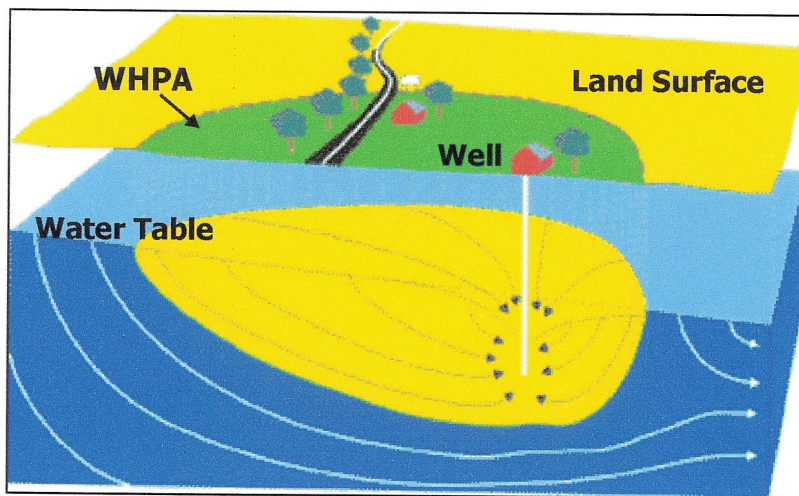


SOURCE WATER ASSESSMENT
FOR THE MEADOWVIEW GROUND WATER SUPPLY
CECIL COUNTY, MD



Prepared By
Maryland Department of the Environment
Water Management Administration
Water Supply Program
March 2001



SUSCEPTIBILITY SUMMARY

In 1998, Cecil County was awarded a Wellhead Protection (WHP) grant by the Maryland Department of the Environment (MDE) to establish a WHP plan for eight community water systems. The studies were completed in August 2000 by Advanced Land and Water, Inc (ALWI). The 1996 amendments to the Safe Drinking Water Act require the State to conduct source water assessments for all of its public drinking water systems.

The Maryland Department of the Environment Water Supply Program (WSP) has conducted a source water assessment for the Meadowview ground water supply based on the completed WHP Plan. The required components as described in Maryland's Source Water Assessment Plan (SWAP) are: (1) delineation of an area that contributes water to the source, (2) identification of potential sources of contamination, and (3) determination of the susceptibility of the water supply to contamination. The first two steps have been addressed in the Meadowview WHP Plan as well as recommendations for protecting the drinking water supply (ALWI, 2000). The WSP is responsible for completing the susceptibility determinations for this system.

The source for the Meadowview ground water supply is an unconfined aquifer in the Coastal Plain that consists of unconsolidated alluvial sediments (MD Dept. of Natural Resources, 1989). The system currently uses two wells to obtain their drinking water. The wellhead protection area (WHPA) for the Meadowview wells was delineated for the Cecil County Office of Planning and Zoning by ALWI using U.S. EPA approved methods specifically designed for each source (ALWI, 2000). For ground water systems, a WHPA is considered to be the source water assessment area.

Table 1 shows the potential sources of contamination within the assessment areas that were identified in the WHP Plan (ALWI, 2000). The delineated WHPA and the mapped contaminant point sources from Table 1 are shown on Figure 1. Well information and water quality data were also reviewed. Tables 2a, 2b, 3a, and 3b summarize the contaminant detects above 50% of the actual or proposed maximum contaminant levels (MCLs) since 1992 for the Meadowview production wells. An aerial photograph of the well locations is shown on Figure 2.

The susceptibility analysis of Meadowview's ground water supply was based on the review of the water quality data, potential sources of contamination, aquifer characteristics, and well integrity. It was determined that the ground water supply at Meadowview is susceptible to contamination by nitrates, volatile organic compounds (e.g. solvents and gasoline), and radionuclides, but is not susceptible to synthetic organic compounds, microbiological contaminants, or other inorganic compounds.

**Table 1. Point Source and Potential Contamination Hazards
Meadowview Wellhead Protection Area**

| Site ID | Zonal Designation | Site Name | Potential Hazard | Data Source (See Figures) |
|---------|-------------------|---|-------------------------------------|---------------------------|
| A | 3 | W.L. Gore & Associates, Inc. | Hazardous Waste | 1 |
| B | 3 | 27 Maple Ct., Winding Brook Subdivision | Emergency Response Release | 2 |
| C | 3 | 32 Maple Ct., Winding Brook Subdivision | Emergency Response Release | 2 |
| D | 2 | Winding Brook Garden Apartments | Underground Storage Tank | 1 |
| E | 2 | Fletchwood Market | Underground Storage Tank | 3 |
| F | 1 | Meadowville Utilities | Hazardous Waste | 3 |
| G | 1 | Fletchwood Pumping Station | Underground Storage Tank | 2 |
| H | 2 | Meadow View Wastewater Treatment | Coliform Bacteria / NO ₃ | 3 |

DATA SOURCE: 1 - Field Reconnaissance; 2 - EDR Report; 3 - Field Reconnaissance and EDR Report

SUMMARY OF WATER QUALITY SUSCEPTIBILITY ANALYSIS

| CONT.ID | CONTAMINANT NAME | MCL (ppm) | SAMPLE DATE | RESULT (ppm) |
|---------|------------------|-----------|-------------|--------------|
| 1040 | NITRATE | 10 | 29-Dec-93 | 6.1 |
| 1040 | NITRATE | 10 | 29-Dec-94 | 8.2 |
| 1040 | NITRATE | 10 | 09-Mar-95 | 5.1 |
| 1040 | NITRATE | 10 | 26-Mar-95 | 5.5 |
| 1040 | NITRATE | 10 | 27-Sep-95 | 6.3 |
| 1040 | NITRATE | 10 | 25-Jan-96 | 6.53 |
| 1040 | NITRATE | 10 | 03-Dec-96 | 6.5 |
| 1040 | NITRATE | 10 | 25-Mar-97 | 8.35 |
| 1040 | NITRATE | 10 | 02-Mar-98 | 6.25 |
| 1040 | NITRATE | 10 | 30-Nov-98 | 9.1 |
| 1040 | NITRATE | 10 | 24-Feb-99 | 7 |
| 1040 | NITRATE | 10 | 01-Dec-99 | 6.9 |
| 1040 | NITRATE | 10 | 07-Mar-00 | 6.6 |

Table 2a. IOC Results Above 50% of the MCL for Sycamore Plant Well, Finished Water Since 1993

| CONT ID | CONTAMINANT NAME | MCL (ppm) | SAMPLE DATE | RESULT (ppm) |
|---------|------------------|-----------|-------------|--------------|
| 1040 | NITRATE | 10 | 29-Dec-93 | 6.3 |
| 1040 | NITRATE | 10 | 29-Dec-94 | 5.9 |
| 1040 | NITRATE | 10 | 26-May-95 | 6.7 |
| 1040 | NITRATE | 10 | 26-Jan-96 | 5.74 |
| 1040 | NITRATE | 10 | 03-Dec-96 | 7 |
| 1040 | NITRATE | 10 | 25-Mar-97 | 8.36 |
| 1040 | NITRATE | 10 | 02-Mar-98 | 5.64 |
| 1040 | NITRATE | 10 | 30-Nov-98 | 7.9 |
| 1040 | NITRATE | 10 | 23-Feb-99 | 6.3 |
| 1040 | NITRATE | 10 | 01-Dec-99 | 6.5 |
| 1040 | NITRATE | 10 | 07-Mar-00 | 6.3 |

Table 2b. IOC Results Above 50% of the MCL for Fletchwood Plant Well, Finished Water Since 1993

| CONT. ID | CONTAMINANT NAME | MCL (pCi/L) | SAMPLE DATE | RESULT (pCi/L) |
|----------|------------------|--------------|-------------|----------------|
| 4004 | RADON-222 | 300 or 4000* | 07-Mar-00 | 720 |
| 4000 | GROSS ALPHA | 15 | 16-Jan-01 | 8 |

* proposed by EPA

Table 3a. Radionuclide Results Above 50% of the Actual or Proposed MCLs for Sycamore Plant Well, Finished Water Since 1992

| CONT. ID | CONTAMINANT NAME | MCL (pCi/L) | SAMPLE DATE | RESULT (pCi/L) |
|----------|------------------|--------------|-------------|----------------|
| 4004 | RADON-222 | 300 or 4000* | 07-Mar-00 | 390 |
| 4000 | GROSS ALPHA | 15 | 16-Jan-01 | 8 |

* proposed by EPA

Table 3b. Radionuclide Results Above 50% of the Actual or Proposed MCLs for Fletchwood Plant Well, Finished Water Since 1992

REFERENCES

- Advanced Land and Water, Inc., 2000, Wellhead Protection Plan for the Meadowview Groundwater Supply System Cecil County, Maryland, 13 p.
- Maryland Department of the Environment Water Supply Program, 1999, Maryland's Source Water Assessment Plan, 36 p.
- Maryland Department of Natural Resources, Water Resources Administration, 1989, Northeastern Cecil County Water Supply Resources Development and Management Plan, 416 p.

OTHER SOURCES OF DATA

- Water Appropriation and Use Permit No. CE1958G005
- Water Treatment Plant Inspection Reports
- MDE Water Supply Program Oracle Database
- Department of Natural Resources 1995 Digital Orthophoto Quarter Quadrangle for Newark West SE
- USGS 7.5 Minute Series Topographic Map, Newark West Quadrangle
- Maryland Office of Planning 1997 Cecil County Land Use Map
- Maryland Office of Planning 1995 Cecil County Sewerage Coverage Map