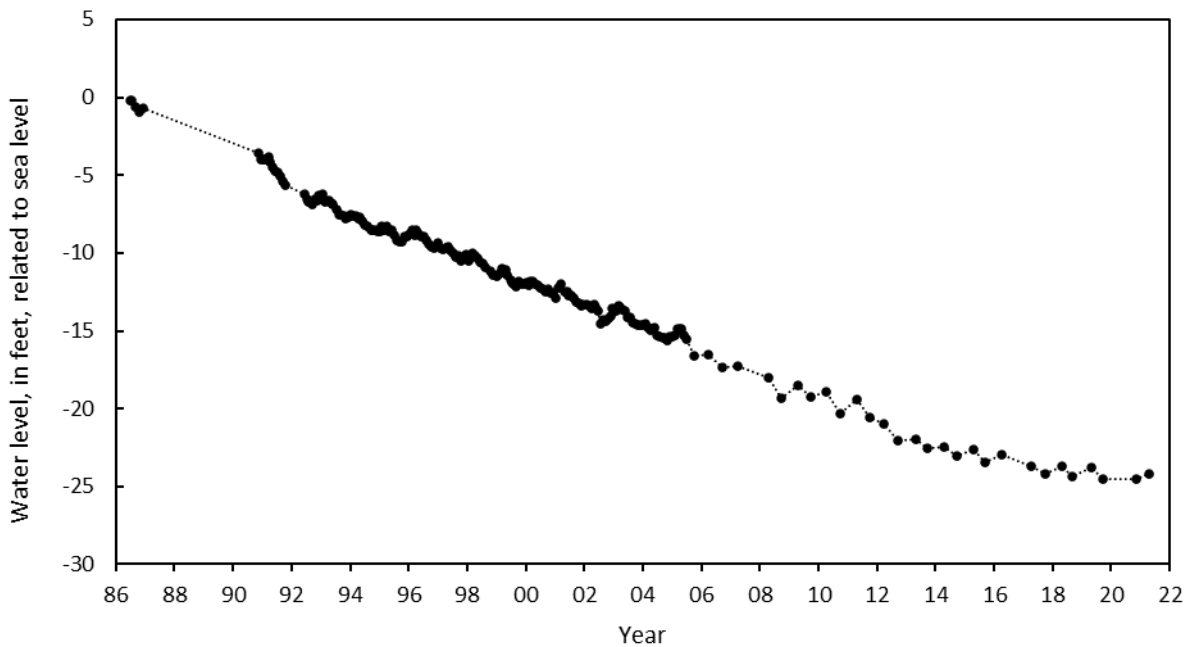
PERIOD OF RECORD: June 1986 to current year.

EXTREMES FOR RECORD: Highest water level measured, 61.85 ft below land surface, on July 11,
1986; lowest measured, 86.22 ft below land surface, on September 24, 2019.

REMARKS: Water levels are affected by regional groundwater withdrawal.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|----------------|
| Nov 05, 2020 | 86.19 |
| Apr 22, 2021 | 85.85 |



WELL NUMBER: QA Fc 7
 LOCATION: Prospect Plantation, west side of Greenwood
 Shoals.

PERMIT NUMBER: QA-73-2191
 LAT. 38° 54' 29", LONG. 76° 12' 02"

AQUIFER: Aquia Aquifer of Early to Late Paleocene age.
 WELL CHARACTERISTICS: Drilled, observation, artesian well. Depth is 356 ft;
 Casing diameter: 4 in. to 336 ft;
 Screen diameter: 4 in. from 336 to 356 ft.

INSTRUMENTATION: Periodic measurements.
 DATUM: Altitude of land surface is 10 ft above NGVD of 1929, from topographic map.
 MEASURING POINT: Top of casing at land surface.

PERIOD OF RECORD: May 1978 to current year.
 EXTREMES FOR RECORD: Highest water level measured, 19.77 ft below land surface, on March 3,
 1983; lowest measured, 42.77 ft below land surface, on August 27, 2002.

REMARKS: Water levels are affected by local groundwater withdrawal. No spring measurements due to
 COVID-19 pandemic.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

| DATE | WATER LEVEL |
|--------------|----------------|
| Sep 23, 2020 | 34.46 |

