Maryland Department of Natural Resources Resource Assessment Service Maryland Geological Survey Richard A. Ortt, Jr., Director

HYDROGRAPHS AND TABLES SHOWING GROUNDWATER LEVEL AND PUMPAGE RECORDS FOR SELECTED OBSERVATION WELLS IN CHARLES COUNTY, MARYLAND

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Prepared in cooperation with the Charles County Department of Planning and Growth Management

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SUMMARY

This report presents water-level data for 27 observation wells in Charles County. Water levels are tabulated for measurements from July 2021 through June 2022. 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. The water-level data can also be accessed through a convenient map interface of the Geological Maryland Survey at http://www.mgs.md.gov/groundwater/water level mapper.html.

This report also presents groundwater withdrawals correlated with water levels in 2 observation wells located in the Waldorf area (Magothy aquifer), from July 2021 through June 2022. Pumpage data were obtained from Charles County Department of Public Utilities. In general, increased pumpage occurs during summer and fall, causing water levels to decline while decreased pumpage occurs during winter and spring, causing a deceleration of declines.

Water levels in the **Magothy aquifer** fluctuate with usage but the overall trend shows continuing gradual declines. Fluctuations in the well at St. Charles (CH Bf 133) were as much as 50 feet due to pumpage (fig. 4). Water levels in the aquifer range from 68.71 ft below sea level at Sun Valley (CH Be 43) to 131.40 ft below sea level at St. Charles (CH Bf 133). Recent pumpage in the Waldorf area ranged from 2,296,987 gallons per day (March 2022) to 3,499,344 gallons per day (August 2021) (tab. 1). Plots in figures 3 and 4 show the correlation between water levels and pumpage in the Waldorf area.

Water levels in observation wells in the **Upper Patapsco aquifer system** fluctuate as much as 4.5 feet in response to pumpage and continue to show slightly declining trends with the exception of those at Douglas Point (CH Da 21), which exhibits a continuing flat trend. Water levels range from 16.09 ft below sea level at Douglas Point (CH Da 21) to 80.42 ft below sea level at St. Charles (CH Bf 157).

Water levels in the **Lower Patapsco aquifer system** observation wells fluctuate seasonally due to usage, but generally show a flat to slightly declining trend. Water levels in the Lower Patapsco aquifer system range from 17.69 ft below sea level at Douglas Point (CH Da 20) to 139.67 ft below sea level at La Plata (CH Ce 56).

Water levels in the **Patuxent aquifer system** continue to decline with the exception of the northeastern part of the County at Malcom (CH Bg 18), where the observation well has exhibited a flat trend due to recent decreased usage at Chalk Point power plant. In western Charles County, water levels at Chapmans Landing, Bryans Road and Mattawoman Water Treatment Plant (CH Bc 75, CH Bc 77, CH Bc 78 and CH Cc 34), have been declining at rates of approximately 2 to 4 ft/yr but may be slowing in recent years. Water levels range from 14.01 ft below sea level in the western part of the county at Douglas Point (CH Da 18) to 111.16 ft below sea level at Chapman's Landing (CH Bc 77).

OBSERVATION WELLS

Magothy aquifer

Well Number CH Be 43 CH Bf 133	<u>Location</u> Sun Valley St. Charles	<u>Aquifer</u> Magothy Magothy
	Upper Patapsco aquifer system	
Well Number	Location	<u>Aquifer</u>
CH Be 60	Smallwood West	Upper Patapsco
CH Bf 157	St. Charles	Upper Patapsco
CH Bf 158	John Hanson Middle School	Upper Patapsco
CH Da 21	Douglas Point	Upper Patapsco
	Lower Patapsco aquifer system	
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Well Number	Location	<u>Aquifer</u>
CH Bc 24	Potomac Heights	Lower Patapsco
CH Bc 81	Montrose Farms	Lower Patapsco
CH Be 72	Saw Mill Place	Lower Patapsco
CH Bf 146	near St. Charles	Lower Patapsco
CH Cc 31	Dravo well	Lower Patapsco
CH Ce 56	Heritage Green, La Plata	Lower Patapsco
CH Da 20	Douglas Point	Lower Patapsco
CH De 52	Chapel Point Woods	Lower Patapsco
	Patuxent aquifer system	
Well Number	Location	<u>Aquifer</u>
CH Bc 75	Chapman's Landing Well 2	Patuxent
CH Bc 77	Chapman's Landing Well 1	Patuxent
CH Bc 78	Bryans Road Well 5	Patuxent
CH Bd 52	Route 227 test site	Patuxent
CH Be 57	Smallwood West	Patuxent
CH Be 73	Saw Mill Place	Patuxent
CH Bf 166	Pinefield	Patuxent
CH Bf 167	Gardiner Road	Patuxent
CH Bg 18	near Malcolm	Patuxent
CH Cc 34	Mattawoman Water Treatment Plant	Patuxent
CH Ce 57	Heritage Green, La Plata	Patuxent
CH Ce 66	White Plains Regional Park	Patuxent
CH Da 18	Douglas Point	Patuxent



Figure 1. Location of observation wells in Charles County.

MAGOTHY AQUIFER

WELL NUMBER: CH Be 43
PERMIT NUMBER: CH-71-0066
LOCATION: Sun Valley
LAT. 38° 38' 19", LONG. 76° 55' 55"
AQUIFER: Magothy Formation of Upper Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 459 ft; Casing diameter: 6 in. to 428 ft; Screen diameter: 5 in. from 433 to 459 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 216.79 ft above NGVD of 1929.
MEASURING POINT: Top of casing 1.95 ft above land surface.
PERIOD OF RECORD: April 1971 to current year.
EXTREMES FOR RECORD: Highest water level measured, 180 ft below land surface, on April 8, 1971; lowest measured, 296.65 ft below land surface, on September 18, 2019.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	293.11	Jan 25,2022	289.98	Apr 22,2022	285.50
Nov 17,2021	291.55	Mar 22,2022	289.17	Jun 09,2022	290.66



WELL NUMBER: CH Bf 133

LOCATION: St. Charles

PERMIT NUMBER: CH-70-0069 LAT. 38° 36' 40", LONG. 76° 54' 59"

AQUIFER: Magothy Formation of Upper Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 510 ft;

Casing diameter: 10 in. to 77 ft; 6 in. from -2 to 420 ft; 4 in. from 420 to 436 ft, and 506 to 510 ft;

Screen diameter: 4 in. from 436 to 506 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 223.50 ft above NGVD of 1929.

MEASURING POINT: Top of casing 0.82 ft above land surface.

PERIOD OF RECORD: May 1970 to current year.

EXTREMES FOR RECORD: Highest water level measured, 201.4 ft below land surface, on May 6, 1970; lowest measured, 358.98 ft below land surface, on July 10, 2007.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 27,2021	306.67	Jan 25,2022	303.18	Apr 22,2022	354.90
Nov 18,2021	305.36	Mar 22,2022	337.81	Jun 07,2022	354.60



UPPER PATAPSCO AQUIFER SYSTEM

WELL NUMBER: CH Be 60
PERMIT NUMBER: CH-81-1468
LOCATION: Smallwood West
LAT. 38° 37' 06", LONG. 76° 57' 56"
AQUIFER: Upper Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 635 ft;
Casing diameter: 6 in. to 401 ft; 4 in. from 401 to 610 ft, and 625 to 635 ft;
Screen diameter: 4 in. from 610 to 625 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 212.8 ft above NGVD of 1929.
MEASURING POINT: Top of casing 2.2 ft above land surface.
PERIOD OF RECORD: May 1986 to current year.
EXTREMES FOR RECORD: Highest water level measured, 227.1 ft below land surface, on April 10, 1987; lowest measured, 278.32 ft below land surface, September 17, 2020.

DATE			WATER LEVEL
Oct	01,	2021	274.16
Apr	29,	2022	271.43



WELL NUMBER: CH Bf 157 DOCATION: St. Charles AQUIFER: Upper Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age. WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 623 ft; Casing diameter: 6 in. to 396 ft; 4 in. from 396 to 608 ft; Screen diameter: 4 in. from 608 to 623 ft. INSTRUMENTATION: Periodic measurements. DATUM: Altitude of land surface is 225.0 ft above NGVD of 1929. MEASURING POINT: Top of casing 1.70 ft above land surface. PERIOD OF RECORD: September 1986 to current year. EXTREMES FOR RECORD: Highest water level measured, 262.27 ft below land surface, on April 5,

1988; lowest measured, 310.93 ft below land surface, on September 5, 2019.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	304.33	Jan 25, 2022	301.79	Apr 22, 2022	304.23
Nov 17,2021	305.42	Mar 22, 2022	300.76	Jun 07, 2022	303.60



WELL NUMBER: CH Bf 158

PERMIT NUMBER: CH-81-1847

LAT. 38° 37' 32", LONG. 76° 53' 19"

LOCATION: John Hanson Middle School

AQUIFER: Upper Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 645 ft;

Casing diameter: 6 in. to 398 ft; 4 in. from 398 to 630 ft;

Screen diameter: 4 in. from 630 to 645 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 193 ft above NGVD of 1929.

MEASURING POINT: Top of casing 2.0 ft above land surface.

PERIOD OF RECORD: April 1986 to current year.

EXTREMES FOR RECORD: Highest water level measured, 216.7 ft below land surface, on April 10, 1987; lowest measured, 257.46 ft below land surface, on September 29, 2021.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	257.46	Jan 25, 2022	255.73	Apr 15, 2022	255.08
Nov 17,2021	257.36	Mar 22, 2022	255.35	Jun 07, 2022	254.43



WELL NUMBER: CH Da 21
PERMIT NUMBER: CH-73-0592
LOCATION: Douglas Point
LAT. 38° 26' 59", LONG. 77° 15' 24"
AQUIFER: Upper Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 381 ft;
Casing diameter: 6 in. to 366 ft;
Screen diameter: 6 in. from 366 to 381 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 90 ft above NGVD of 1929.
MEASURING POINT: Top of casing 1.67 ft above land surface.
PERIOD OF RECORD: April 1976 to current year.
EXTREMES FOR RECORD: Highest water level measured, 88.19 ft below land surface, on March 25, 1980; lowest measured, 106.44 ft below land surface, on April 29, 2022.

DA	TE	WATER LEVEL
Sep	27,2021	106.09
Apr	29,2022	106.44



LOWER PATAPSCO AQUIFER SYSTEM

WELL NUMBER: CH Bc 24	PERMIT NUMBER: CH-02-0874
LOCATION: Potomac Heights	LAT. 38° 36' 34", LONG. 77° 08' 30"
AQUIFER: Lower Patapsco aquifer of the Pata	psco Formation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observa	ation, artesian well, depth 435 ft;
Casing diameter: 10 in. to 383.5 ft and	398.5 to 415 ft;
Screen diameter: 10 in. from 383.5 to 3	598.5 and 415 to 435 ft.
INSTRUMENTATION: Periodic measurement	ts.
DATUM: Altitude of land surface is 72 ft abov	e NGVD of 1929.
MEASURING POINT: Top of casing 1.55 ft al	bove land surface.
PERIOD OF RECORD: October 1955 to ci	urrent year.
EXTREMES FOR RECORD: Highest water le	evel measured, 122 ft below land surface, on October 10,
1955; lowest measured, 203.48 ft below	<i>v</i> land surface, on September 21, 2007.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	189.12	Jan 25, 2022	184.64	Apr 25, 2022	183.51
Nov 17,2021	185.90	Mar 22, 2022	183.93	Jun 13, 2022	183.59



WELL NUMBER: CH Bc 81
PERMIT NUMBER: CH-88-0482
LOCATION: Montrose Farms
LAT. 38° 37' 09", LONG. 77° 06' 10"
AQUIFER: Lower Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 656 ft; Casing diameter: 6 in. to 541 ft; 4 in. from 531 to 556 ft, 588 to 642 ft, and 646 to 656 ft; Screen diameter: 4 in. from 556 to 588 ft, and 642 to 646 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 156.46 ft above NGVD of 1929.
MEASURING POINT: Top of casing 2.82 ft above land surface.
PERIOD OF RECORD: March 1990 to current year.
EXTREMES FOR RECORD: Highest water level measured, 238 ft below land surface, on March 19, 1990; lowest measured, 298.89 ft below land surface, on September 21, 2007.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	275.46	Jan 25, 2022	272.87	Apr 25, 2022	269.93
Nov 17,2021	273.29	Mar 16, 2022	271.17	Jun 09, 2022	269.77



WELL NUMBER: CH Be 72	PERMIT NUMBER: CH-95-0275
LOCATION: Saw Mill Place	LAT. 38° 39' 03", LONG. 76° 59' 43"
AQUIFER: Lower Patapsco aquifer of the Patapsco Form	nation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, arter	sian well, depth 905 ft;
Casing diameter: 4 in. to 720 ft, and 730 to 880 f	ft, and 900 to 905 ft;
Screen diameter: 4 in. from 720 to 730 ft, and 88	30 to 900 ft.
INSTRUMENTATION: Periodic measurements.	
DATUM: Altitude of land surface is 110 ft above NGVE) of 1929.
MEASURING POINT: Top of casing 2.55 ft above land	surface.
PERIOD OF RECORD: June 2007 to current year.	
EXTREMES FOR RECORD: Highest water level measured	ured, 224.36 ft below land surface, on April 19,
2016; lowest measured, 254.58 ft below land sur	face, on October 31, 2007.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	234.38	Jan 25,2022	232.13	Apr 25,2022	230.48
Nov 17,2021	232.88	Mar 16,2022	231.25	Jun 09,2022	233.31



WELL NUMBER: CH Bf 146

PERMIT NUMBER: CH-81-0593

LOCATION: Near St. Charles

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LAT. 38° 35' 08", LONG. 76° 54' 07"
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AQUIFER: Lower Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age. WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1,427 ft;

Casing diameter: 6 in. to 1,059 ft, 1,069 to 1,073 ft, 1,083 to 1,161 ft, 1,166 to 1,170 ft, 1,180 to 1,184 ft, 1,189 to 1,195 ft, 1,205 to 1,244 ft, 1,249 to 1,252 ft, 1,262 to 1,298 ft, 1,328 to 1,342 ft, and 1,417 to 1,427 ft;

Screen diameter: 6 in. from 1,059 to 1,069 ft, 1,073 to 1,083 ft, 1,161 to 1,166 ft, 1,170 to 1,180 ft, 1,184 to 1,189 ft, 1,195 to 1,205 ft, 1,244 to 1,249 ft, 1,252 to 1,262 ft, 1,298 to 1,328 ft and 1,342 to 1,417 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 192.8 ft above NGVD of 1929.

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

PERIOD OF RECORD: December 1983 to current year.

EXTREMES FOR RECORD: Highest water level measured, 195.82 ft below land surface, on April 4, 1985; lowest measured, 351.74 ft below land surface, on September 25, 2002.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	324.77	Jan 25,2022	322.04	Apr 22,2022	326.84
Nov 17,2021	324.15	Mar 22,2022	326.07	Jun 07,2022	319.01



WELL NUMBER: CH Cc 31

PERMIT NUMBER: CH-73-1416 LAT. 38° 34' 55", LONG. 77° 07' 44"

LOCATION: Dravo well

AQUIFER: Lower Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 559 ft;

Casing diameter: 6 in. to 200 ft; 4 in. from 200 to 438 ft, 453 to 480 ft, 505 to 544 ft, and 554 to 559 ft;

Screen diameter: 4 in. from 438 to 453 ft, 480 to 505 ft, and 544 to 554 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 35 ft above NGVD of 1929.

MEASURING POINT: Top of casing 3.65 ft above land surface.

PERIOD OF RECORD: April 1977 to current year.

EXTREMES FOR RECORD: Highest water level measured, 75 ft below land surface, on April 26, 1977; lowest measured, 141.06 ft below land surface, on September 21, 2007.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	120.64	Jan 25,2022	118.79	Apr 25,2022	118.36
Nov 17,2021	120.15	Mar 22,2022	119.20	Jun 09,2022	118.62



WELL NUMBER: CH Ce 56

LOCATION: Heritage Green, La Plata

PERMIT NUMBER: CH-94-1111

LAT. 38° 32' 51", LONG. 76° 58' 39"

AQUIFER: Lower Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age. WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1,268 ft;

Casing diameter: 6 in. to 475 ft; 4 in. from 475 to 896 ft, 906 to 945 ft, 950 to 957 ft, 962 to 993 ft, 1,008 to 1,024 ft, 1,029 to 1,037 ft, 1,042 to 1,094 ft, 1,134 to 1,166 ft, 1,186 to 1,204 ft, 1,214 to 1,248 ft, and 1,258 to 1,268 ft;

Screen diameter: 4 in. from 896 to 906 ft, 945 to 950 ft, 957 to 962 ft, 993 to 1,008 ft, 1,024 to 1,029 ft, 1,037 to 1,042 ft, 1,094 to 1,134 ft, 1,166 to 1,186 ft, 1,204 to 1,214 ft, and 1,248 to 1,258 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 196.48 ft above NGVD of 1929.

MEASURING POINT: Top of casing 2.76 ft above land surface.

PERIOD OF RECORD: March 1997 to current year.

EXTREMES FOR RECORD: Highest water level measured, 287.66 ft below land surface, on March 16, 1998; lowest measured, 383.59 ft below land surface, on September 21, 2007.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	336.15	Jan 25,2022	330.78	Apr 22,2022	331.91
Nov 17,2021	334.55	Mar 22,2022	331.76	Jun 07 , 2022	334.54



WELL NUMBER: CH Da 20
PERMIT NUMBER: CH-73-0590
LOCATION: Douglas Point
LAT. 38° 26' 54", LONG. 77° 15' 27"
AQUIFER: Lower Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 522 ft; Casing diameter: 6 in. to 420 ft, 425 to 444 ft, 449 to 481 ft, and 486 to 517 ft; Screen diameter: 6 in. from 420 to 425 ft, 444 to 449 ft, 481 to 486 ft, and 517 to 522 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 90 ft above NGVD of 1929.
MEASURING POINT: Top of casing 1.75 ft above land surface.
PERIOD OF RECORD: September 1977 to current year.

EXTREMES FOR RECORD: Highest water level measured, 89.14 ft below land surface, on March 22, 1979; lowest measured, 107.96 ft below land surface, on April 29, 2022.

DA	TE	WATER LEVEL
Sep	27,2021	107.69
Apr	29,2022	107.96



WELL NUMBER: CH De 52
PERMIT NUMBER: CH-94-6280
LOCATION: Chapel Point Woods
LAT. 38° 27' 52", LONG. 76° 59' 36"
AQUIFER: Lower Patapsco aquifer of the Patapsco Formation of Lower Cretaceous age
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1220 ft; Casing diameter: 6 in. to 1128 ft, and 1158 to 1190 ft, and 1210 to 1220 ft; Screen diameter: 6 in. from 1128 to 1158 ft, and 1190 to 1210 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 165 ft above NAVD88.
MEASURING POINT: Top of steel casing 1.09 ft above land surface.

PERIOD OF RECORD: June 2007 to current year.

EXTREMES FOR RECORD: Highest water level measured, 244.24 ft below land surface, on June 22, 2007; lowest measured, 250 ft below land surface, on October 1, 2021.

DATE	WATER LEVEL
Oct 01,2021	250.00
Apr 29,2022	249.88



PATUXENT AQUIFER SYSTEM

WELL NUMBER: CH Bc 75	PERMIT NUMBER: CH-92-0500
LOCATION: Chapman' s Landing Well 2	LAT. 38° 36' 45", LONG. 77° 06' 24"
AQUIFER: Patuxent aquifer of the Patuxent Formati	on of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, artesian well,	, depth 940 ft;
Casing diameter: 8 in. to 820 ft, 825 to 860 ft	t, 880 to 898 ft, and 923 to 940 ft;
Screen diameter: 8 in. from 820 to 825 ft, 86	0 to 880 ft, and 898 to 923 ft.
INSTRUMENTATION: Periodic measurements.	
DATUM: Altitude of land surface is 109.64 ft above	NGVD of 1929 (Start June 2021)
MEASURING POINT: Top of casing 2.5 ft above or	iginal land surface. (Start June 2021)
PERIOD OF RECORD: June 1993 to current year.	
EXTREMES FOR RECORD: Highest water level m	leasured, 120.95 ft below land surface, on September
26, 1994; lowest measured, 234.59 ft below 1	land surface, on April 23, 2021.

REMARKS: Beginning in June 2021, a new reference measuring point was used. The hydrograph record was corrected to the new datum for this report.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	219.16	Jan 25,2022	217.36	Apr 25,2022	218.69
Nov 18,2021	217.63	Mar 22,2022	218.43	Jun 13,2022	220.20





WELL NUMBER: CH Bc 77
PERMIT NUMBER: CH-88-1028
LOCATION: Chapman's Landing Well 1
LAT. 38° 36' 44", LONG. 77° 05' 55"
AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 955 ft; Casing diameter: 16 in. to 60 ft; 8 in. from 0 to 845 ft; and 6 in. from 845 to 925 ft; Screen diameter: 6 in. from 925 to 955 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 96.64 ft above NGVD of 1929.
MEASURING POINT: Top of casing 4.36 ft above land surface.
PERIOD OF RECORD: August 1990 to current year.

EXTREMES FOR RECORD: Highest water level measured, 94 ft below land surface, on August 10, 1990; lowest measured, 208.83 ft below land surface, on June 25, 2021.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021 Nov 18,2021	206.72 207.30	Jan 25,2022 May 05,2022	205.15 206.65	Jun 09,2022	207.80



WELL NUMBER: CH Bc 78

PERMIT NUMBER: CH-94-0394

LAT. 38° 38' 09", LONG. 77° 05' 34"

LOCATION: Bryans Road Well 5

AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, artesian well, depth 790 ft;

Casing diameter: 10 in. to 550 ft; 6 in. from 550 to 675 ft, and 685 to 710 ft;

Screen diameter: 6 in. from 675 to 710 ft, and 685 to 790 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 20.13 ft above NGVD of 1929.

MEASURING POINT: Top of 2 in riser pipe 1.0 ft above land surface.

PERIOD OF RECORD: September 1995 to current year.

EXTREMES FOR RECORD: Highest water level measured, 16 ft below land surface, on September 15, 1995; lowest measured, 129.18 ft below land surface, on October 1, 2021.

DA	TE	WATER LEVEL
Oct	01,2021	129.18
Apr	29,2022	128.19



WELL NUMBER: CH Bd 52
LOCATION: Route 227 test site
AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1,105 ft; Casing diameter: 4 in. to 1,040 ft, and 1,050 to 1,085 ft, and 1,095 to 1,105 ft; Screen diameter: 4 in. from 1,043 to 1,050 ft, and 1,085 to 1,095 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 47.5 ft above NGVD of 1929.
MEASURING POINT: Top of casing 3.0 ft above land surface.

PERIOD OF RECORD: October 1996 to current year.

EXTREMES FOR RECORD: Highest water level measured, 46.55 ft below land surface, on November 20, 1996; lowest measured, 153.72 ft below land surface, on April 29, 2021.

DA	TE	WATER LEVEL
Oct	01,2021	151.43
Apr	29,2022	153.31



WELL NUMBER: CH Be 57
DCATION: Smallwood West
LAT. 38° 37' 06", LONG. 76° 57' 56"
AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.
WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1,696 ft; Casing diameter: 6 in. to 400 ft; 4 in. from 400 to 1,660 ft; Screen diameter: 4 in. from 1,660 to 1,696 ft.
INSTRUMENTATION: Periodic measurements.
DATUM: Altitude of land surface is 212.26 ft above NGVD of 1929.
MEASURING POINT: Top of casing 2.0 ft above land surface.
PERIOD OF RECORD: June 1985 to current year.

EXTREMES FOR RECORD: Highest water level measured, 196.1 ft below land surface, on April 3, 1986; lowest measured, 275.87 ft below land surface, on April 29, 2022.

DATE	WATER LEVEL
Oct 01,2021	275.12
Apr 29,20222	275.87



WELL NUMBER: CH Be 73

PERMIT NUMBER: CH-12-0183 LAT. 38° 39' 03", LONG. 76° 59' 43"

LOCATION: Saw Mill Place

AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1400 ft;

Casing diameter: 4 in. to 1120 ft; 1135 to 1140 ft; 1150 to 1186 ft; 1196 to 1256 ft; 1261 to 1314 ft; 1324 to 1357 ft.; 1362 to 1372 ft.; 1377 to 1385 ft.; 1395 to 1400 ft.;

Screen diameter: 4 in. from 1120 to 1135 ft.; 1140 to 1150 ft.; 1186 to 1196 ft.; 1256 to 1261 ft.; 1314 to 1324 ft.; 1357 to 1362 ft.; 1372 to 1377 ft.; 1385 to 1395 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 106 ft above NAVD of 1988.

- MEASURING POINT: Top of flange plate 2.3 ft above land surface.
- PERIOD OF RECORD: June 2013 to current year.
- EXTREMES FOR RECORD: Highest water level measured, 146.83 ft below land surface, on October 30, 2013; lowest measured, 175.65 ft below land surface, on June 09, 2022.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	174.66	Jan 25,2022	174.86	Apr 25,2022	175.37
Nov 17,2021	174.97	Mar 16,2022	175.22	Jun 09,2022	175.65



WELL NUMBER: CH Bf 166

LOCATION: Pinefield

PERMIT NUMBER: CH-12-0182

LAT. 38° 38' 47", LONG. 76° 51' 20"

AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1975 ft;

Casing diameter: 4 in. to 1717 ft; 1727 to 1747 ft; 1752 to 1774 ft; 1784 to 1819 ft; 1854 to 1960 ft; 1970 to 1975 ft.;

Screen diameter: 4 in. from 1717 to 1727 ft.; 1747 to 1752 ft.; 1774 to 1784 ft.; 1819 to 1854 ft.; 1960 to 1970 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 211 ft above NAVD of 1988.

MEASURING POINT: Top of flange plate 2.6 ft above land surface.

PERIOD OF RECORD: November 2013 to current year.

EXTREMES FOR RECORD: Highest water level measured, 228.18 ft below land surface, on November 8, 2013; lowest measured, 247.73 ft below land surface, on June 07, 2022.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 30,2021	246.72	Jan 25,2022	247.03	Apr 22,2022	247.59
Nov 11,2021	246.90	Mar 22,2022	247.41	Jun 07,2022	247.73



WELL NUMBER: CH Bf 167

PERMIT NUMBER: CH-12-0185 LAT. 38° 35' 56", LONG. 76° 50' 52"

LOCATION: Gardiner Road

AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 2073 ft;

Casing diameter: 4 in. to 1818 ft; 1848 to 1934 ft; 1954 to 2008 ft; 2018 to 2048 ft; 2068 to 2073 ft.;

Screen diameter: 4 in. from 1818 to 1848 ft.; 1934 to 1954 ft.; 2008 to 2018 ft.; 2048 to 2068 ft. INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 182 ft above NAVD of 1988.

MEASURING POINT: Top of 4 inch casing 2.5 ft above land surface.

PERIOD OF RECORD: November 2013 to current year.

EXTREMES FOR RECORD: Highest water level measured, 205.3 ft below land surface, on February 27, 2014; lowest measured, 219.50 ft below land surface, on June 07, 2022.

REMARKS: No January and March measurements because the lock was seized, and the well could not be accessed.

DATE	LEVEL	DATE	WATER LEVEL
Sep 30, 2 Nov 17, 2	2021218.882021219.08	May 05, 2 Jun 07, 2	2022 219.48 2022 219.50



WELL NUMBER: CH Bg 18

PERMIT NUMBER: CH-95-1036

LOCATION: near Malcolm

LAT. 38° 36' 21", LONG. 76° 46' 28" AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 2300 ft;

Casing diameter: 4 in. to 1914 ft; 1924 to 2034 ft; 2049 to 2151 ft; 2161 to 2200 ft; 2205 to 2228 ft; 2233 to 2257 ft; 2267 to 2288 ft; 2298 to 2300 ft;

Screen diameter: 4 in. from 1914 to 1924 ft; 2035 to 2049 ft; 2151 to 2161 ft; 2200 to 2205 ft; 2228 to 2233 ft; 2257 to 2267 ft; 2288 to 2298 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 187.16 ft above NAVD88.

MEASURING POINT: Top of casing 2.6 ft above land surface.

PERIOD OF RECORD: November 2009 to current year.

EXTREMES FOR RECORD: Highest water level measured, 194.31 ft below land surface, on November 5, 2009; lowest measured, 223.70 ft below land surface, on June 25, 2021.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 30,2021	223.69	Jan 25,2022	223.11	Apr 22,2022	223.04
Nov 17,2021	223.56	Mar 22,2022	223.05	Jun 07,2022	222.84



WELL NUMBER: CH Cc 34

PERMIT NUMBER: CH-94-0897

LOCATION: Mattawoman Waste -Water Treatment Plant
 LAT. 38° 34' 41", LONG. 77° 06' 39"
 AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age
 WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 975 ft;
 Casing diameter: 4 in. to 874 ft, 884 to 945 ft, and 955 to 975 ft;
 Screen diameter: 4 in. from 874 to 884 ft, and 945 to 955 ft.
 INSTRUMENTATION: Periodic measurements.
 DATUM: Altitude of land surface is 41.82 ft above NGVD of 1929.
 MEASURING POINT: Top of casing 2.9 ft above land surface.

PERIOD OF RECORD: August 1996 to current year.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	146.69	Jan 25 , 2022	145.02	Apr 25,2022	145.59
Nov 17,2021	146.08	Mar 22,2022	145.03	Jun 09,2022	146.38



EXTREMES FOR RECORD: Highest water level measured, 44.78 ft below land surface, on September 12, 1996; lowest measured, 146.75 ft below land surface, on June 25, 2021.

WELL NUMBER: CH Ce 57

LOCATION: Heritage Green, La Plata

PERMIT NUMBER: CH-94-1112

LAT. 38° 32' 50", LONG. 76° 58' 40"

AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1,703 ft;

Casing diameter: 6 in. to 400 ft; 4 in. from 400 to 1,406 ft, 1,421 to 1,500 ft, 1,515 to 1,668 ft, and 1,698 to 1,703 ft;

Screen diameter: 4 in. from 1,406 to 1,421 ft, 1,500 to 1,515 ft, and 1,668 to 1,698 ft. INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 193.47 ft above NGVD of 1929.

MEASURING POINT: Top of casing 5.0 ft above land surface.

PERIOD OF RECORD: March 1997 to current year.

EXTREMES FOR RECORD: Highest water level measured, 192.64 ft below land surface, on June 26, 1997; lowest measured, 232.29 ft below land surface, on April 22, 2022.



WELL NUMBER: CH Ce 66

LOCATION: White Plains Regional Park

PERMIT NUMBER: CH-12-0184

LAT. 38° 34' 44", LONG. 76° 55' 12"

AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.

WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 1925 ft;

Casing diameter: 4 in. to 1512 ft; 1522 to 1605 ft; 1645 to 1714 ft; 1724 to 1794 ft; 1809 to 1814 ft.; 1824 to 1876 ft.; 1886 to 1900 ft.; 1910 to 1925 ft.;

Screen diameter: 4 in. from 1512 to 1522 ft.; 1605 to 1645 ft.; 1714 to 1724 ft.; 1794 to 1809 ft.; 1814 to 1824 ft.; 1876 to 1886 ft.; 1900 to 1910 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 179 ft above NAVD of 1988.

- MEASURING POINT: Top of flange plate 2.35 ft above land surface.
- PERIOD OF RECORD: September 2013 to current year.

EXTREMES FOR RECORD: Highest water level measured, 204.18 ft below land surface, on September 12, 2013; lowest measured, 219.83 ft below land surface, on June 7, 2022.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Sep 29,2021	219.09	Jan 25,2022	219.39	Apr 22,2022	219.81
Nov 17,2021	219.34	Mar 22,2022	219.64	Jun 07,2022	219.83



WELL NUMBER: CH Da 18PERMIT NUMELOCATION: Douglas PointLAT. 38° 26' 54'AQUIFER: Patuxent aquifer of the Patuxent Formation of Lower Cretaceous age.WELL CHARACTERISTICS: Drilled, observation, artesian well, depth 740 ft;

Casing diameter: 8 in. to 684 ft, and 694 to 730 ft;

Screen diameter: 8 in. from 684 to 694 ft, and 730 to 740 ft.

INSTRUMENTATION: Periodic measurements.

DATUM: Altitude of land surface is 89.9 ft above NGVD of 1929.

MEASURING POINT: Top of recorder platform 3.10 ft above land surface.

PERIOD OF RECORD: September 1976 to current year.

EXTREMES FOR RECORD: Highest water level measured, 81.11 ft below land surface, on September 21, 1976; lowest measured, 104.27 ft below land surface, on April 29, 2022.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DA	TE	WATER LEVEL
Sep	27,2021	103.91
Apr	29,2022	104.27



PERMIT NUMBER: CH-73-0586

TABLES AND GRAPHS SHOWING GROUNDWATER WITHDRAWALS AND WATER LEVELS

WALDORF AREA



Figure 2. Location of Magothy aquifer observation wells (black) and the Magothy aquifer well fields (green) in the Waldorf area.

DATE	AVG WITHDRAWALS IN GALLONS PER MONTH	AVG WITHDRAWALS IN GALLONS PER DAY
Jul 2021	106,289,148	3,428,682
Aug 2021	108,479,648	3,499,344
Sep 2021	100,097,502	3,336,583
Oct 2021	100,355,322	3,237,268
Nov 2021	89,726,262	2,990,875
Dec 2021	92,515,656	2,984,376
Jan 2022	85,560,502	2,760,016
Feb 2022	68,733,791	2,454,778
Mar 2022	71,206,589	2,296,987
Apr 2022	80,260,904	2,675,364
May 2022	90,822,617	2,929,762
Jun 2022	102,157,797	3,405,260

Table 1. Monthly pumpage data for the Magothy wells in the Waldorf area.



Mattwoman/Beantown Pinefield John Hanson Piney Church Billingsley Rd Cleveland Park St Charles Westwood Dr Towne Plaza





Figure 4. Daily water level and pumpage trends in the Magothy aquifer in the Waldorf area.