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2002 Drinking Water Quality Report
Water is a precious resource.
Please use it wisely...

June 2003

Message from the County Executive

Dear Anne Arundel County Water Customers,

It is with great pleasure that we bring to you, the 2002 Annual Drinking Water Quality Report. Once again this year, our public water system met all state and federal standards. In 2002, Anne Arundel County residents met the challenge of state imposed water restrictions across central Maryland due to the drought, and a decrease in water supply due to a broken 72-inch water main from Baltimore City that supplied water to many of our North County residents. These challenges provided even greater cause for reflection on the importance of an abundant supply of clean, reliable drinking water.

In response to the ongoing threat of terrorism throughout the world, Anne Arundel County completed and certified to the Environmental Protection Agency (EPA) our water system's vulnerability assessment. We are in the process of reviewing and updating our emergency operations plans which will be presented to EPA in the fall of 2003.

We continue to work diligently to build the infrastructure necessary to ensure a safe and abundant supply of drinking water for future generations. I encourage each of you to practice water conservation and teach children to respect this precious resource. I hope you find this report informative.

Sincerely,

A handwritten signature in black ink that reads "Janet S. Owens".

Janet S. Owens
County Executive





Anne Arundel County Department of Public Works 2002 Drinking Water Quality Report

Public Water Meets All Federal, State Requirements...

Reflecting the pride and spirit of excellence in which it is produced and distributed, the drinking water produced by the Department of Public Works in 2002 once again met all state and federal requirements. More than 12 billion gallons of clean, safe drinking water were delivered to approximately 360,000 customers. More than 9.5 billion gallons of this water was treated and distributed after being taken from deep wells throughout the county. About 2.5 billion gallons were purchased from Baltimore City.

Sources, Treatment and Distribution

The county's public water system consists of eight water service areas as seen on the map on page 2. Drinking water purchased from Baltimore City is surface water taken from reservoirs. Drinking water in the county is drawn from the Patuxent and Patapsco aquifers via deep wells ranging in depth from 221 to more than 1000 feet deep. These aquifers are underground sand layers through which water travels



at a slow rate from the recharge area to the wells. The groundwater delivered by Anne Arundel County is typically treated at our treatment facilities by the following processes: aeration for oxidation of iron; chlorine addition for disinfection; lime addition for pH adjustment; sedimentation for iron and particle removal; filtration for iron and particle removal, and fluoride addition to prevent dental decay. From the treatment plants, the treated or "finished" water enters the distribution system which contains over 1,100 miles of water mains that deliver water directly to customers.

Testing

Water produced by the Department of Public Works' Bureau of Utility Operations is tested at our state certified laboratory. In addition, some complex water quality analyses are performed by the State of Maryland and private laboratories. These tests are performed to ensure that superior quality drinking water is consistently delivered to our customers. In 2002 over 13,000 samples were collected and 45,000 analyses performed for approximately 130 parameters. This report summarizes the results of these tests, which we perform throughout the year to measure for both regulated and unregulated contaminants.

System Improvements

The Department of Public Works continually analyzes the needs of the public water system to plan infrastructure and capacity expansion to meet the needs of future generations. In 2002 a "strategic water system study" was completed which outlines future system additions and improvements through the year 2020. In the past two decades the expansion of plant and storage capacity has been a primary goal. In recent years, the emphasis has shifted to improving and expanding the transmission system to make the system more flexible and functional. During 2002, several projects were completed to enhance the water facilities and distribution system. One important project was a new water transmission main which will allow for improved water transfer from our Severna Park treatment plant to the Jacobsville area. Projects are currently underway in which sections of transmission main are being built that when eventually connected will transport water from our Arnold treatment plant to the Sun Valley area.

System Security

The safety of our public water system and our customers is of the utmost importance to the Department of Public Works. Therefore, we have recently completed a vulnerability assessment of the system and submitted certification of the assessment to the Environmental Protection Agency (EPA). We are currently reviewing and updating our emergency operations plans. Certification of this review will be made to the EPA in the fall of 2003.

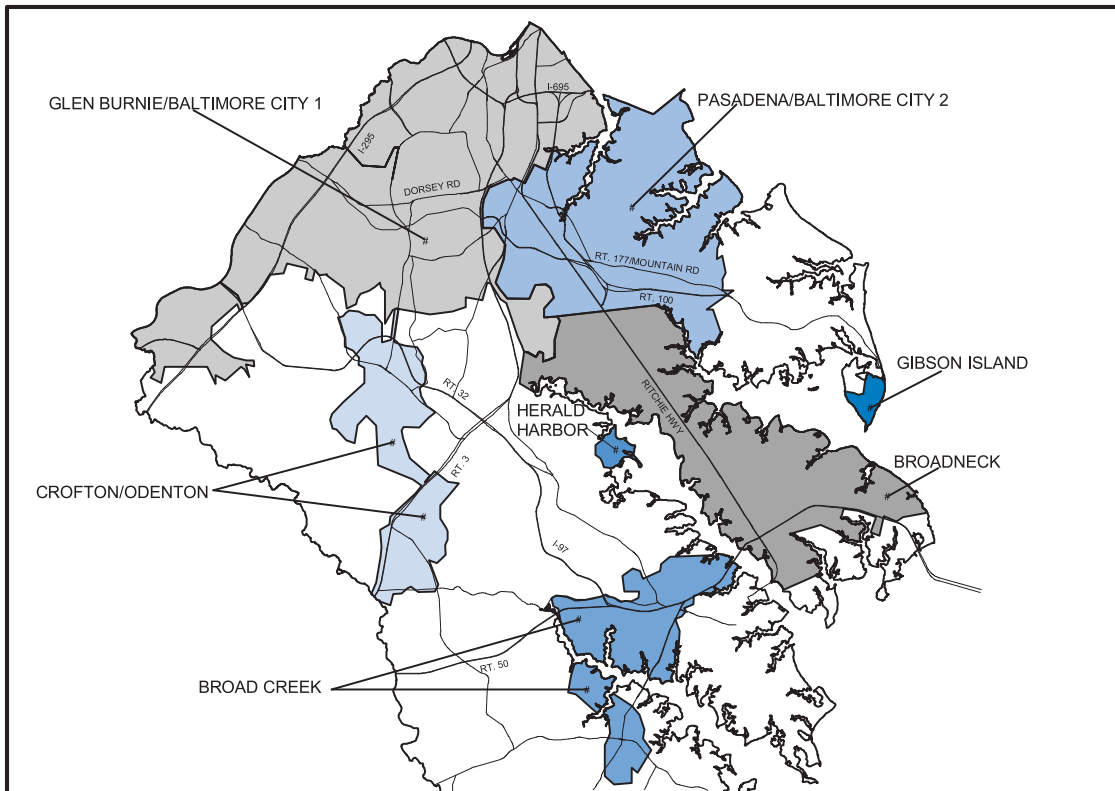
Water Restrictions

Although we strive to consistently provide excellent customer service and drinking water of outstanding quality, occasionally circumstances beyond our control dictate the need for water restrictions. The Department of Public Works would like to thank our customers for meeting the challenge when faced with water restrictions in 2002. After a 72-inch water main supplying water to the northeast corner of the county from Baltimore City broke, customers in the zip codes 21122, 21226 and 21260 responded admirably to the challenge. These customers conserved enough water to make it possible for the county to provide adequate supplies from other sections of the county to meet daily usage and fire protection needs. The exemplary efforts of our customers illustrate the importance of a successful partnership between our utility and its customers.

Public Participation...

All capital projects which include improvements and/or additions to the water supply system are included in the annual budget presented by the County Executive to the County Council each spring. Public hearings are advertised and conducted throughout the County. Public comment is welcome. Copies of the budget are available for review from the County Council offices and at local branches of the County library. The County also maintains a "Ten Year Master Plan for Water Supply and Sewage Systems." This plan can be reviewed at any branch of the County library or at the Office of Planning and Zoning at 2664 Riva Road, Annapolis, or by contacting the Long Range Planning Section at 410-222-7432.

Anne Arundel County Water Service Areas



Terms and Definitions Used in Water Quality Data Table

Maximum Contaminant Level (MCL) - highest level of a contaminant allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Action Level - concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.

N/A - not applicable

ND - not detectable at testing limit

NT - not tested

ppm - parts per million or milligrams per liter. One part per million is the equivalent of 1 cent in \$10,000 or one minute in two years.

ppb - parts per billion or micrograms per liter. One part per billion is the equivalent of 1 cent in \$10,000,000 or one minute in two thousand years.

pCi/l - picocuries per liter (a measure of radiation)

mrem/s - millirems per liter (a measure of radiation)

NTU - nephelometric turbidity units (a measure of clarity)

TT - treatment technique, a required process intended to reduce the level of a contaminant in drinking water.

DRINKING WATER QUALITY DATA — 2002

PARAMETER (units)	MAXIMUM CONTAMINANT LEVELS		GLEN BURNIE/ BALTIMORE CITY #1 ZONE		PASADENA/ BALTIMORE CITY #2 ZONE		BROADNECK ZONE		CROFTON/ ODENTON ZONE		BROAD CREEK ZONE		GIBSON ISLAND ZONE		HERALD HARBOR ZONE		NOTES	TYPICAL SOURCES OF CONTAMINATION
	MCL	MCLG	highest level	range of detection	highest level	range of detection	highest level	range of direction	highest level	range of detection	highest level	range of detection	highest level	range of detection	highest level	range of detection		
Microbiological Contaminants																		
Total Coliforms (#)	5% Positive	0 % Positive	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	0%	N/A	1	Naturally present in the environment.
Turbidity (NTU)	TT	N/A	0.25	100%	0.44	99.9%	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	2	Soil run-off
Radioactive Contaminants																		
Alpha Emitters (pCi/l)	15	N/A	4	0.9 - 5.8	8	1.0 - 11.3	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	3, 5	Erosion and/or decay of natural deposits.
Beta Emitters (pCi/l)	50	N/A	3	3 - 3	3	3 - 3	NT	N/A	1	1 - 1	NT	N/A	NT	N/A	NT	N/A	3, 5, 9	Erosion and/or decay of natural deposits.
Combined Radium (pCi/l)	5	N/A	3	1.2 - 1.9	5	3.4 - 5.5	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	3, 5	Erosion and/or decay of natural deposits.
Inorganic Contaminants																		
Barium (ppm)	2	2	0.009	ND - 0.009	0.050	ND - 0.050	0.028	ND - 0.028	NT	N/A	0.010	0.010-0.010	0.005	0.005 - 0.005	0.003	0.003 - 0.003		Erosion and/or decay of natural deposits; discharge of drilling wastes; discharge from metal refineries.
Fluoride (ppm)	4.0	4.0	1.92	0.10 - 1.92	1.70	0.10 - 1.70	1.98	0.15 - 1.98	1.95	0.04 - 1.95	1.61	0.43 - 1.61	2.00	0.46 - 2.00	1.61	0.71 - 1.61		Erosion and/or decay of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Nitrate (ppm)	10	10	1.32	ND - 1.32	2.08	0.49 - 2.08	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A		Erosion and/or decay of natural deposits; leaching from septic tanks; sewage.
Nickel (ppb)	100	N/A	14	ND - 14	2	ND - 2	ND	N/A	NT	N/A	ND	N/A	ND	N/A	ND	N/A	5	Erosion and/or decay of natural deposits; discharge of drilling wastes; discharge from metal refineries.
Lead (ppb)	AL = 15	0	ND	3	ND	3	ND	3	ND	0	ND	1	6	3	6	2	4, 5	Erosion and/or decay of natural deposits; corrosion of household plumbing systems.
Copper (ppm)	AL = 1.3	1.3	0.13	0	0.13	0	0.13	0	0.07	0	0.14	0	ND	0	0.05	0	4, 5	Erosion and/or decay of natural deposits; corrosion of household plumbing systems.
Selenium (ppb)	50	50	4	ND - 4	ND	N/A	4	4 - 4	NT	N/A	4	4 - 4	ND	N/A	3	3 - 3		Run-off from herbicide.
Disinfection By-Products																		
Total Trihalomethanes (ppb)	80	N/A	34.7	ND - 103.0	36.7	15.0 - 95.4	36.7	15.0 - 95.4	2.2	0.7 - 4.0	8.6	6.5 - 11.4	NT	N/A	NT	N/A	3, 5	By-product of drinking water treatment processes.
Total Haloacetic Acids (ppb)	60	N/A	30	5 - 67	26	5 - 57	NT	N/A	3	ND - 3	9	ND - 9	NT	N/A	NT	N/A	3, 5	By-product of drinking water treatment processes.

Volatile Organic Contaminants / Synthetic Organic Contaminants																		
Tetrachloroethene (ppb)	5	0	ND	N/A	2.3	ND - 2.3	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	5	Leaching from pvc pipes; discharge from factories and dry cleaners.
Pentachlorophenol (ppb)	1	0	1	ND - 1	1	ND - 1	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A		Discharge from wood preserving factories.
Di(2-ethylhexyl)phthalate (ppb)	6	0	1	ND - 1	1	ND - 1	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A		Discharge from rubber and chemical factories.
Unregulated Contaminants																		
Radon (pCi/l)	N/A	N/A	35	35 - 35	130	25 - 130	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	6, 7	Erosion and/or decay of natural deposits.
Sodium (ppm)	N/A	N/A	12.80	0.20 - 12.80	19.80	0.87 - 19.80	2.68	0.77 - 2.68	2.83	0.38 - 2.83	3.67	0.66 - 3.67	5.18	3.69 - 5.18	2.87	0.73 - 2.87	5, 6	Naturally present in the environment; by-product of drinking water treatment processes.
Sulfate (ppm)	N/A	N/A	16.80	1.13 - 16.80	60	17 - 60	16.40	9.05 - 16.40	NT	N/A	8.92	8.92 - 8.92	18.10	18.10 - 18.10	7.44	7.44 - 7.44	5, 6	Naturally present in the environment.
Dicamba (ppb)	N/A	N/A	3	ND - 3	ND	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	6	Run-off from herbicide.
Disulfoton (ppb)	N/A	N/A	7	ND - 7	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	NT	N/A	6	Run-off from insecticide.

TABLE NOTES:

Note 1: The “MCL” and “MCLG” for Total Coliforms is based on the percentage of “positive coliform results” in a given month. The MCL requires that less than or equal to 5% of the samples test positive. The percentage of positive sample results is shown in the “range of detection” column.

Note 2: Turbidity standards are based on a “treatment technique” and are only applicable to systems using surface water as a source. The maximum Turbidity allowed in a given month is 5 NTU, and 95% of the results must be less than 0.5 NTU. This is indicated in the “range of detection” column.

Note 3: Compliance with the MCL for these contaminants is based on the average of four quarterly samples. The “range of detection” numbers represent individual analysis results, not an average. There were no MCL violations at any facility.

Note 4: Compliance with the MCL for Lead and Copper is based on the “90th percentile” value of all analysis results. The number of sample results exceeding the MCL for these parameters is indicated in the “range of detection” column.

Note 5: Testing for some parameters is not required on an annual basis. Some results reflect the most recent testing between 2000 - 2002.

Note 6: Testing required by EPA to determine if an MCL/health standard should be set.

Note 7: Currently, there is no MCL for Radon. The proposed MCL is 300 pCi/l.

Note 8: EPA considers a level of 50 pCi/l equivalent to the actual MCL of 4 mrems/l.

General Note: The drinking water was analyzed for more than 100 other parameters. These contaminants do not appear in the data table because they were not detected.



Information from the EPA...

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from waste treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic discharges, oil and gas production, mining or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.



Facts About...

Radium...

Radium is a naturally occurring substance which can, if exposed to acidic conditions (low pH), leach into groundwater. The EPA has set maximum contaminant levels for radium. The County monitors the public water system, and as in past years, the analysis results were within the acceptable levels set by the EPA.

Radon...

Radon is a naturally occurring radioactive gas that may cause cancer, and may be found in drinking water and indoor air. The EPA advises that some people who are exposed to radon in drinking water may have increased risk of cancer over the course of their lifetime, especially lung cancer. Radon in soil under homes is the biggest source of radon in indoor air, and a greater risk of lung cancer than radon in drinking water. For more information, call EPA's Radon Hotline (800-SOS-RADON) or visit the web site at www.epa.gov/iaq/radon. Testing has indicated that radon is not present in the public water system at concentrations which would cause any health concerns.

Cryptosporidium...

Cryptosporidium is a microscopic parasite that may cause diarrhea, fever and related gastrointestinal disorders in infected humans and animals. Cryptosporidium may find its way into drinking water that comes from surface water, such as reservoirs, rivers or lakes. Cryptosporidium is not a problem in drinking water taken from aquifers via deep wells. Since the source of drinking water from Baltimore City is reservoirs, the City monitors its raw water sources for cryptosporidium. Samples from the raw water sources were analyzed and determined to be free of viable organisms. The City protects its water supply reservoirs to help prevent these organisms from entering the water supply.

Arsenic...

Arsenic is a naturally occurring substance which, if contained in drinking water, could increase the risk of serious health concerns such as circulatory problems. The proposed EPA level for this contaminant is 10 mg/l. Testing has indicated that there is no arsenic in the public water system.

Contact us...

24 Hour Emergency Hotline	410-222-8400
(from South County)	410-451-4118
Billing Office	410-222-1144
DPW Customer Relations	410-222-7582
DPW General Information	410-222-7500

For more information about the Department of Public Works or to contact us by email, visit our website at:

www.aadpw.org

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