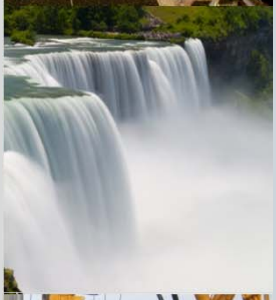
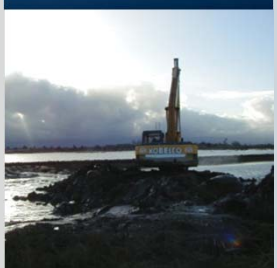
S.S. Papadopulos & Associates, Inc.
Environmental and Water Resource Consultants





Source Water Protection Plan for the Thurmont, Maryland Public Water System

November, 2013

S.S. Papadopulos & Associates, Inc.
7944 Wisconsin Avenue
Bethesda, Maryland 20814

and

Chesapeake Environmental Management, Inc.
42 North Main Street
Bel Air, MD 21014

Source Water Protection Plan for the Thurmont, Maryland Public Water System

Prepared for:
Maryland Department of the Environment
Water Supply Program
(Purchase Order # P2400301)

Prepared by:

S.S. PAPADOPULOS & ASSOCIATES, INC.
Environmental & Water-Resource Consultants

Chesapeake Environmental Management, Inc.

November, 2013

7944 Wisconsin Avenue, Bethesda, Maryland 20814-3620 • (301) 718-8900

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List of Acronyms

AGPD	Average Gallons per Day
BMP	Best Management Practices
CEM	Chesapeake Environmental Management
ESD	Environmental Site Design
GIS	Geographic Information System
GPD	Gallons per Day
IOC	Inorganic Compounds
MCL	Maximum Contaminant Level
MDE	Maryland Department of the Environment
MGPD	Maximum Gallons per Day
OCP	Oil Control Program
PCS	Potential Contaminant Source
PWS	Public Water System
PWSID	Public Water System Identification
SOC	Synthetic Organic Compounds
SSP&A	S.S. Papadopulos & Associates
SWAA	Source Water Assessment Area
SWPP	Source Water Protection Plan
TCE	Trichloroethylene
TTHM	Total Trihalomethanes
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WHPA	Wellhead Protection Area
WHPO	Wellhead Protection Ordinance

REPORT

Section 1
Introduction

This Source Water Protection Plan (SWPP) was prepared for the Town of Thurmont by S.S. Papadopulos & Associates (SSP&A) and Chesapeake Environmental Management (CEM). The plan was initiated and funded by the Maryland Department of the Environment (MDE) under Purchase Order # P2400301.

In the early 2000s, the MDE completed or contracted out completion of Source Water Assessments (SSWAAs) for public water systems (PWS) across the state. These reports were developed in accordance with Maryland's Source Water Assessment Plan (1999). The content of these reports included

- Designation of Source Water Assessment Areas (SWAAs)
- Identifying Potential Sources of Contamination, and
- Completing a Susceptibility Analysis for each PWS groundwater source.

Thurmont's SWAP was completed by MDE in 2000 (MDE, 2000).A significant portion of this report is an update to the previous SWAA Report, including an update to the SWAAs. Recommendations included within this report, however, go beyond those in the original Source Water Assessment Report (MDE, 2000). To date, the town of Thurmont has opted not to develop a Wellhead Protection Ordinance, in favor of coordination with Frederick County, since recharge areas for some of the Town's sources lie outside of town boundaries (Thurmont Planning & Zoning Commission, 2010). Recommendations in this report address a number of issues associated with Wellhead Protection.

In completing this report, MDE provided assistance through access to files, databases, and GIS data. The report contents were discussed with representatives of Frederick County, and public input was solicited prior to finalization to help ensure that recommendations for Source Water Protection were consistent with the County's needs and resources.

1.1 Community Involvement

Opportunities for public involvement were provided during the course of this project. The goals and scope of the project were presented at a Town Council Meeting on June 19, 2012. Public notices prior to this meeting included an announcement in the Frederick News Post.

The final recommendations of this report will be presented to the Town Council.

Section 2
Background

The Town of Thurmont is located in Frederick County, approximately 10 miles south of the Pennsylvania Border (Figure 1). According to the 2010 census, the Town's population was approximately 6,200 people. The Thurmont Public Water System (PWS) is operated by the Town, and serves approximately 2,300 connections. The town comprises the center of the Thurmont Community Growth Area, as designated in the Frederick County Comprehensive Plan (Figure 1; Frederick County, 2010)

The town of Thurmont encompasses approximately 3 square miles at an elevation of approximately 520 ft MSL, rising up to almost 900 feet on its western edge. The entire town is situated within the Middle Potomac River watershed, and Hunting Creek flows southward through the town, from its origins in the Catoctin Mountains to the west.

Currently the Town obtains its drinking water supply entirely from up to seven wells, with Well #2 used only during emergencies. An additional well, the Jermae well, has been permitted but is not currently in use. Surface water appropriation from High Run, while still permitted, is no longer active.

2.1 Groundwater and Surface Water Sources; System Operations

Currently the Thurmont Public Water System (PWSID 0100023) is permitted to withdraw 1,006,000 gallons per day (gpd) on average from up to six active wells (Table 1). These wells – Thurmont 3, 4, 7, 8, 9 and the Jermae Well, are covered by five Maryland Water Appropriation Permits (Table 2).

- Well #2 is permitted for an additional 89,000 gpd; this well is no longer in use, but can be utilized during emergencies.
- Well #5 is no longer in use (due to contamination), and there has never been a Well #6.
- The Jermae Well is new and currently not connected to the public water supply. Only a small amount of test use has been reported for this well, in 2010.
- Well #3 is classified as under the direct influence of surface water (GUDI). This designation requires additional monitoring, and is an indication of greater susceptibility to surface water impacts than most groundwater sources.

In addition to the groundwater withdrawal permits, the Town currently holds a single surface water permit for High Run, in the amount of 43,000 GPD on average (Table 2).

Data provided by MDE indicate that since 1995, Thurmont's PWS's total water use has been increasing approximately linearly (Figure 2). Surface water use was discontinued after 1992, with the increasing volumes made up by additional groundwater withdrawals. In the past ten years (2002 to 2011), the Thurmont PWS has appropriated between 185 million gallons to 268 million gallons per year, averaging about 221 million gallons a year, or about 606,000 gallons per day. This is equivalent to an extraction rate of 420 gallons per minute, on average.

2.2 Previous Source Water Assessment and Protection Reports

In 1995, the MDE completed a Wellhead Protection Plan for Thurmont which addressed potential contaminant sources and defined wellhead protection areas, utilizing zones based upon travel time of potential contaminants to the wells. A Source Water Assessment Report was also developed for Thurmont by MDE's Public Drinking Water Program in 2000 (MDE, 2000). This report found that the presence of potential sources of contamination in the assessment area and the inherent vulnerability of the aquifer cause Thurmont's wells to be susceptible to contamination by nitrate, radon, volatile organic compounds, synthetic organic compounds. In addition, Well #3 was considered vulnerable to microbiological contaminants.

2.3 Water System Infrastructure

The six wells currently in use share three treatment plants (Table 1) where the raw water receives hypochlorite treatment. Wells #7 and #9 also receive air stripping treatment for VOCs. The air stripper was replaced in 2012. The total system extractive capacity is more than 1 million gallons a day, although only a fraction of this is currently used (Thurmont Planning & Zoning Commission, 2010; Figure 2). The water system includes 3 elevated storage tanks and a covered concrete storage basin which have a combined total capacity of 580,000 gallons. The Town's effluent is treated at a single wastewater treatment plant with a capacity of about 1 million gallons a day that discharges to Hunting Creek (Thurmont Planning & Zoning Commission, 2010).

Section 3
Source Water Assessment

This section of the report provides the updated Source Water Assessment for the Thurmont PWS.

3.1 Hydrogeology and Hydrology

The town of Thurmont is located within the Gettysburg Lowland district of the Piedmont Plateau Physiographic Province (Reger and Cleaves, 2008; Figure 3). This region consists of valley regions floored by limestone bedrock, exhibiting many sinkholes, but few caves.

All wells in the Thurmont system are screened within the Frederick limestone or Gettysburg shale (Figures 1 and 3). Wells are open to the aquifer at depths from about 30 to 300 feet depth. These aquifers, consisting of sedimentary rocks with limited porosity, provide useable amounts of groundwater through fractures (secondary porosity; Duigan and Dine, 1987). In this area, groundwater occurs primarily under unconfined or semi-confined conditions in fractures in metamorphic and sedimentary rocks; its circulation is generally controlled by local topography (Duigon & Dine, 1987).

3.2 Review of Water Quality Data

Maryland's Water Supply Program provided SSP&A with compiled analytical data reported for the Thurmont PWS from 1990 to 2011. For the purposes of this analysis, ten (10) years' worth of data are reviewed (2001 to 2010). Data discussed here are compared to the US Environmental Protection Agency (USEPA)'s Maximum Contaminant levels (MCLs) and Maryland groundwater cleanup standards (MDE, 2008).

3.2.1 Volatile Organic Compounds (VOCs)

For the period from 2001 through 2010, 2,458 VOC analyses were reported for the Thurmont PWS. During this time period, a number of VOCs were detected (Table 3):

- Chlorinated sovlents
  - Carbon Tetrachloride
  - Chloroethane
  - Chloromethane
  - cis–1,2, Dichloroethane
  - Tetrachloroethene (PCE)
  - Trichlorethene (TCE)
- Chlorofluorocarbons (CFCs)
  - Dichlorofluoromethane (Freon 21)
  - Trichlorofluoromethane (Freon 11)

Most of these compounds are chlorinated compounds that likely originated from surficial use of solvents and/or industrial chemicals. Groundwater contamination with chlorinated

solvents has been a problem in Thurmont since the late 1990s; the Treatment Plants for wells #7 (TP 5) and #8 (TP 6) are equipped with air strippers to address contamination with TCE and other VOCs. As noted on Table 3, VOC detections in TP 2 (Well #2) have also occurred, although this well is not regularly in service. Reported TCE concentrations declined to below the MCL after installation of the treatment facilities, and no TCE is currently detected in raw water samples (Town of Thurmont, pers. Comm, 2013). A single detection of TCE at TP 5 (Well #7) exceeded the USEPA's MCL of 5 ug/l in 2011.

The other two VOCs reported – dichlorodifluoromethane and trichlorofluoromethane, are both chlorofluorocarbons, or CFCs. CFCs have been widely used as refrigerants, propellants (in aerosol applications), and solvents. The manufacture of such compounds has been phased out because they contribute to ozone depletion in the upper atmosphere. These compounds are very persistent in both the atmosphere and groundwater. There are no USEPA or MD MCLs for these compounds.

In addition, the following trihalomethanes (THM) were detected in the active treatment plants

- Bromodichloromethane
- Bromoform
- Chloroform
- Dibromochloromethane

Trihalomethanesare formed when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. These are regulated as a group – the Total Trihalomethanes (TTHM). The USEPA has established a Maximum Contaminant Level (MCL) of 80 ug/l for the TTHMs. Under USEPA's Stage 2 Disinfection Byprodcuts Rule (DBR), compliance with this standard is based upon an annual average value at each location. As shown in Table 3, for the period from 2001 to 2010, there have been no exceedances of the TTHM level; the annual averages have been lower than 40 ug/l.

3.2.2 Synthetic Organic Contaminants (SOCs)

Synthetic organic compounds detected in the Thurmont Public Water System are summarized in Table 4. The only contaminant detected was:

- Di(2-Ethylhexyl) Phthalate

Di (2-Ethylhexyl) phthalate is a common plasticizer and laboratory contaminant and may not be indicative of water quality in the aquifer. This compound was not detected in excess of relevant groundwater standards.

3.2.3 Inorganic Compounds

Inorganic compounds reported in Thurmont groundwater are summarized in Table 5. Many of these compounds can have both natural and man-made (anthropogenic) sources. None

of the parameters listed in Table 5 have exceeded the relevant standard - MCL or secondary MCL – during the time period from 2001 to 2010.

Nitrate is a naturally-occurring ion that is also a contaminant associated with agricultural fertilizers and septic systems/sewage. None of the nitrate measurements reported for Thurmont exceeded the MCL (10 mg/l) or one-half the MCL (5 mg/L). There is no indication of increasing nitrate levels for the Thurmont PWS. The highest concentrations (> 4 mg/l) were generally observed in the 1990s, prior to the removal of Well #2 from service.

3.2.4 Coliform Bacteria

Total coliforms are a group of closely related, mostly harmless bacteria that live in soil and water as well as the gut of animals. The extent to which total coliforms are present in source water can indicate the general quality of that water and the likelihood that the water is contaminated with fecal matter from animals or humans. Total coliforms are currently controlled in drinking water regulations (Total Coliform Rule) because their presence above the standard indicates problems in treatment or in the distribution system. EPA requires all PWS to monitor for total coliforms in distribution systems. If total coliforms are found, then the public water system must further analyze that total coliform-positive sample to determine which specific types of coliforms (i.e., fecal coliforms or *E. coli*) are present.

Table 6 summarizes the coliform results for the Thurmont system for the years 2001 to 2010. During this period, no positive detections for total coliform or fecal coliform were reported. In the previous SWAP Report (MDE, 2000), positive total coliform detections had been reported in untreated (raw) water for Well #3.

3.3 Source Water Assessment Areas

The Source Water Assessment Area describes the geographic boundary of areas providing water to public water systems. As per Maryland's Source Water Assessment Program Guidance (MDE, 1999), the primary tool to be used for delineating SWAAs for groundwater sources in areas of fractured bedrock is hydrogeologic mapping.

The following steps were used to define each SWAA for the Thurmont system:

1. Each source location was visually inspected in the field, and then mapped in a Geographic Information System (GIS);
2. Based upon the permitted average daily extraction value for each source, the total annual volume of recharge required was calculated;
3. Using MDE's drought annual recharge value for the Hunting Creek watershed, the surface area required to meet the permitted annual withdrawal values was calculated;
4. Geologic maps of the area were reviewed, and stereo-pairs of air photos were reviewed to delineate any lineaments that might be related to local geologic structures
5. A digital elevation model (DEM) and topographic maps of the area were reviewed for topographic and hydrologic constraints on surface water flow; and

6. This information was combined to determine the minimum geographic extent and shape of the SWAA for each well that corresponded to the calculated recharge area.

The new SWAA for wells is delineated on Figure 4. As the individual SWAAs for each of the wells overlap, a single composite SWAA is shown, with a total area of 1,820 acres.

As noted above, Thurmont's permit for surface water extraction is still extant, even though it is not being used. Consequently, the Hunting Creek watershed is also considered an area potentially contributing surface water to the Thurmont PWS. Since Well #3 is classified as GUDI, we have included the entire watershed, rather than just that portion upgradient of the High Run surface water intake. This SWAA, totally about 7,280 acres is also shown in Figure 4.

3.4 Potential Contaminant Sources

In August, 2011, staff of Chesapeake Environmental Management (CEM), completed a survey of the Thurmont area to identify any Potential Contaminant Sources (PCS) that might be located within or near the SWAAs. Identification and description of these PCS will assist in understanding current conditions with regard to threats to groundwater quality and contribute to the susceptibility analysis.

Prior to the field Survey, SSP&A obtained database and shape file layers from MDE and USEPA to assist in identifying existing and new PCS. These layers included those generated during the previous SWAA evaluation (2003-2005), MD oil control program (OCP) sites, registered generators of hazardous waste (GHS), registered pesticide dealers, existing and out-of-service underground storage tanks, and Land Remediation Program sites. These were used to create preliminary maps and tables from which CEM staff worked to identify existing PCS.

Twenty-five (25) PCS were identified in the area (Table 7). These include underground storage tanks (USTs) at gas stations, above-ground salt storage and diesel tanks associated with diesel generators and gas stations, a car wash, a cemetery and a dry cleaning establishment. In addition, the Thurmont WWTP is located within the SWAA boundary.

3.5 Land Use

Figures 6 and 7 and Table 8 illustrate the land use within the Thurmont SWAAs. For the wells, more than half (~53%) of the SWAA consists of low, medium, or high density residential areas, plus commercial and institutional properties. The remaining land use is largely forested and agricultural. About 60% of the SWAA is within the Town of Thurmont, and about 78% is within the Thurmont Community Growth Area.

The watershed contributing to the permitted, but unused surface water supply (and potentially to Well 3) consists of approximately 74% forested land, almost entirely outside the Town boundaries. Most of this SWAA (about 75%) occurs within the boundaries of the Catoctin Mountain National Park and Cunningham Falls State Park. The remaining land includes agricultural, large lot subdivision residential, and limited amounts of high density residential and industrial/institutional uses.

Zoning from the Frederick County Comprehensive Plan is shown in Figure 8. The zoning largely replicates the current land use for the Thurmont area, although agricultural areas currently on the edge of Thurmont are zoned for future residential and limited industrial use.

Water and Sewer Service is represented in Figure 9, and follows the land use divisions. The portions of the SWAA within the Town boundaries and Community Growth Area largely have existing or planned water and sewer service. No services are currently planned for the 20 to 40% of the land outside these designations.

3.6 Susceptibility Analysis

As outlined in MDE's Source Water Assessment Program Plan (1999), the goal of a Susceptibility Analysis is to assess the potential for a water supply source to be contaminated at concentrations that would pose a concern or be affected in a way that is detrimental to the operation, health of consumers, or long-term viability of the supply. The methodology relies on existing water quality data, and an evaluation of potential contaminants of concern and their sources. Specifically, if any potential contaminant of concern exceeds ½ the Federal MCL for 10% of the results, a more detailed evaluation is warranted.

Because the Thurmont PWS relies on wells open to fractured bedrock and surface water for its water supplies, all of these sources are potentially susceptible to contamination from surface sources. One of the sources (Well #3) is classified as under the direct influence of Surface Water (Table 1). The point sources previously identified in or near the SWAAs include potential sources of gasoline, motor oil, other man-made chemicals, and biological contaminants and nitrates (from wastewater discharge).

Section 4
Existing Provisions to Protect Groundwater

This section addresses existing provisions in place to protect Elkton's water supply, and provides recommendations for additional, improved or revised items.

4.1 Thurmont Master Plan

The Thurmont Master Plan (2010) addresses water resources in terms of protecting supplies, maintaining appropriate infrastructure, wastewater capacity and stormwater management. Among the objectives of that plan is protection of groundwater recharge areas around the town's wells. As noted above, the Town of Thurmont has not adopted its own wellhead protection ordinance, in favor of working with Frederick County, in part because water recharge areas lie on the edge of, or outside of town boundaries. Most of the groundwater sources lie within residential areas, with the exception of the unused Well #2. Surface water recharge areas (and potential impacts on Well #3) are almost entirely outside the town boundaries.

4.2 Frederick County Wellhead Protection Ordinance

In 2007, Frederick County adopted a Wellhead Protection ordinance (Frederick County Division of Planning, 2007) which applies to Frederick County jurisdiction. The ordinance includes a number of provisions, including

- A definition of wellhead protection areas (WPAs) that conforms to the Source Water Assessment areas developed by the MDE
- Requirements for placement and of hazardous substance and petroleum storage tanks and their containment capacities within the WPAs
- Requirements for review of permits regarding placement of storage tanks within WPAs
- Prohibited land uses within the WPAs

4.3 Frederick County Water Resources Element (WRE)

The Water Resources Element of Frederick's Comprehensive Plan was adopted in 2010. There are numerous aspects of the WRE that pertain to management of surface and groundwater water resources. These include general water resource policies, drinking water policies, drinking water action items, waste water action items and stormwater action items. Selected items relevant to the Thurmont area are summarized in Table 9.

In addition to the other items outlined in Table 9, stormwater management facilities for new development are required by the latest Maryland Stormwater Design Manual to treat stormwater using small-scale Environmental Site Design (ESD) facilities to the maximum extent practical. The County can provide feedback to the developers to ensure that the stormwater features are designed and installed appropriately to have the greatest benefit for water quality and quantity. Stormwater management plans should contain specifications for scheduled maintenance, which should be followed to ensure proper function.

Section 5
Recommendations for Source Water Protection

This section of the report addresses both existing and proposed provisions for protecting Thurmont's surface water and groundwater sources. The following recommendations are provided for protection of Thurmont's Source Water: Potential funding sources to assist with these recommendations are included in Table 10.

5.1 Contingency Planning for Emergency Spill Response

The Town of Thurmont does not maintain a Contingency Plan for its public water system. In general, for emergencies, the town relies on Frederick County 911 services and the Town Volunteer Fire Department (VFD).

It is recommended that The Town of Thurmont develop and maintain a plan in the event that a spill of hazardous materials, or other water-supply related emergency occurs. This contingency plan should include emergency contact lists, methods for community notification, locations of known PCS. The contents should include the following:

5.1.1 Emergency Contact Lists

Type of Incident	Designated Department	Contact
Hazardous Material Release	Frederick County Div. of Emergency Mgmt	Frederick County 911
Fire or Explosion	Thurmont VFD	Frederick County 911
Water distribution / Water Quality	Town Manager / Water Superintendent	301-271-7313

Under scenarios that might pose a risk of contamination to groundwater or surface water supplies (spill, explosion, leak) any immediate threat to human health will be most appropriately addressed by Emergency Services. The longer-term, potential threats to drinking water supplies are appropriately addressed by the Town; these responsibilities would include addressing water and sewer infrastructure, and ensuring the continued supply of potable water.

5.1.2 Known PCS

It is recommended that the Contingency Plan include all PCS identified in or near the SWAAs, as outlined in this report and future updates. Appropriate content includes

- Figure 5 and Table 7 from this report, and similar figures, as updated in future Source Water Protection Plans

5.1.3 Steps for Alerting the Public

Steps necessary to alert the public to water quality or water supply issues will be outlined. These will include existing measures currently used for public notification including

- Town emergency siren,
- Cable system alerts,
- Police alert text messages, and
- Electronic signs in public areas

In addition, as other measures become available, these will be implemented and the Contingency Plan will be updated as appropriate.

5.1.4 Alternate Water Supply for Impacted Source(s)

In cases where the water supply to a well or surface water source is threatened, the Town will take steps necessary to replace that water until the problem can be solved. The Town's current water storage capacity is approximately 2-day supply at average usage rates, and the Town has the ability to switch wells when one or more wells is out of service. Currently, the Town has plans to install emergency generators at wells to assist in case of power outage (Town of Thurmont, pers. comm., 2013).

No Town resources are currently available for replacement of water supplies should a lengthy outage occur. The primary option would therefore be reliance upon Frederick County emergency response. Alternately, temporary pumping and treatment of water from Well #2 might be appropriate.

5.2 Permitted Sources

As Well #2 is no longer in use, and prone to contamination, we recommend that the town properly abandon this well if its use for emergencies is deemed unsuitable.

As the surface water resources are no longer being used by the town, we recommend that the town consider closing the permit for surface water appropriation, unless such use is planned for the future. Alternately, if the Town anticipates future needs for this resource, we recommend that any necessarily rehabilitation or capital investments needed for its use be incorporated into the Town's comprehensive planning.

5.3 Wellhead Protection Ordinance

]it is recommended that the Town of Thurmont implement its own Wellhead Protection Ordinance (WHPO) to establish additional control over potential threats to groundwater quality, and to apply an updated approach to wellhead protection over that incorporated into Frederick County's WHPO. The Maryland Department of the Environment (MDE) has developed a model WHPO for use across the state. As per MDE's Model WHPO, the WHPO provisions can be designated by zone, with Zone 1 representing an area closest to the wellhead, and Zone 2 an area defined by the SWAAs delineated in this report (via MDE's methodology for fractured bedrock).

It is recommended that Zone 1 be defined as a 500 foot radius from the wellhead. Based on the survey of PCS detailed here, implementation of Zone 1 restrictions may result in one non-conforming uses near Well #4 – specifically the SHA Maintenance Facility, within 500 feet of the wellhead . This use may be "grandfathered", and re-evaluated at a later date if the land use changes or ownership changes. An example, WHPO for Thurmont, based on the MDE Model WHPO is provided in Appendix A.

Within Zone 1, specific land uses that involve concentrated storage and/or use of potential contaminants are prohibited. Within Zone 2, such land uses are conditional, pending Town approval. Among the requirements within both zones are application of Best Management Practices (BMPs) for managing hazardous materials and controlling surface water runoff. These BMPs will help ensure groundwater quality and quantity, and are defined in part by the state of Maryland's Stormwater Design Manual (updated 2009).

As noted elsewhere, significant portions of the Towns' SWAA lie within Frederick County jurisdiction. Thus, it is important that provisions of the Town's WHPO do not contradict with those of the Town, or cause conflicts.

5.4 Digital Information/Mapping Resources

The Town currently relies upon Frederick County for shared planning resources. It is recommended that the Town continue to develop mapping and Geographic Information Systems (GIS) resources, including the possible use of a contract planner. This effort will allow the County government to maintain and update high-precision geographic information related to SWAAs, water resources, PCS locations, potential effluent sources, and also provides the ability to generate custom maps. It is recommended that the SWAAs' (as currently defined and subsequently updated) GIS layers be incorporated into the development review process to identify potential impacts to groundwater resources during the planning phase.

SWAA maps can be very useful in communicating information to the public and decision makers as it regards water policy and emergency response. At a minimum, the Town should maintain hard copy maps that depict the boundaries of the SWAAs, PCS, critical infrastructure, emergency transportation options, and areas of high vulnerability at specific locations including fire stations, government offices, and water facilities in the area.

5.5 Source Water Assessment Areas and Source Water Protection Planning

Thurmont should update the delineation of SWAAs for the town, and complete a new inventory of Potential Contaminant Sources, and a new Susceptibility Analysis at a regular interval; an interval of every 6 years, coincident with revisions to the Town General Plan, is recommended. This interval will be sufficient to account for identifying new trends in groundwater monitoring data and will account for changes in zoning and land use. An updated Source Water Protection Plan should be completed and retained by the Town Planning Department after each review.

Between the completion of each new SWPP, the Department of Public Works and the Department of Planning should work together to implement the recommendations of the most current SWPP, particularly as recommendations change that affect land use.

Coincident with this review of water supply susceptibility, continue to review the County's Wellhead Protection Ordinance regulations approximately every six years. This will provide the Town with the opportunity to ensure that items such as the prohibited land uses are consistent with the town's goals, and will help to ensure that the Wellhead Protection regulations remain viable to implement.

5.6 Physical Protection of Sources

It is recommended that the Town improve the physical protection of water sources that are currently unprotected or minimally protected (e.g. the Jermae well, as currently configured). The Town should take steps to protect the components from accidental or intentional damage. This would include steps such as installing bollards around wells, fencing the wellheads off from unpermitted activity, and marking the area with no trespassing signs.

5.7 Public Interaction

It is recommended that the Town of Thurmont develop a robust outreach strategy that is focused on educating residents on how water issues affect each of them and how they can take steps to minimize their impacts. These efforts can include the development of educational materials and their distribution.

The Town of Thurmont owns its utility system and has an existing communication pathway with residents through the periodic distribution of water/electric bills and annual water quality reports. It is recommended that the Town utilize these mailings to alert residents as to any ongoing issues with the water supply system, to alert them to best management practices (BMPSs), such as the reduction in use of lawn fertilizer and pesticides, and to invite feedback at public discussions of water supply issues at Town Council meetings.

5.8 Signage for the Recharge Zones

It is recommended that the Town of Thurmont install additional signage that indicates what areas are located in the Recharge Zone. These signs should be placed along main roads and within residential developments. The road signs can explain to the public that they are entering a protected drinking water watershed and provide contact info which can help people to identify and report spills. Signs are available from the Maryland Rural Water Association for minimal cost to the Town.

Proposed locations are:

- On Maryland Route 806 just south of Pryor Drive
- On Maryland Route 77 just west of South Altamont Ave
- On Maryland Route 550 at North Altamont Ave
- On Maryland Route 550 at the northwest end of Meadow Lane
- On Maryland Route 550, just north of Hessong Bridge Road

5.9 Funding Opportunities

The Town of Thurmont should pursue means of outside funding for water quality improvement and community outreach efforts to offset additional costs incurred by protection measures and recommended actions identified. EPA and MDE provide opportunities for grants and loans through various programs targeted for specific purposes. Table 10 provides information pertaining to each funding opportunity and contact information to pursue funding.

5.10 Implementation Schedule

Table 11 is a matrix summarizing the results of this report. It includes a listing of possible threats to water quality and supply, recommended actions, together with estimated costs, sources of funding, and proposed schedule. Some potential costs and schedules are poorly defined at this time, and dependent upon further Town action. These are noted as "---" in the table.

Section 6
Conclusions and Summary

The Source Water Assessment for Thurmont's Public Water System has been updated to account for the current permitted water withdrawals. New Source Water Assessment Areas have been delineated, using MDE's prescribed method of hydrogeologic mapping. These comprise 1,820 acres associated with groundwater sources and 7,280 acres associated with the watersheds upgradient of surface water supplies and well (Well #3) considered under the influence of surface water.

The susceptibility analysis for the Thurmont PWS finds that all of the groundwater and surface water sources are potentially susceptible to surface contamination, including VOCs, IOCs, and SOCs. Detections of VOCs and SOCs in the past ten years do not indicate specific concerns, but warrant continued monitoring and contingency planning in case of future acceptable levels of groundwater contaminants.

Recommendations to the Town of Thurmont include the following:

- Implementation of a Contingency Planning for Emergency Spill Response – information on the required contents are provided, including:
  - Emergency Contact Lists
  - Known PCS
  - Steps for Alerting the Public
- Permitted Sources no longer in use:
  - Proper abandonment of Well #2, and
  - Relinquishment of the water appropriation for the High Run source
- Implementation of a Wellhead Protection Ordinance
  - An example WHPO is incorporated as Appendix A
- Continued efforts to support use of Digital Information/Mapping Resources, including the SWAAs developed in this analysis
- Regular updates to Source Water Assessment Areas and Source Water Protection Planning, every 6 years, consistent with the Comprehensive Planning schedule
- Physical Protection of the Jermae well to prevent physical damage, e.g. bollard, fence, and/or box cover
- Improved Public Interaction, using the existing water bills to alert the public of water quality/water supply issues
- Signage defining the boundaries of the Recharge Zones is recommended at 5 specific locations on state roads.
- Funding Opportunities from state and federal sources are provided, as is an implementation matrix listing funding sources and proposed schedules

Section 7
References

Duigon, Mark T., and James R. Dine. 1987. Water Resources of Frederick County, Maryland Abstract. Bulletin 33.

Frederick County Division of Planning. 2007. An Ordinance to Amend and Revise Certain Provisions of Chapters 1-19 and 1-6 of the Frederick County Code Regarding Wellhead Protection- The Effective Date of this Ordinance is May 26, 2007 - Ordinance No: 07-16-456. May 26.

Frederick County Division of Planning. 2010. Frederick County Comprehensive Plan, Adopted April, 2010.

Maryland Department of the Environment Water Supply Program. 1999. Maryland's Source Water Assessment Plan. January 29, 1999.

Maryland Department of the Environment. 2000. Source Water Assessment for the Town of Thurmont, Frederick County, MD. February.

Maryland Department of the Environment. 2008. Cleanup Standards for Soil and Groundwater. June.

Reger, James P., and Emery T. Cleaves. 2008. Explanatory Text for the Physiographic Map of Maryland. Open-File Report 08-0301. Maryland Geological Survey.

Thurmont Planning & Zoning Commission. 2010. Thurmont Master Plan - A Community Vision for 2010 and Beyond - Draft Plan of the Thurmont Board of Commissioners. February.

FIGURES

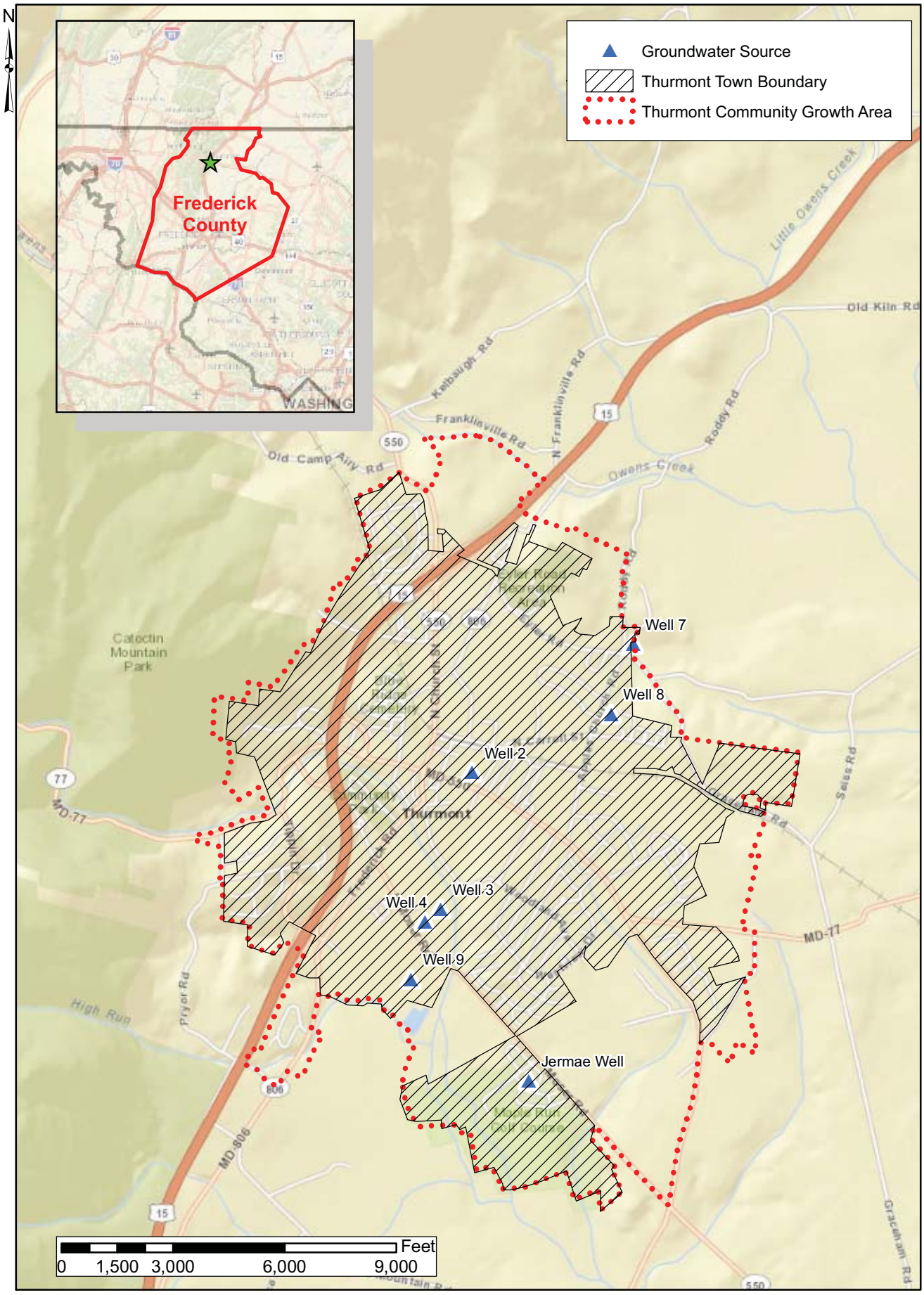


Figure 1 Location of Thurmont, Maryland and Groundwater Sources of the Thurmont PWS

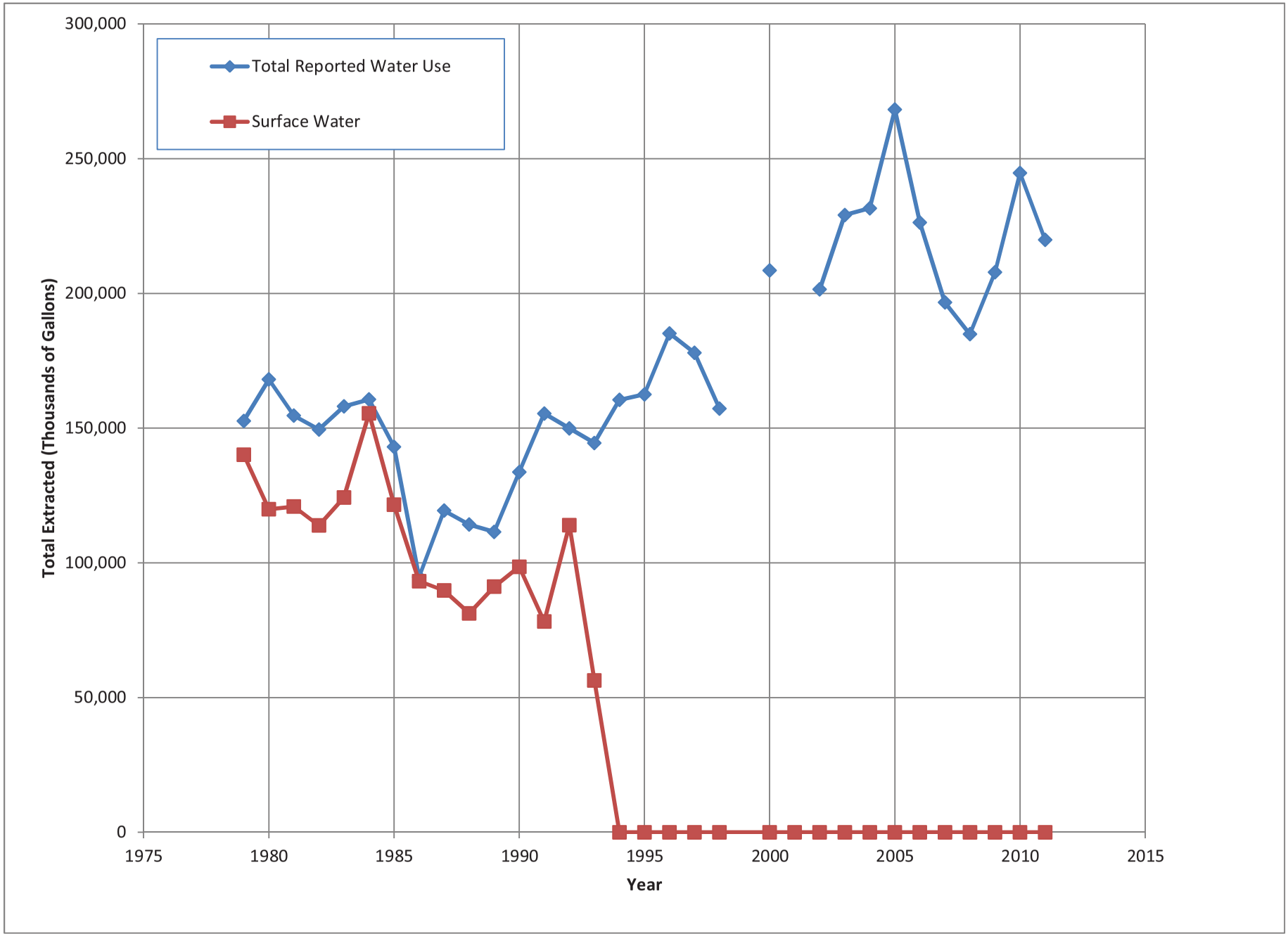
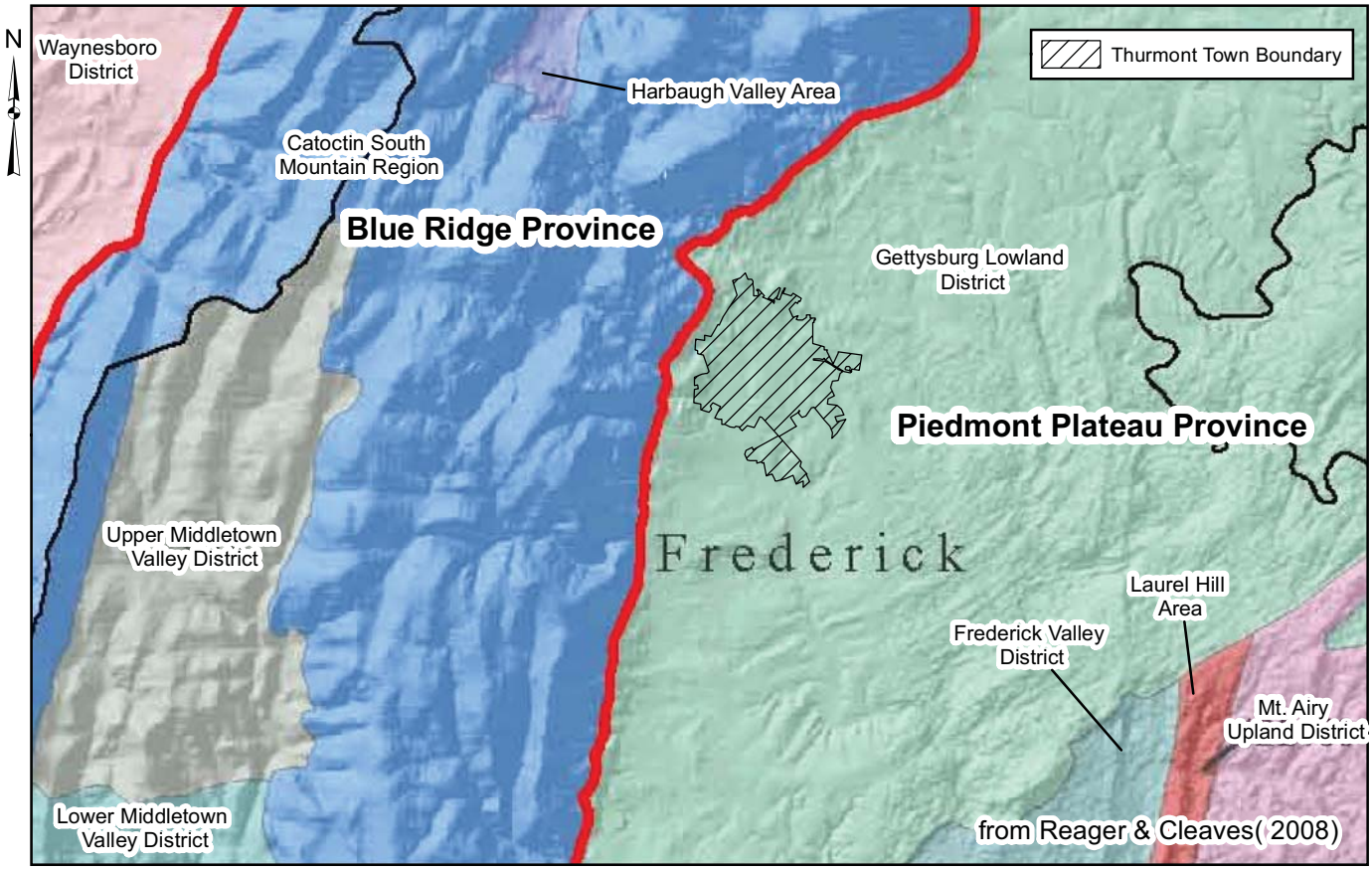


Figure 2 Reported Water Use by the Thurmont PWS, 1979 to 2011



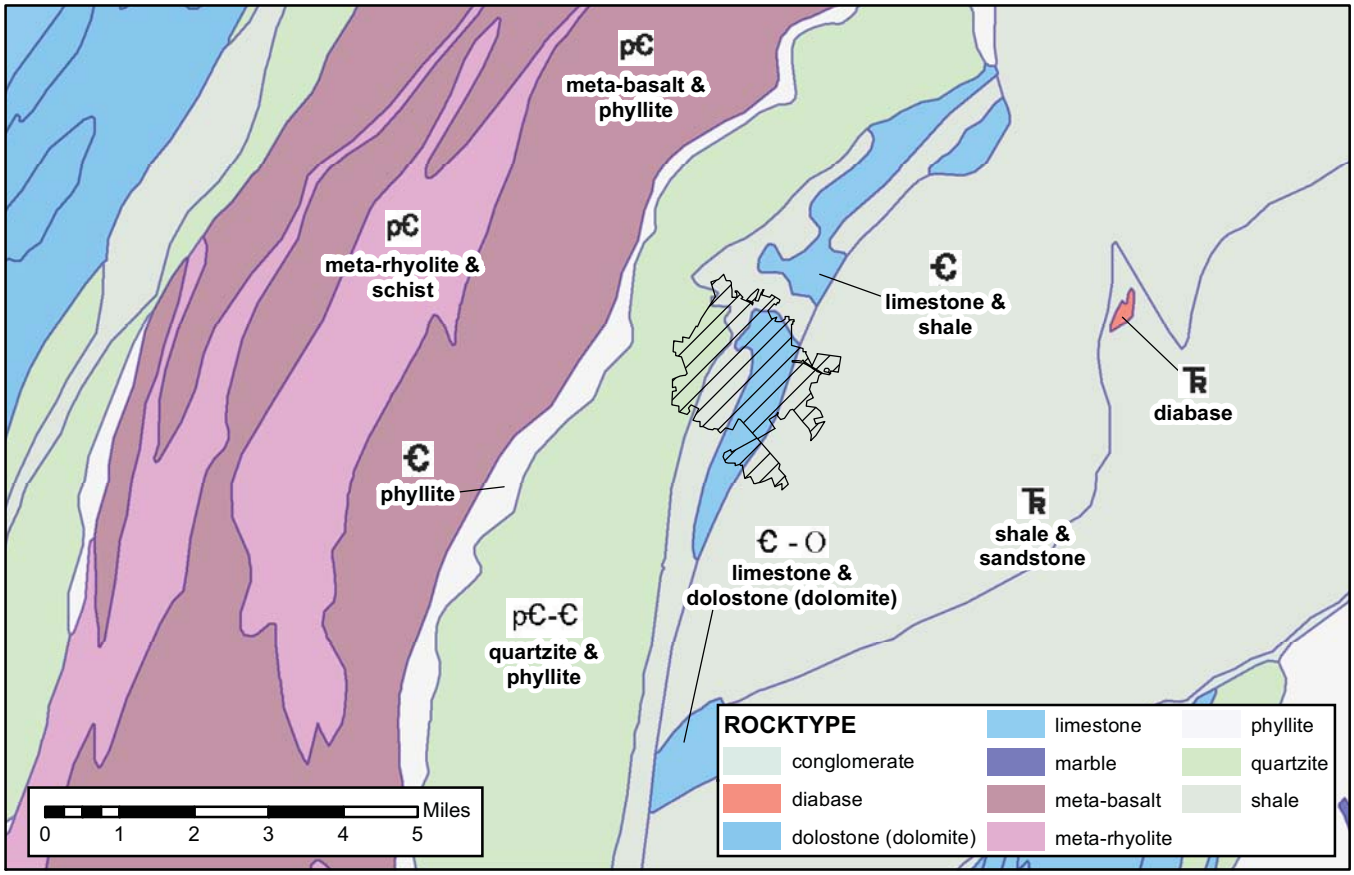


Figure 3 Physiographic Provinces of Maryland (A) and Bedrock Geology (B) in vicinity of Thurmont, MD

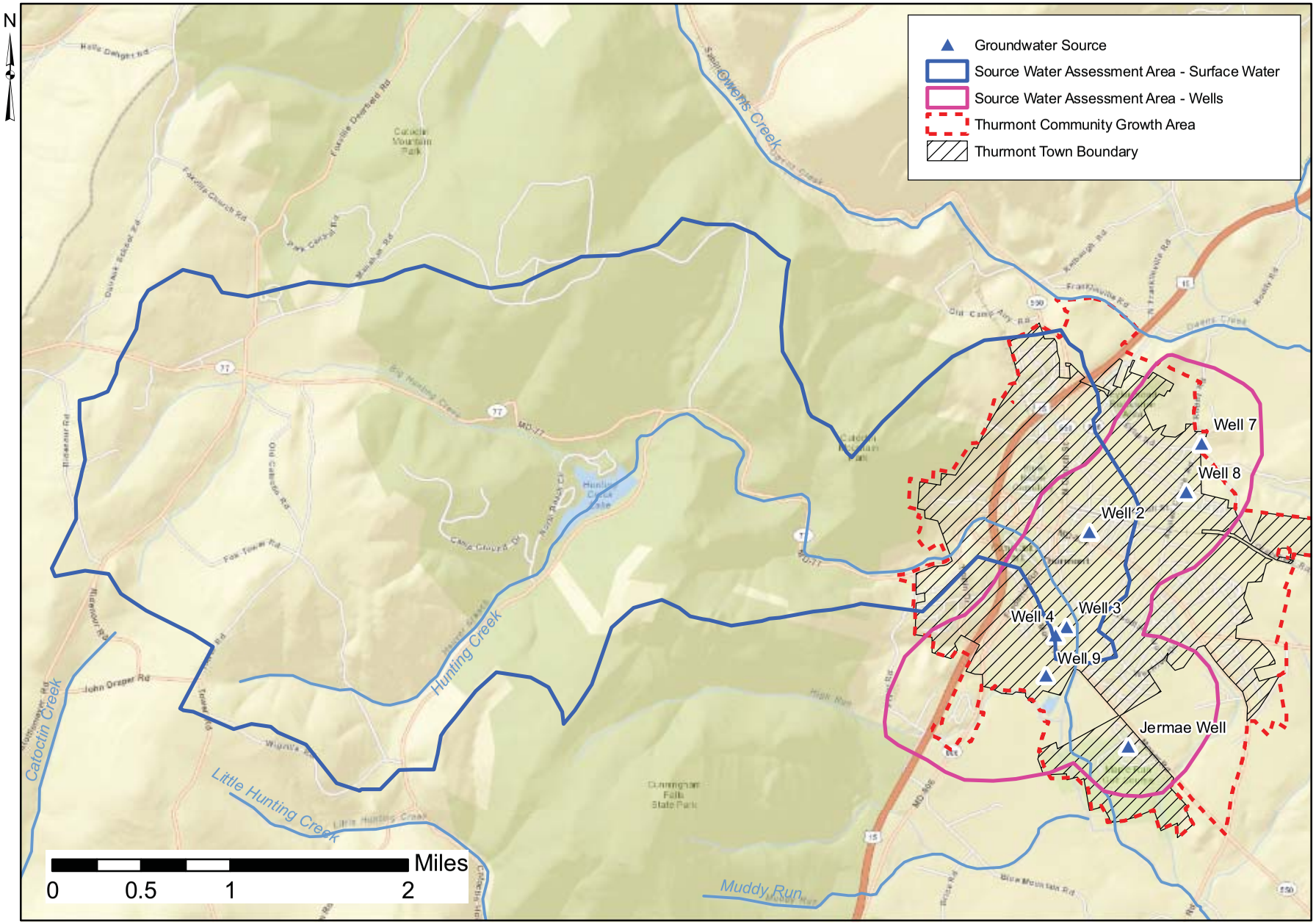


Figure 4 Source Water Assessment Area (SWAA) for the Thurmont Public Water System

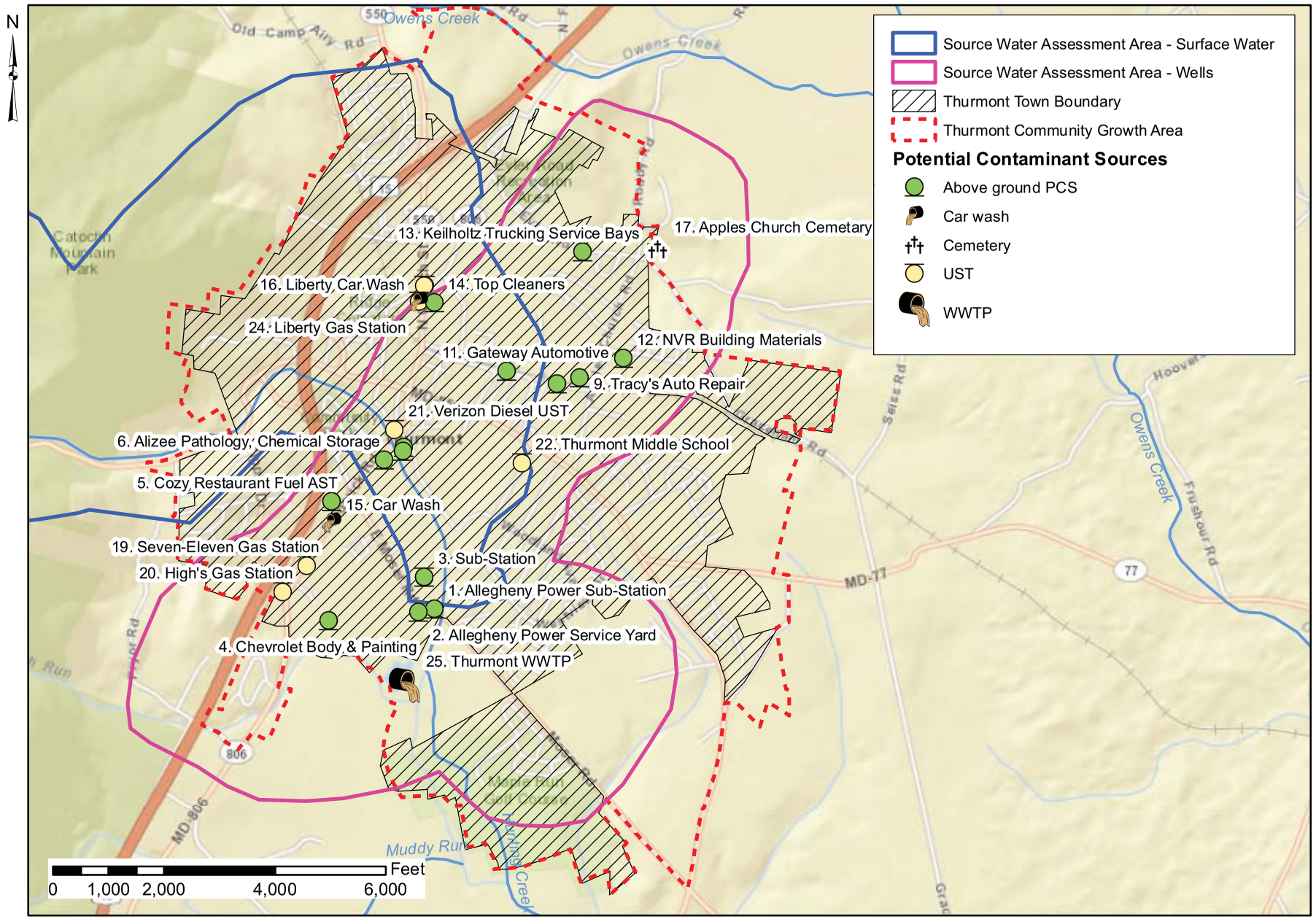


Figure 5 Potential Contaminant Sources in the Thurmont Area

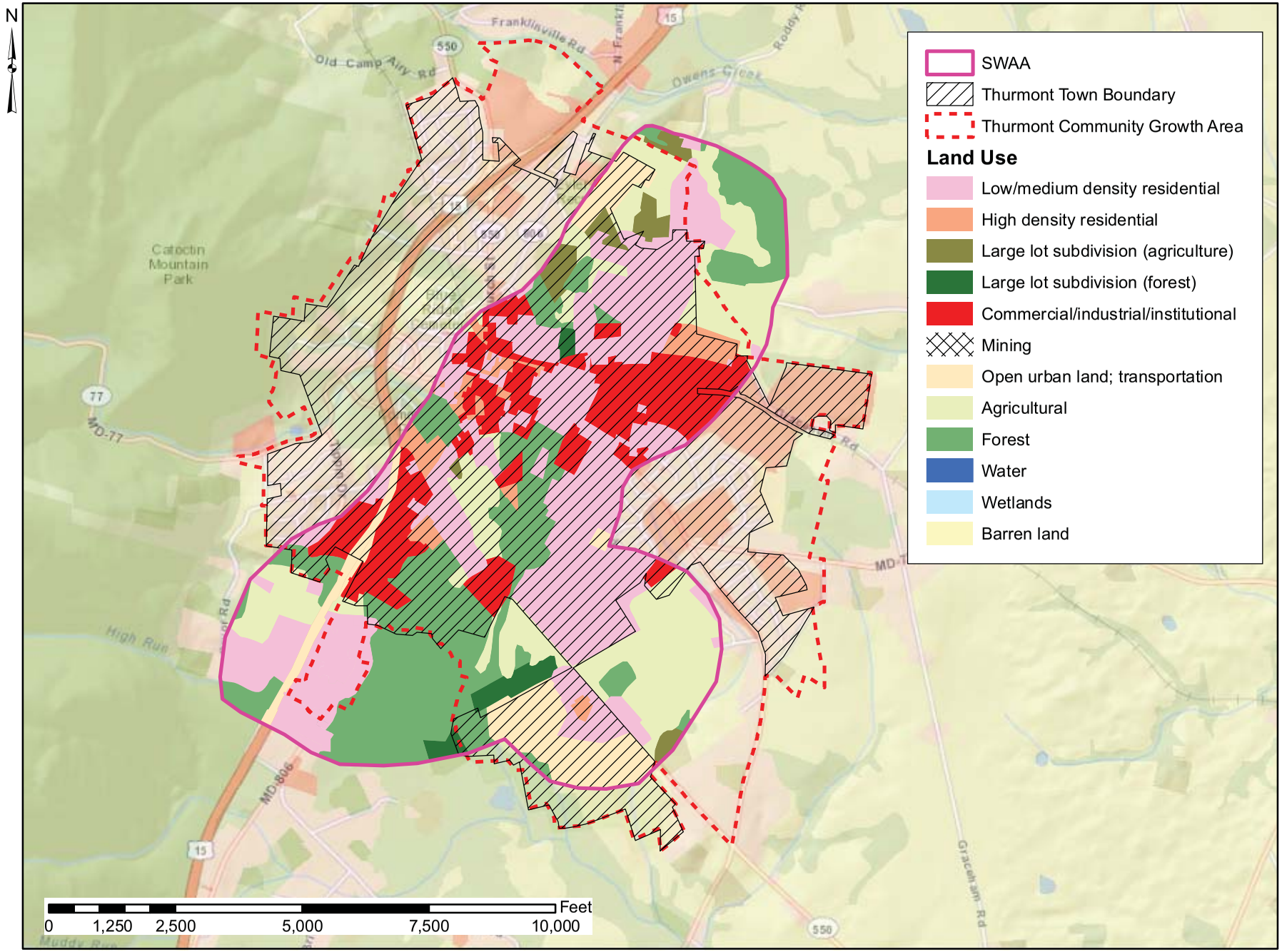


Figure 6 Land Use in the SWAA for Wells in the Thurmont Public Water System

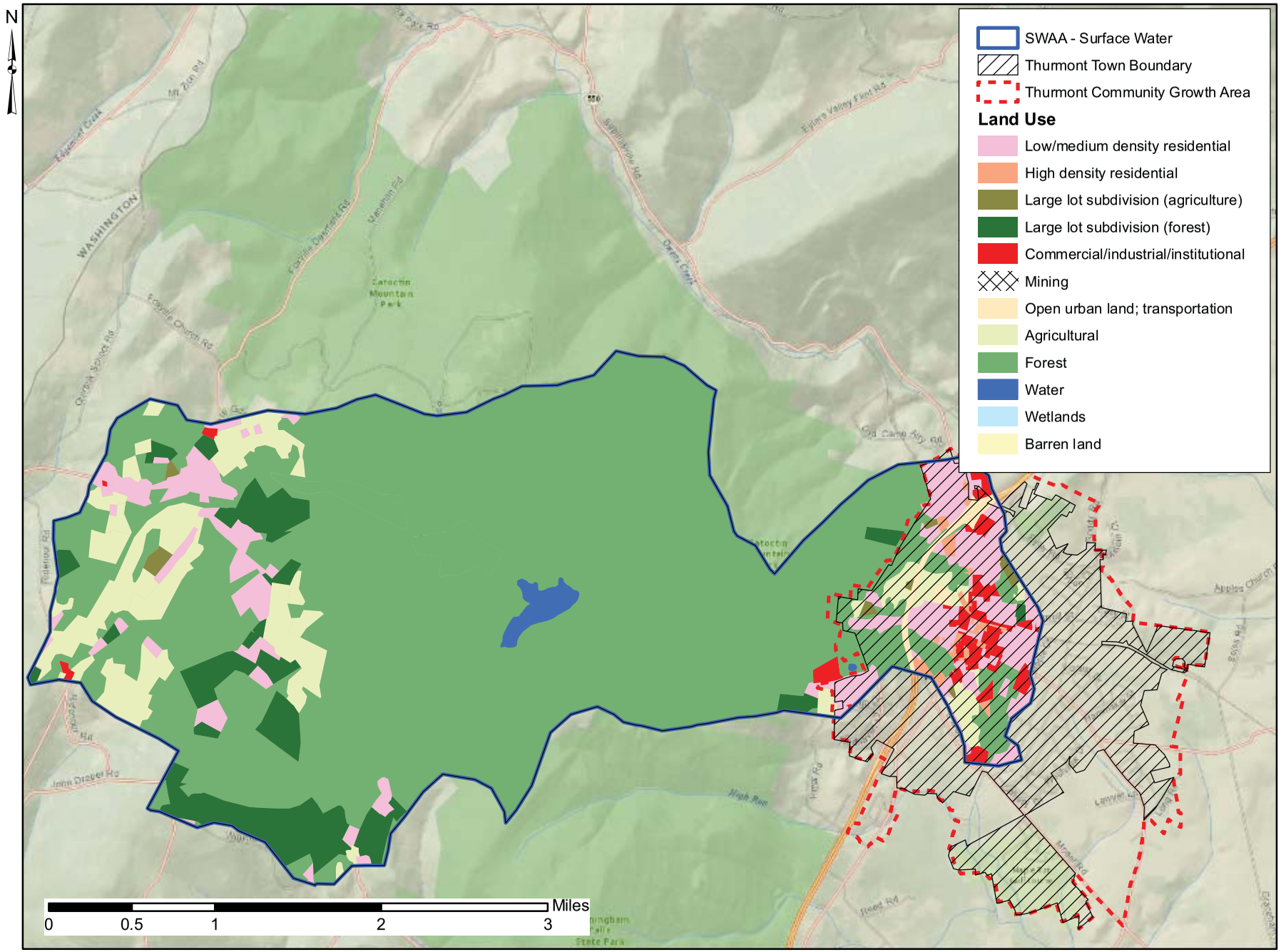


Figure 7 Land Use in the SWAA for Surface Water Potentially Impacting theThurmont Public Water System

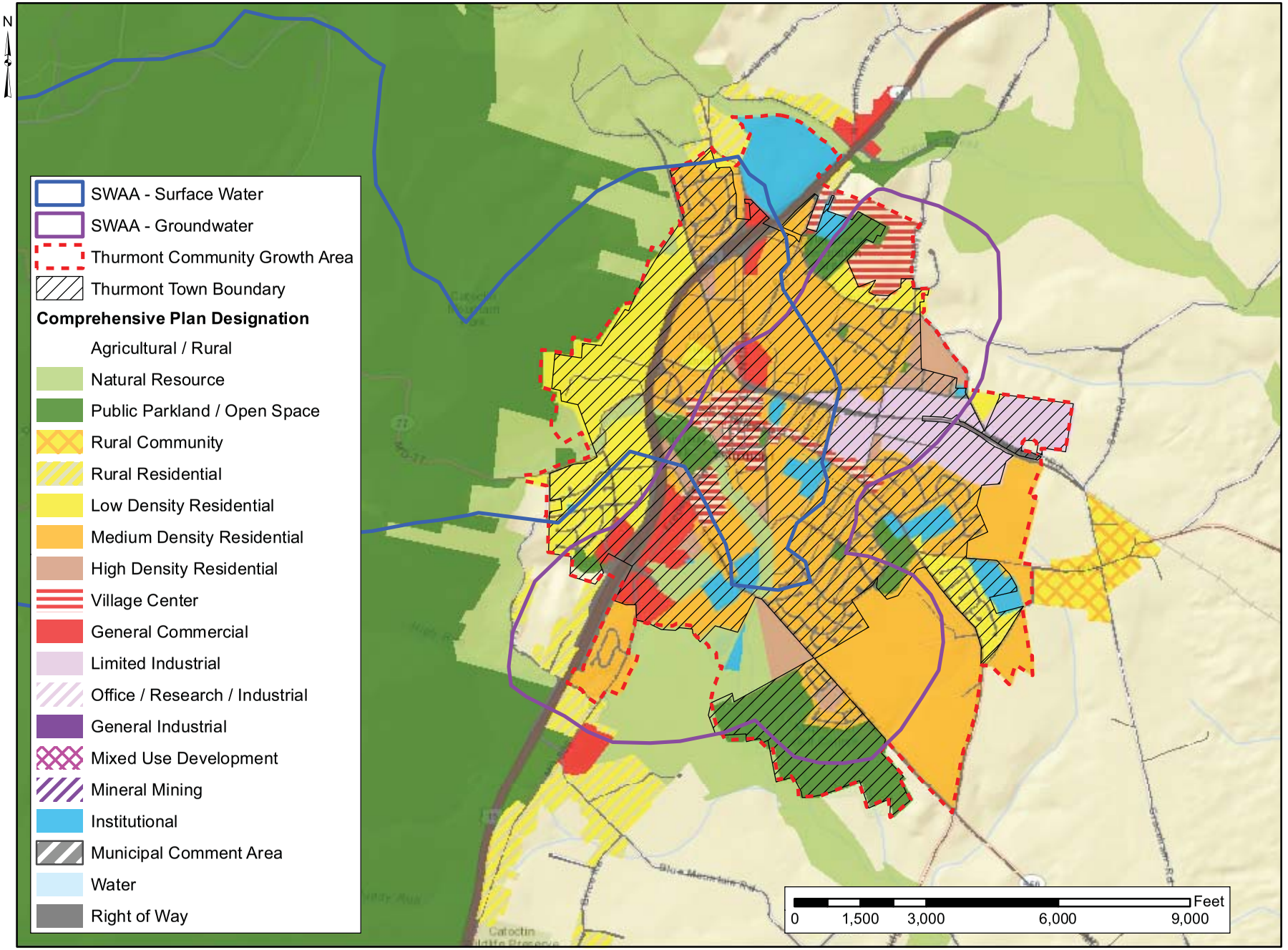


Figure 8 Land Use Designations from the Frederick County Comprehensive Plan

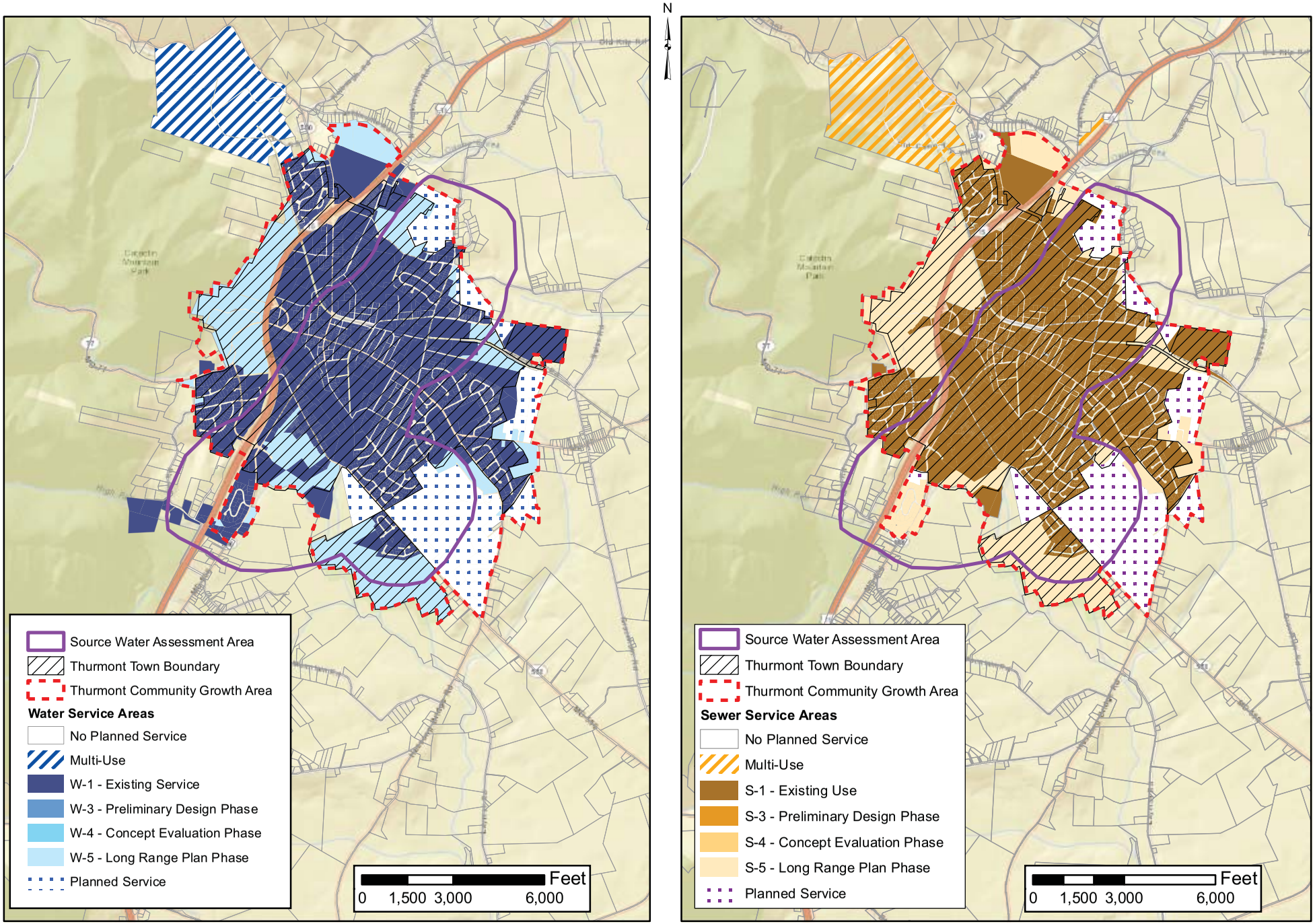


Figure 9 Water Service (A) and Sewer Service Areas (B) in the Vicinity of Thurmont

TABLES

TABLE 1 Sources of the Thurmont Public Water System

SOURCES ADDRESSED IN THIS REPORT											
	Source Type	**Source ID**	**Plant ID**	**Source Name**	**Well Permit**	**WAPID #**	**Total Depth (ft)**	**Casing Depth (ft)**	**GUDI? ***	**Open Interval (ft)**	**Sources in 2000 SWAP Report?**
1	GW	2	2	Thurmont 2	---	FR1969G121	192	73		73 - 192	Yes
3	GW	3	3	Thurmont 3	FR690518	FR1969G021	105	29	Yes	29 - 105	Yes
4	GW	4	3	Thurmont 4	FR720327	FR1969G021	294	70		70 - 294	Yes
2	GW	5	4	Thurmont 5	FR738626	FR1969G021	197	73		73 - 197	Yes
5	GW	7	5	Thurmont 7	FR738820	FR1988G004	197	73		73 - 197	Yes
6	GW	8	6	Thurmont 8	FR940911	FR1993G036	160	130		130 - 160	Yes
7	GW	9	3	Thurmont 9	FR943408	FR2003G001	220	33		33 - 220	
8	GW	---	---	Jermae Well	---	FR2002G030	---	---		--- - ---	

* Groundwater under the direct influence of surface water

Thurmont wells operate under three Water Appropriation Permits (WAPID), see Table 2

TABLE 2 Water Appropriation Permits for the Town of Thurmont

	WAPID	System	Wells	Average Withdrawal (Gallons per Day)	Maximum Withdrawal (Gallons per Day)
1	FR1969G021	Thurmont	3, 4 and 5	275,000	460,000
2	FR1993G036	Thurmont	8	234,000	300,000
3	FR1988G004	Thurmont	7	93,000	156,000
4	FR1974S013	Thurmont - Unused - High Run	Surface Water	43,000	500,000
5	FR1969G121	Thurmont (unused)	(Well 2) Not in use	89,000	149,000
6	FR2002G030	Thurmont	Jermae Well	200,000	275,000
7	FR2003G001	Thurmont	9	204,000	318,000

TABLE 3 Volatile Organic Compounds (VOCs) and Total Trihalomethanes (TTHM) Reported for the Thurmont PWS

A. Non - Trihalomethanes

Contaminant	Plant ID	Earliest Detect Date	Most Recent Detect Date	Number of Analyses	Count of Detections	Max Concentration (ug/L)
Carbon Tetrachloride	2*	July-01	August-01	12	2	1
Chloroethane	2*	November-06	November-06	12	1	1.2
Chloromethane	2*	November-06	November-06	12	1	1.3
cis-1,2-Dichloroethylene	5	May-11	May-11	10	1	1.3
Dichlorodifluoromethane	2*	August-01	August-01	12	1	0.6
Tetrachloroethylene	5	May-11	May-11	10	1	0.5
Trichloroethylene	2*	November-03	November-03	11	1	0.5
Trichloroethylene	5	May-11	May-11	10	1	9.2
Trichloroethylene	6	July-01	November-10	15	5	1.2
Trichlorofluoromethane	2*	July-01	July-01	12	1	0.7

* Well 2 only used for emergency backup

B. Individual Trihalomethanes

Contaminant	Plant ID	Earliest Detect Date	Most Recent Detect Date	Number of Analyses	Count of Detections	Max Concentration (ug/L)
Bromodichloromethane	3	November-03	August-09	3	2	1.5
Bromoform	3	November-03	August-09	3	3	1.3
Bromoform	5	December-05	November-07	10	2	0.9
Chloroform	2*	March-04	March-06	12	2	0.6
Chloroform	3	August-09	August-09	3	1	0.9
Dibromochloromethane	3	November-03	August-09	3	3	2.2
Dibromochloromethane	5	February-03	December-05	10	2	1.1
Dibromochloromethane	6	April-01	August-08	15	2	0.5

* Well 2 only used for emergency backup

C. Total Trihalomethanes

Contaminant	Plant ID	Number of Samples	Exceedances of One-Half MCL (40 ug/l)	Exceedances of MCL (80 ug/l)
TTHM 2950	0	6		
TTHM 2950	1	2		

TABLE 4 Synthetic Organic Compounds (SOCs) Reported in Thurmont Public Water System

Contaminant	Plant ID	Earliest Detect Date	Most Recent Detect Date	Number of Analyses	Count of Detections	Max Concentration (ug/L)	MCL *
Di(2-Ethylhexyl) Phthalate	2	Nov-01	Mar-04	28	8	1.4	6
Di(2-Ethylhexyl) Phthalate	3	Nov-01	Oct-07	42	12	1.4	6
Di(2-Ethylhexyl) Phthalate	5	Nov-03	Aug-06	42	12	4.6	6
Di(2-Ethylhexyl) Phthalate	6	Sep-02	Oct-05	28	8	2.7	6

* Same as State of Maryland Groundwater Standards for Type I and Type II Aquifers

TABLE 5 Synthetic Organic Compounds (SOCs) Reported in Thurmont Public Water System

Contaminant	Numer of Detections	Earliest Detect Date	Most Recent Detect Date	Min Concentration	Max Concentration	MCL	SMCL	Units
BARIUM	1010	March-02	October-11	0.006	0.035	2		mg/L
CHROMIUM	1020	October-06	November-08	0.005	0.009	0.1		mg/L
COMBINED RADIUM (226 & 228)	4010	November-03	November-03	1	1	5		pCi/L
FLUORIDE	1025	March-02	November-08	0.1	0.23	4	2	mg/L
GROSS ALPHA	4000	November-03	August-09	1	3	15		pCi/L
GROSS BETA	4100	August-09	August-09	2	2	50		pCi/L
NICKEL	1036	March-02	March-02	0.011	0.011	0.1		mg/L
NITRATE	1040	March-01	February-11	1	4.6	10		mg/L
SODIUM	1052	November-01	November-03	0.05	101			mg/L

TABLE 6 Total and Fecal Coliform Results Reported for the Thurmont Public Water System

Routine Samples				Repeat Samples			
Number of Samples Collected	Number Positive for Total Coliform	Number Positive for Fecal Coliform	Number Indeterminate	Number of Samples Collected	Number Positive for Total Coliform	Number Positive for Fecal Coliform	Number Indeterminate
891	0	0	0	0	0	0	0

TABLE 7 Potential Contaminant Sources in the Thurmont Area

No	Potential Contaminant Source	Type
1	Allegheny Power Sub-Station	Above ground PCS
2	Allegheny Power Service Yard	Above ground PCS
3	Sub-Station	Above ground PCS
4	Chevrolet Body & Painting	Above ground PCS
5	Cozy Restaurant Fuel AST	Above ground PCS
6	Alizee Pathology, Chemical Storage	Above ground PCS
7	Town Vehicle Maintenance	Above ground PCS
8	Town Maintenance Shop	Above ground PCS
9	Tracy's Auto Repair	Above ground PCS
10	Richard Dewees Fuel Oil	Above ground PCS
11	Gateway Automotive	Above ground PCS
12	NVR Building Materials	Above ground PCS
13	Keilholtz Trucking Service Bays	Above ground PCS
14	Top Cleaners	Above ground PCS
15	Car Wash	Car wash
16	Liberty Car Wash	Car wash
17	Apples Church Cemetary	Cemetery
18	SHA Maintenance	UST
19	Seven-Eleven Gas Station	UST
20	High's Gas Station	UST
21	Verizon Diesel UST	UST
22	Thurmont Middle School	UST
23	Direct-To-You Gas Station	UST
24	Liberty Gas Station	UST
25	Thurmont WWTP	WWTP

TABLE 8 Land Use in the Thurmont Area

A. Groundwater Sources

Land Use	Acres	% of SWAA Acreage
Agricultural	325.9	17.9%
Commercial / Industrial / Institutional	253.5	13.9%
Forested	402.6	22.1%
High-Density Residential	52.8	2.9%
Large lot subdivision (agriculture)	39.4	2.2%
Large lot subdivision (forest)	27.1	1.5%
Low / Medium Density Residential	587.9	32.3%
Open Urban Land / Transportation	130.7	7.2%
Total Acres	**1,819.8**	**100.0%**

B. Hunting Creek Upstream of Well 3

Land Use	Acres	% of SWAA Acreage
Agricultural	594.7	8.2%
Commercial / Industrial / Institutional	119.6	1.6%
Forested	5348.8	73.5%
High-Density Residential	37.4	0.5%
Large lot subdivision (agriculture)	29.7	0.4%
Large lot subdivision (forest)	476.3	6.5%
Low / Medium Density Residential	580.0	8.0%
Open Urban Land / Transportation	42.3	0.6%
Water	50.8	0.7%
Total Acres	**7,279.6**	**100.0%**

TABLE 9 Selected Elements of Frederick County's Water Resources Element (2010)

Key General Water Resource Policies
WR-P-01 Provide community water/sewer service only within Community Growth Areas.
WR-P-02 Stage development within Community Growth Areas according to the adequacy of drinking water and wastewater treatment capacities.
WR-P-03 Consider including developed properties on well and septic within adjacent Community Growth Areas to facilitate connections to community water/sewer service.
WR-P-04 Minimize new development utilizing individual well and septic systems to protect the quality and quantity of ground water resources
Key Drinking Water Policies
WR-P-07 Protect community groundwater-based systems and individual wells in karst (limestone) areas.
WR-P-08 Support compatible land uses within designated wellhead protection areas.
Key Drinking Water Action Items
DW-A-01 Explore the application of water recharge easements as a complement to existing agricultural and land preservation easement programs.
DW-A-02 Explore the use of impoundments to supplement other drinking water sources.
DW-A-06 Develop a water conservation education program for residents and businesses of Frederick County.
DW-A-07 Develop a water-resources-based GIS database for staff to review in regard to development plans and proposals.
DW-A-11 Coordinate the development of GIS mapping and drinking water data with the municipalities.
DW-A-12 Identify means to keep pharmaceuticals and endocrine disruptors out of the County‘s waste stream and wastewater treatment systems.
Key Waste Water Policies Action Items
WW-A-01 Explore funding sources and programs to address inflow and infiltration problems in wastewater collection systems.
WW-A-02 Identify and prioritize retrofitting failing septic systems using the Bay Restoration Fund (flush tax) and other programs.
WW-A-03 Require that new septic systems use the best technologies available to reduce nitrogen pollution.
WW-A-04 Identify means to reduce pharmaceuticals and other components believed to be endocrine disrupters out of the County‘s wastewater streams and/or develop treatment strategies, which have been demonstrated to remove or destroy the contaminants.
Key Stormwater Policies and Action Items
SW-A-02 Develop an action plan to improve watershed health in watersheds where impervious cover is reaching or exceeding 10%.

TABLE 10 Source Water Protection Funding Opportunities

S.S. PAPADOPULOS & ASSOCIATES, INC.

Organization/ Funding Opportunity	Contact	Description	Website
MDA			
Conservation Reserve Enhancement Program (CREP)	Dawn Early (301) 695-2803 ext. 3	Offers financial assistance above the rates offered by the traditional Conservation Reserve Program. Program places land in conservation reserve or provides cost-share assistance for BMPs.	http://mda.maryland.gov/resource_conservation/Pages/crep.aspx
MDE			
Drinking Water Supply Assistance Program	Deborah Thomas (410)537-3722	Provides financial assistance for the acquisition, construction, rehabilitation and improvement of publicly owned water supply facilities to protect against health problems and meet federal SDWA requirements.	http://www.mde.maryland.gov/programs/water/qualityfinancing/saterqualityfinancehome/pages/programs/waterprograms/water_quality_finance/wqfa_ws.aspx
319 Nonpoint Source Program	Eric Ruby (410) 537-3685 (800) 633-6101	Provides financial assistance for the implementation of nonpoint source best management practices and program enhancements as a means of controlling the loads of pollutants entering the State's waterways.	http://www.mde.state.md.us/programs/Water/319NonPointSource/Pages/Programs/WaterPrograms/319nps/index.aspx
Bay Restoration Fund Enhanced Nutrient Removal	Rajiv Chawla (410)537-3770 (800) 633-6101	Provides up to 100 percent grant funding to upgrade wastewater treatment plants to enhanced nutrient removal (ENR) technologies.	http://www.mde.state.md.us/programs/Water/BayRestorationFund/Pages/water/cbwrf/enr.aspx
Maryland's Nitrogen-Reducing Septic Upgrade Program	Shan Abeywickrama 410-537-3921	Onsite Disposal Systems (OSDS) Fund: Provides up to 100 percent in grant funding for upgrades of existing systems to best available technology for nitrogen removal or for the marginal cost of using best available technology instead of conventional technology. Priority given to failing OSDS in Critical Areas	http://www.mde.state.md.us/PROGRAMS/WATER/BAYRESTORATIONFUND/ONSITEDISPOSALSYSTEMS/Pages/Water/cbwrf/index.aspx
Biological Nutrient Removal Cost-Share Program	Ms. Elaine Dietz (410) 537-3908 (800) 633-6101	Provides grants to local municipalities and agencies for upgrading WWTPs with biological nitrification/denitrification facilities to achieve a goal of annual average effluent concentration of 8 mg/l total nitrogen.	http://www.mde.state.md.us/programs/Water/QualityFinancing/SaterQualityFinanceHome/Pages/programs/waterprograms/water_quality_finance/wqfa_bnr.aspx
Linked Deposit Water Quality Revolving Loan Fund (WQRLF) and Drinking Water Revolving Loan Fund (DWRLF)	Mr. Jag Khuman (410) 537-3119 (800) 633-6101	Provides a source of low-interest financing for certain water quality and drinking water capital projects. Below market interest rates are passed on to borrowers by participating commercial lenders with investment agreements with MDE	http://www.mde.state.md.us/programs/Water/QualityFinancing/LinkedDeposit/Pages/programs/waterprograms/water_quality_finance/link_deposit/index.aspx
Sewerage Facilities Supplemental Assistance Program	Ms. Heather Fleming (410) 537-3327 (800) 633-6101	Provides financial assistance to local governmental entities in the form of grants, supplementing the Water Quality Loan funds, where affordability is a problem and to correct public health or water quality problems	http://www.mde.state.md.us/programs/Water/QualityFinancing/SaterQualityFinanceHome/Pages/programs/waterprograms/water_quality_finance/wqfa_supplemental.aspx
State Revolving Loan Fund/ Water Quality Financing	Mr. Jag Khuman (410) 537-3119 (800) 633-6101	Provides a source of low interest financing to encourage private landowners, and water system owners to implement capital improvements that will protect or improve the quality of Maryland's water resources and provide safe drinking water.	http://www.mde.state.md.us/programs/Water/QualityFinancing/Pages/Programs/WaterPrograms/water_quality_finance/index.aspx
Water Supply Program/ Drinking Water Supply Assistance Program	Ms. Debbie Thomas (410) 537-3722 (800) 633-6101	Provides financial assistance to local governments or to water supply systems for wellhead protection projects and direct loans to local governments or to water supply systems for land acquisition for source water protection.	http://www.mde.state.md.us/programs/Water/QualityFinancing/SaterQualityFinanceHome/Pages/programs/waterprograms/water_quality_finance/wqfa_ws.aspx
UST Loan Program/ Linked Deposit WQRLF & DWRLF	Mr. Greg Sonberg (410) 537-3412 (800) 633-6101	A program through the Water Management Administration, known as Linked Deposit, may provide owners of underground oil storage tanks (UST) a way to replace those tanks.	http://www.mde.state.md.us/programs/Water/QualityFinancing/LinkedDeposit/Pages/programs/waterprograms/water_quality_finance/link_deposit/index.aspx
UST Reimbursement Program (Oil Contaminated Site Environmental Cleanup Fund)/ The Oil Control Program	Mr. Christopher Ralston (410) 537-3443 (800) 633-6101	Provides financial assistance to owners or operators of USTs by reimbursing them for costs incurred as a result of an oil-contaminated site environmental cleanup project.	http://www.mde.state.md.us/programs/Land/OilControl/OilControlProgram/Pages/programs/landprograms/oil_control/pollution_management/index.aspx
Environmental Benefits Districts	Lisa Nissley (410) 537-3812 (800) 633-6101	Offers financial, technical, and other appropriate resources to benefit targeted communities. This is a new initiative developed by MDE to foster sound environmental practices, healthy and safe communities, and proactive economic development for all Marylanders.	http://www.mde.state.md.us/programs/crossmedia/EnvironmentalJustice/EJImplementationinMaryland/Pages/programs/multimediaprograms/environmental_justice/implementation/details.aspx#ebd
USDA			
Funding for Rural Communities	Brad King 301-797-0500 ext. 5	Provides assistance for rural businesses, housing and community facilities, and utilities through direct or guaranteed loans, grants, technical assistance, research and educational materials.	http://www.rurdev.usda.gov/RD_Loans.html
Conservation Reserve Program (CRP)	Brad King 301-797-0500 ext. 5	Agricultural producers receive cost-share assistance to plant resource-conserving cover crops (improving water quality, controlling soil erosion and enhancing wildlife habitat) and receive annual rental payment for the contract term (10-15 years). Acts as an incentive to safeguard environmentally sensitive land.	http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp-sp
Conservation Innovation Grant (CIG) Program	Gregorio Cruz (703) 235-8065	Provides grants for the development and adoption of innovative conservation approaches and technologies. Provides more options for environmental enhancement and compliance with agricultural regulations.	http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044413.pdf
USEPA			
Assessment and Watershed Protection Program Grants (CFDA 66.480)	Federal Service Desk (866) 606-8220	Provides financial assistance for studies relating to water pollution, specifically for watershed management actions and policies.	https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=8f560648f1725cee11f88ee3c25452ea
Environmental Education Regional Grants	Federal Service Desk (866) 606-8220	Provides financial assistance for environmental education projects that increase public awareness.	http://www.epa.gov/education/grants/index.html
Pollution Prevention Grants Program (CFDA 66.708)	Federal Service Desk (866) 606-8220	Provides financial assistance for pollution prevention technical assistance and projects for businesses.	https://cfda.symplicity.com/index?s=program&mode=form&tab=step1&id=15438a8058b068197cc298e0234f8695

TABLE 11 Implementation Matrix

Threat to Source Water	Recommended Action	Estimated Cost *	Funding Sources	Schedule
Releases of Contaminants	Contingency Planning	<$1,000	General Revenues	within 6 months
	Wellhead Protection Ordinance	<$1,000	General Revenues / Frederick County	within 6 months
Inappropriate Land Use	Digital Information/Mapping Resources	---	General Revenues / Frederick County	within 30 days
	Periodic Updates of SWPP	$15,000 - $30,000	General Revenues / Frederick County	every 6 years
	Outreach via Water Bills	---	General Revenues	within 6 months
	Additional Signage for Town	<$200	Maryland Rural Water Assoc	within 6 months
GUDI / Surface Water Infiltration	Physical Protection of Sources	< $5,000	---	within 1 year
	Abandonment of Well 2	< $5,000	---	As alternate Source Determined

* Cost Estimates are based upon current implementation, and do not account for changes in costs over time
--- Dashes indicated minimal cost, and regular part of county operations

APPENDIX A

Example
Wellhead Protection Ordinance[1]

For the Town of Thurmont,
November, 2013

Based on the
Maryland Model Wellhead Protection Ordinance
February 1997,
Revised August 2005
Revised August 2007

Maryland Department of the Environment
Water Management Administration
Water Supply Program

[1] This text has not been reviewed, approved, or otherwise endorsed by attorneys, planners or other parties responsible for enacting legislation for the Town of Thurmont. It is provided as a framework and suggestion, only.

Table of Contents

Section 1.0 PURPOSE AND INTENT

WHEREAS, the ground water underlying the community water supply wellhead protection areas is a major source of the Town of Thurmont's existing and future water supply; and

WHEREAS, a safe and adequate source of drinking water is of great benefit to the health and well being of the Town of Thurmont; and

WHEREAS, the aquifer systems supplying the community water supply wellhead protection areas, with its ground water supply, is integrally connected with numerous surface waters and streams; and

WHEREAS, accidental spills and discharges of toxic and hazardous materials can threaten the quality of such water supplies, posing public health and safety hazards; and

WHEREAS, unless preventive measures are adopted to control the discharge and storage of toxic and hazardous materials within the community water supply wellhead protection areas, further spills and discharges of such materials will predictably occur, and with greater frequency and degree of hazard by reason of increasing land development, population, and vehicular traffic within the wellhead protection areas; and

WHEREAS, agricultural and residential development can result in increased nitrogen loading to the ground water from septic systems, fertilizer application and livestock wastes; and

WHEREAS, proper siting, installation, operation, and maintenance of septic systems, agricultural operations, feedlots and animal wastes areas are necessary to prevent contamination of the ground water from excessive nitrogen and pathogenic organisms; and

WHEREAS, the purpose of this ordinance is to protect the public health, safety, and welfare through the preservation of the ground water resources of community public water supplies to ensure a future supply of safe and healthful drinking water. The designation of the wellhead protection districts, and careful regulation of development activities within these districts, can reduce the potential for ground and surface water contamination.

Section 2.0 DEFINITIONS

A. **AQUIFER** means any formation of soil, sand, rock, gravel, limestone, sandstone, or other material, or any crevice from which underground water is or may be produced.

B. **BEST MANAGEMENT PRACTICES (BMPs)** means a conservation or pollution control practice that manages wastes, agricultural chemicals, or hazardous materials so as to minimize movement into surface or ground waters of the State.

C. **CONTAINMENT DEVICE** shall be defined as a device that is designed to contain an unauthorized release, retain it for cleanup, and prevent released materials from penetrating into the ground.

D. **EPA** refers to the United States Environmental Protection Agency.

E. **EPA STORMWATER NPDES PERMIT** shall be defined as a permit meeting the requirements of the National Pollutant Discharge Elimination System Permit Application Regulations for Storm Water Discharges issued by EPA on November 16, 1990.

F. **HAZARDOUS MATERIALS** means any substance that: (1) conveys toxic, lethal, or other injurious effects or which causes sublethal alterations to plant, animal, or aquatic life; or (2) may be injurious to human beings. Hazardous materials include any matter identified as a "hazardous waste" by the Environmental Protection Agency or a "controlled hazardous substance" by the Maryland Department of the Environment.

G. **MDE** refers to the Maryland Department of the Environment.

H. **NUTRIENT/MANURE MANAGEMENT PLAN** shall be defined as a plan prepared by a certified nutrient management consultant to manage the amount, placement, timing, and application of animal waste, fertilizer, sewage sludge, and other plant nutrients in order to prevent pollution and to maintain productivity of the soil.

I. **ON-SITE FLOOR DRAINS** shall be defined as drains which are not connected to municipal sewer or stormwater systems and which discharge directly to the ground or septic system.

J. **OWNER** shall be defined as a property owner or his duly authorized agent or attorney, a purchaser, devisee, fiduciary, and any other person having vested or contingent interest in the property of question.

K. **PERSON** shall be defined as any natural person, individual, public or private corporation, firm, association, joint venture, partnership, municipality, government agency, political subdivision, public officer, owner, lessee, tenant, or any other entity whatsoever or any combination of such, jointly or severally.

L. **PESTICIDE** shall be defined as any substance or mixture of substances intended for: (1) preventing, destroying, repelling, or mitigating any pest; (2) use as a plant regulator, defoliant, or desiccant; or (3) use as a spray adjuvant such as a wetting agent or adhesive.

M. **RULES AND REGULATIONS OF MDE** shall be defined as official publications of MDE with standards and requirements for protection of ground water resources.

N. **UNDERGROUND INJECTION WELL** shall be defined as a bored, drilled, driven or dug well whose depth is greater than the largest surface dimension, through which fluids enter the subsurface; or, an improved sinkhole; or, a subsurface fluid distribution system.

O. **UNDERGROUND STORAGE TANK** means an underground storage tank, connected piping, underground ancillary equipment, and containment system, if any.

P. **WELLHEAD PROTECTION DISTRICT** means that land area overlying the aquifer which contributes water to a public water supply well under the permitted withdrawal rate (average annual) and average annual recharge conditions that can be anticipated based on historical data. It is bounded and may be influenced by the ground water divides which result from pumping the well and by the contact of the aquifer with less permeable geologic boundaries. In all cases, the Wellhead Protection District shall extend upgradient to its point of intersection with prevailing hydrogeologic boundaries (a ground water flow divide, a contact with geologic formations, or a recharge boundary), or be limited by time-of-travel. The Wellhead Protection District shall be reviewed and approved by MDE.

The Wellhead Protection District may include two (2) zones of protection, with Zone 1 being the most restrictive. Zone 1 is based on a fixed radius from the wellhead. Zone 2 is based on a the Source Water Assessment Area defined for well, based upon the methods for Fractured Bedrock, as defined in the Maryland Department of the Environment's Source Water Source Water Assessment Plan.

Q. **YARDING AREAS** shall be defined as a pen or other outdoor area used for the feeding and care of livestock or poultry.

Section 3.0 AUTHORITY

Section 3.1 Enabling Statute

WHEREAS, the Town of Thurmont has duly adopted within the Comprehensive Plan, after public notice and hearing, a Sensitive Areas Plan element in accordance with §3.05 of Article 66B of the Annotated Code of Maryland; and

WHEREAS, § 3.05 of Article 66B requires protection of streams and their buffers, 100-year floodplains, habitats of threatened and endangered species (habitat), and steep slopes; and

WHEREAS, § 3.05 (a)(2) of Article 66B authorizes protection of additional types of sensitive areas; and

WHEREAS, the Town of Thurmont the has determined through the Sensitive Areas element of the Comprehensive Plan that, in addition to streams and their buffers, 100-year floodplains, habitats of threatened and endangered species, and steep slopes, wellhead protection areas are in need of special protection; and

WHEREAS, § 4.01 of Article 66B empowers the Town of Thurmont with the authority to regulate and restrict land use for the purpose of promoting the health, safety and general welfare of the community; and

WHEREAS, Section 1428 of the Federal Safe Drinking Water Act Amendments of 1986 requires that each state develop a wellhead protection program to protect public water supplies from contamination from contamination; and

WHEREAS, the Maryland Department of the Environment (MDE) has developed a wellhead protection program, approved by EPA, which identifies that local governments have

responsibility for developing programs, including regulations and management controls, to protect public water supplies from contamination.

Section 4.0 APPLICABILITY

A. This Ordinance applies to all land uses and activities located or proposed within the area delineated as the Wellhead Protection District in the Town of Thurmont on a map available for inspection at the office of the Town of Thurmont and as defined in the definitions section of the ordinance. The Wellhead Protection District consists of Zone 1, and Zone 2 as described in 5.0 below.

B. This Ordinance is supplementary to other laws and regulations. Where this Ordinance or any portion thereof imposes a greater restriction than is imposed by other regulations, the provisions of this Ordinance shall control.

Section 5.0 EXTENT AND DESIGNATIONS

A. The Wellhead Protection District includes differing zones of protection as recommended by MDE.

1. Zone 1 represents the area bounded by a fixed radius of 500 feet from the wellhead. MDE has indicated its approval of this area as being consistent with the requirements of Section 1428 of the Safe Drinking Water Act by letter dated _____.

2. Zone 2 represents an area based on a the Source Water Assessment Area defined for a well, based upon the methods for Fractured Bedrock, as defined in the Maryland Department of the Environment's Source Water Source Water Assessment Plan, as delineated in the Sourcewater Protection Plan for the Town of Thurmont (2013, and subsequent updates). MDE has indicated its approval of this area as being consistent with the requirements of Section 1428 of the Safe Drinking Water Act by letter dated _____.

B. The maps delineating the Wellhead Protection District and Zone(s) (1&2) are entitled (title and date) and are incorporated herein and made a part of this Ordinance. The maps shall be on file and maintained by . Accurate copies of these maps shall be made available for review by the public.

C. In determining how properties within the Wellhead Protection District depicted on the (title and date of map) are affected by the requirements of this ordinance the following rules shall apply:

1. Properties located wholly within one zone as reflected on (title and date of map) shall be governed by the restrictions applicable to that Zone.

2. Properties having parts lying within more than one zone as reflected on the (title and date of map) shall be governed by the restrictions applicable in each zone.

3. Where the boundary line between two zones passes through a building, the entire building shall be considered to be in that zone in which more than fifty (50) percent of the floor space of the building is situated.

D. The boundary of the Wellhead Protection District or individual zones within the District may be modified should additional information or analysis be provided that shows that the current boundary lines no longer appropriately reflects the criterion which they purport to represent. Such evaluations will be made at a minimum every six years, coincident with preparation of the Town's Comprehensive Plan and Water Resources Element.

Procedures for modification of such boundaries shall be as follows:

1. The applicant wishing a change in boundary shall provide the evidence to the Zoning Commissioner. The applicant shall petition the Zoning Commissioner for a special hearing/District Reclassification and be required to present detailed hydrogeologic and hydrologic information to the Board of Appeals indicating where in fact the new boundary line should be drawn. The applicant shall provide (No. of copies) copies of all reports and maps to the Zoning Commissioner for a technical review of geologic and hydrologic, and any other relevant information. Maps shall be submitted on the same scale or more detailed as the official Wellhead Protection District Maps.

2. The Zoning Commissioner shall seek competent technical advice of such a change request. The (name of community) wellhead protection planning team shall be given a copy of the information given to the zoning commissioner and be granted adequate time to comment on the proposed change.

3. The burden of proof shall be on the applicant to show that the current boundaries do not represent the criterion which they purport to represent.

4. If after receiving written advice from the Town of Thurmont planning team and/or other technical advisors, and the Zoning Commissioner believes that the proposed change has merit, all property owners potentially affected by the changes shall be sent notices indicating the proposed change. An opportunity for public comment of sixty (60) days after notices are sent shall be provided.

5. After close of the comment period the Zoning Commissioner shall make his decision.

6. Any maps so revised shall be incorporated and made part of this Ordinance and kept on file and available to the public for review by (name of appropriate agency).

Section 6.0 USE REGULATIONS

Section 6.1 Permitted Uses

The following uses shall be permitted:

A. Conservation of soil, water, plants, and wildlife;

B. Outdoor recreation, nature study, boating, fishing, and hunting where otherwise legally permitted;

C. Foot, bicycle, and/or horse paths, and bridges;

D. Normal operation and maintenance of existing water bodies and dams, splash boards, and other water control, supply and conservation devices;

E. Maintenance, repair, and enlargement of any existing structure, subject to Section 6.2 prohibited uses;

F. Residential development, subject to Section 6.2 prohibited uses;

G. Farming, gardening, nursery, conservation, forestry, harvesting, and grazing, subject to Section 6.2 prohibited uses; and

H. Construction, maintenance, repair, and enlargement of drinking water supply related facilities such as, but not limited to, wells, pipelines, aqueducts, and tunnels. Underground storage tanks related to these activities are not categorically permitted.

Section 6.2 Prohibited Uses

The following uses are prohibited or conditional within the designated protection zone(s):

			Zone 1	Zone 2
A.		Bulk Storage of Hazardous Materials, except the following[2]	X	Cu
	1.	Materials needing for normal household use, outdoor maintenance, and heating of a structure;		
	2.	Waste oil retention facilities required by statute, rule, or regulation;		
	3.	Materials needed for emergency generators; or		
	4.	Materials used in Water Treatment Plants.		
B.		Dry Cleaning Establishments, Coin or Commercial Laundries	X	Cu
C.		Garage, Service Station	X	Cu
D.		Heavy Manufacturing Uses	X	X
E.		Junk Yard	X	X
F.		Yarding Area	X	Cu[3]
G.		Manure Piles, Animals Waste Pits, Lagoons, and Sewage Sludge Storage Facilities	X	Cu
H.		Metal Plating Establishments	X	X
I.		On-site Wastewater Disposal	X	Cu[4]
J.		Open Burning Sites and Dumps	X	X
K.		Quarries and Mining Operations	X	X

L.		Storage of Deicing Chemicals	X	Cu
M.		Disposal of Fuels or Hazardous Materials	X	X
N.		Sanitary Landfills and Rubble Fills	X	X
O.		Bulk Storage and Mixing of Pesticides and Fertilizers[5]	X	Cu
P.		Underground Injection Wells	X	Cu[6]
Q.		Underground Storage Tanks	X	Cu
R.		Uses which involve, as a principal activity, the manufacture, storage, use, transport, or disposal of hazardous materials	X	X
S.		Uses which involve hazardous materials in quantities greater than those associated with normal household use [8]	X[7]	Cu
T.		Underground pipelines [9] carrying hazardous materials	X	Cu
U.		Development with greater than 50% impervious surfaces	Cu	Cu

Key: X = Not Allowed, Cu = Conditional Use

[2]Secondary containment and release detection standards for in-ground tanks and above ground tanks found later in this manual apply to the exceptions permitted in Zone 1 of the wellhead protection district.

[3]Counties/municipalities may require nutrient management plans through local regulation or other non-zoning by law/ordinance. Local requirements must be consistent with MDA/SCD standards.

[4] Counties/municipalities should consider requiring commercial and residential developments within this Zone to be serviced by public sewer. For all lots subdivided which propose on-site wastewater disposal, the intention is to ensure that the nitrate-levels do not exceed 10 mg/l. In some instances on-site systems that maximize nitrogen removal may required. Process wastewater that contain hazardous materials above drinking water standards or otherwise to harm to the water supply should be prohibited from on-site disposal.

[5]New standards and guidelines adopted by Maryland Department of Agriculture should be referenced as a condition for special exception.

[6]Process wastewater that contain hazardous materials above drinking water standards or otherwise cause harm to the water supply should be prohibited from on-site disposal.

[7]This prohibition does not apply to uses permitted in Section 6.2.A.

[8]Normal household use does not imply that it is acceptable to dispose of hazardous material through the home's plumbing system.

[9] Counties and local governments may be pre-empted from regulating the location of pipelines used in interstate commerce.

Section 6.3 Conditional Uses

Activities that are defined as conditional uses will not be allowed within the Wellhead Protection District unless the property owner can show the use will not harm the ground water and is able to meet the conditions described in 6.3.B and 6.7 of this ordinance.

A. The landowner or representative shall submit to the Town of Thurmont an application for a Conditional Use. The application shall include:

1. A list of all hazardous materials which are to be stored, handled, used, or produced in the activity being proposed.

2. A description of the quantities and containers for the storage, handling, use, or production of hazardous materials by the proposed activity.

3. A site plan illustrating the location of all operations involving hazardous materials, spill containment structures and showing all points of potential discharge to ground water including dry wells, infiltration ponds, septic tanks and drainfields.

4. Documentation of approval by MDE of any industrial waste treatment or disposal system or any wastewater treatment system over 5,000 gallons per day (gpd) capacity.

5. Documentation of MDE permit or approval for any discharge via an underground injection well.

6. A description and estimate of the average and maximum number of poultry livestock animals that will be yarded within the Wellhead Protection District. Evidence that a nutrient management plan for nitrogen has been completed for all livestock or poultry wastes to be generated by the activity. This plan must incorporate adequate waste holding facilities and show any application sites within the wellhead protection district.

7. Plans showing secondary containment, for all underground and above ground tanks and lines containing hazardous material.

8. A description of the best management practices which will be followed during the construction of the facility to ensure that hazardous materials are not released to the ground water.

9. An emergency plan indicating the procedures which will be followed in the event of a spill of a hazardous material to control and collect the spilled material to prevent the substance from reaching the ground water.

10. A hydrologic assessment for properties with greater than 50% planned impervious surfaces (building footprints, sidewalks, and transportation surfaces) to determine the ground water recharge rate after site development is completed. The assessment will also estimate the ground water recharge rate prior to development.

B. The Town of Thurmont shall obtain advice from all appropriate local agencies to assess whether the wellhead protection area will be protected from contaminants which pose an adverse effect on the health or comfort of persons. In making their determination, the Town of Thurmont shall give consideration to the simplicity, reliability, and feasibility of the control measures proposed and the degree of threat to drinking water quality which would result if the control measures failed. Town of Thurmont shall then issue a written decision. In order for the area to be approved, it must be shown that the use:

1. Will protect the water supply from contaminants used on the property which pose an adverse effect on the health or comfort of persons;

2. Will not cause the average ground water quality on the property to violate drinking water standards promulgated by MDE and the EPA; or

3. Will maintain recharge of water to the water supply aquifer consistent with rates prior to development. A request may not be approved until all comments provided by

local agencies have been addressed by the applicant to the satisfaction of the Town of Thurmont.

C. The Town of Thurmont may deny the Conditional Use if it is determined that the Conditional Use would not meet the requirements outlined in 6.3.B. above. The Town of Thurmont's decision shall be made in writing to the applicant.

Section 6.4 Nonconforming Uses

Non-conforming uses lawfully in existence within the Wellhead Protection District may continue to exist in the form in which they existed at the time on this Ordinance is adopted. Changes in title or right to possession shall not effect continuation of an existing use.

In the event a non-conforming use poses a direct hazard to the public water supply, the Town of Thurmont may take any action permitted by law to abate the hazard.

Section 6.5 Variances

Variances to the provisions of this ordinance may be granted by the Town of Thurmont, following a public hearing, provided that a strict interpretation of the Ordinance deprives such property of privileges or safety enjoyed by other similarly situated property within the Wellhead Protection District. Applications for Variances must be presented to the Town of Thurmont.

Section 6.6 Exemptions

The following activities are exempt from regulation under this ordinance:

1. Transportation of Hazardous Material- The transportation of any Hazardous Material through the Wellhead Protection District shall be exempt from the provisions of this ordinance.

2. Application of Pesticides- The application of pesticides in recreation, agriculture, pest control, and aquatic weed control activities shall be exempt from the provisions of this ordinance provided that:

a. The application is in strict conformity with the use requirement as set forth in the substances EPA registries. A pesticide can only be used according to its labeling and according to pertinent federal and state laws.

b. The application of pesticides shall be noted in the records of an applicator certified by the Maryland Department of Agriculture. Records shall be kept of the date and amount of these substances applied at each location and said records shall be available for inspection.

3. Underground Storage of Oil(s)- The underground storage of oil(s) used for heating fuel shall be exempt from the provisions of this ordinance if the tank used for storage is located within an enclosed structure (i.e., secondary containment or any currently approvable containment technology) sufficient to contain leakage of oil from the environment and to provide routine access for visual inspection (e.g., cement-floored basement), and sheltered to prevent the intrusion of precipitation. Any tank used for the underground storage of oil that is

out of service for more than one year shall be removed. Liquid residue shall be removed and all connecting piping securely capped or plugged.

4. Aboveground Storage of Oil(s)- The aboveground storage of oil(s) used for heating fuel shall be exempt from the provisions of this ordinance provided that the tank used for storage is: 1) located on an impervious pad or container of sufficient volume to capture and contain spills and leakage of oil from entering the environment, 2) sheltered to prevent the intrusion of precipitation and, 3) located in a manner that allows for routine visual inspection. Aboveground storage of oil shall be located as far away from the public water supply wells as possible.

Section 6.7 Performance Plan Standards

All activities that are designated conditional uses shall meet the following design and operation guidelines. The intent of this section is to encourage the use of Best Management Practices (BMPs) for all potentially hazardous activities in Zones 1 and 2.

A. Containment of hazardous materials. Leak-proof trays under containers, floor curbing, or other containment systems to provide secondary liquid containment shall be installed. The containment shall be of adequate size to handle all spills, leaks, overflows, and precipitation until appropriate action can be taken. The specific design and selection of materials shall be sufficient to contain any hazardous material at the location and prevent escape to the environment. These requirements shall apply to all areas of use, production, and handling, to all storage areas, to loading and off-loading areas, and to aboveground and underground storage areas. Because State and federal governments already regulate hazardous materials nothing in this ordinance shall be applied in a way to prevent a person from complying with State and federal requirements.

B. All underground tanks(s) and piping systems shall meet the requirements of COMAR 26.10.05.03.C 1-4 for secondary containment, double wall tanks, liners, vaults and underground piping.

C. Dry cleaning establishments shall not discharge to the ground or subsurface any wastewater that was in contact with the organic solvents used in dry cleaning process. As specified in A. above, secondary containment is required for areas when dry cleaning solvent is stored, used and transferred.

D. Infiltration of stormwater runoff that has come in contact with the pavement surfaces shall not be permitted at gasoline service stations. Waste from service stations' work areas is not permitted to be discharged to the ground or subsurface.

E. All sewage sludge and animal waste holding facilities shall be constructed so as not to allow the waste material to leach into the ground water. All in-ground facilities shall use low permeability liners constructed to meet one of the standards specified below:

a. one foot of clay with a permeability less than 10^{-7} cm/sec, or

b. two feet of clay with a permeability less than 10^{-6} cm/sec or

c. two feet of compacted soil with a permeability less than 10^{-5} cm/sec, and a manmade liner, 30 mil thick, and permeability less than 10^{-7} cm/sec.

F. Agricultural operations with yarding areas shall follow nutrient management plans for nitrogen. Waste application rates for all sites within the wellhead protection district are to be

designed to not exceed not exceed crop requirements and therefore minimize nitrate discharge to ground water.

G. All facilities with wastewater disposal greater than 5,000 gpd shall have a State discharge permit. All developments with on-site disposal shall be designed so that the average NO_3-N concentration of the water recharging the surficial ground water aquifer under the property shall not exceed 10 milligrams per liter.

H. All de-icing chemicals (salt piles and sand/salt mixes) must be stored under roof and protected from precipitation by a permanent cover. Runoff from mixing and loading areas may not be discharged to the subsurface.

I. All facilities with bulk storage of pesticides must show evidence of compliance with Maryland Department of Agriculture requirements.

J. All tanks of liquid fertilizers must have secondary containment of at least 110% of the largest tank within the contained area. All dry fertilizer storage must be under a permanent cover and protected from rainfall.

K. All facilities with underground injection wells must show evidence of compliance with all applicable MDE permits, consent orders, or other State actions, regarding the underground disposal of wastes.

L. All underground pipelines carrying hazardous materials shall be equipped with operable secondary release detection equipment and be protected against corrosion.

M. All excess hazardous materials from the construction of any facility shall not be released to the environment and shall be removed from the property, unless such materials are incorporated into a contained hazardous materials storage area.

N. At all facilities practicing stormwater infiltration the following design standards shall apply:

1. Stormwater management facilities including drainage swales, detention ponds, and retention ponds shall be designed in a manner to provide optimal protection of the ground water resources. Uses of grass swales, open shoulder roads and grass filter strips shall be considered as first options in plan development.

2. At least four feet of soil material is required between the top of bedrock surface or high water table (whichever is higher) and the bottom of any stormwater infiltration pond or system.

3. Stormwater infiltration shall be prohibited in areas receiving runoff from handling and mixing areas of hazardous materials.

4. At least 80% of the predevelopment recharge rate shall be preserved following development. The design shall be made to ensure that this rate can be maintained over the life of the facility.

O. Reporting of Spills. Any spill of a hazardous material shall be reported by the facility owner by telephone to the water supplier, within two (2) hours of discovery of the spill. Clean-up shall commence immediately upon discovery of the spill. A written report detailing the steps taken to contain and clean up the spill and preventing a recurrence shall be submitted to the water supplier within five (5) working days of the spill.

P. Monitoring for Hazardous Materials in Ground Water. If required by the Town of Thurmont, ground water monitoring well(s) shall be installed at the expense of the facility owner or operator in accordance with an approved ground water monitoring plan. The permittee shall be responsible for developing an approved ground water monitoring system. Samples shall be analyzed by a State-certified laboratory and the results reported to the Town of Thurmont

Q. Alterations and Expansion. The Town of Thurmont shall be notified in writing prior to the expansion, alteration, or modification of any activity that is subject to a Conditional Use. Approval by the Town of Thurmont is required before the activity subject to a Conditional Use can begin. The landowner or representative shall submit an explanation of the change in activity and the information as required by this ordinance above.

R. Facilities required by Federal and/or State Law to maintain a Spill Prevention, Control, and Countermeasure Plan (SPCC; e.g. those facilities storing more than 1,320 gallons of oil or petroleum-based liquid above ground, or 42,000 gallons of oil underground, per the Clean Water Act of 1990) will be required to provide copies of these plans with the Town of Thurmont, and to provide updates to the Town when any substantive changes are made, when land use changes, or when the property changes ownership.

Section 7.0 ADMINISTRATION REQUIREMENTS

Section 7.1 Subdivision and Land Development Review

All subdivision proposals and other proposed new development plans within the Wellhead Protection District shall be reviewed by for compliance with the provisions of this ordinance. It shall be the responsibility of the Town of Thurmont to recommend approval, disapproval, or approval with modifications of the proposed subdivision or development plan.

Section 7.2 Notice of Violation

Whenever it is determined that there is a violation of this ordinance, A Notice of Violation shall be issued. The Notice of Violation shall:

1. Specify the violation or violations in writing.
2. Specify the length of time available to correct the violation.
3. Clearly state any penalties associated with the subject violation.
4. Provide a description of any rights of appeal.

Section 7.3 Stop Work Orders

The Town of Thurmont is authorized to issue cease and desist orders whenever it becomes aware of violations of this ordinance.

Section 7.4 Penalties

All costs incurred by the Town of Thurmont, including engineering and attorney's fees for enforcing this ordinance shall be paid by the owner who violated the provisions of this ordinance.
A penalty of up to $1,000 may be levied for any violation of this ordinance.

Section 8.0 FEES

All fees for review of Subdivision and Land Development Plans shall be established by resolution of the appropriate local governing body. Fees established shall be reviewed annually and adjusted as required. The fees shall include reasonable costs involved with the implementation of this ordinance and may include Administrative and professional staff review costs.