



Public Health

Prevent. Promote. Protect.

Harford County Health Department

Building with a Well and Septic System Booklet # 01-08

Introduction

This booklet is intended for individuals planning to build a home on an existing lot which will be serviced by a private well and an on-site sewage disposal system. It is not intended for persons planning to subdivide property or to develop commercial property.

For information regarding subdivision of property, please contact our Subdivision and Percolation Testing Program at 410-877-2317.

For information regarding development of commercial property, please contact our Permits, Inspections, Complaints, Solid Waste and Air Quality Program at 410-877-2327.



Process for Residential Development on Existing Lots

New homes constructed outside the service areas for public water and sewerage in Harford County requires considerable site evaluation before a building permit may be issued. Careful planning prior to construction is in the best interest of the potential homeowner and the general public. The proper placement and construction of your well and septic system is extremely important to ensure water quality, protect the environment and safeguard human health.

The eight steps outlined in this booklet will familiarize you with the procedures required to navigate the residential development process.

Step 1 - Prepare a site plan

Step 2 - Apply for a percolation test

Step 3 - Perform the percolation test

Step 4 - Obtain a well permit and drill the well

Step 5 - Apply for construction permits

Step 6 - Build the home and install the septic system

Step 7 - Perform water quality testing for a Certificate of Potability

Step 8 – Obtain the Use and Occupancy Permit

Step 1: Prepare a Site Plan

The first step in the building process is preparation of a scaled site plan. This may be completed by the property owner, unless this office or the Harford County Department of Planning and Zoning require a professionally drawn engineered site plan. The plan must display accurate dimensions of the lot and proposed dwelling and location of the well, septic system, septic reserve area (SRA), driveway and parking areas. The location of the dwelling and any outbuildings must conform to the Harford County Department of Planning and Zoning's (P&Z) building setback requirements. Contact that office at 410-638-3103 regarding setback and other related code requirements.

The site plan must be drawn to a scale of 1"= 100' or less (1"= 50' is recommended). The proposed house, well location, septic system/SRA, and driveway must be displayed on the plan meeting all siting requirements as shown below. Neighboring wells, septic systems, streams and structures within 100 feet of the property lines must also be shown. Soil types, as mapped in the Harford County Soil Survey Manual, and topographic lines may be included which will expedite review and approval. See Figure 1 for an example of an acceptable site plan.

The following siting parameters are required by State and local codes to protect the well and groundwater from contamination, and to ensure a properly functioning septic system.

Well Locations Must Be:

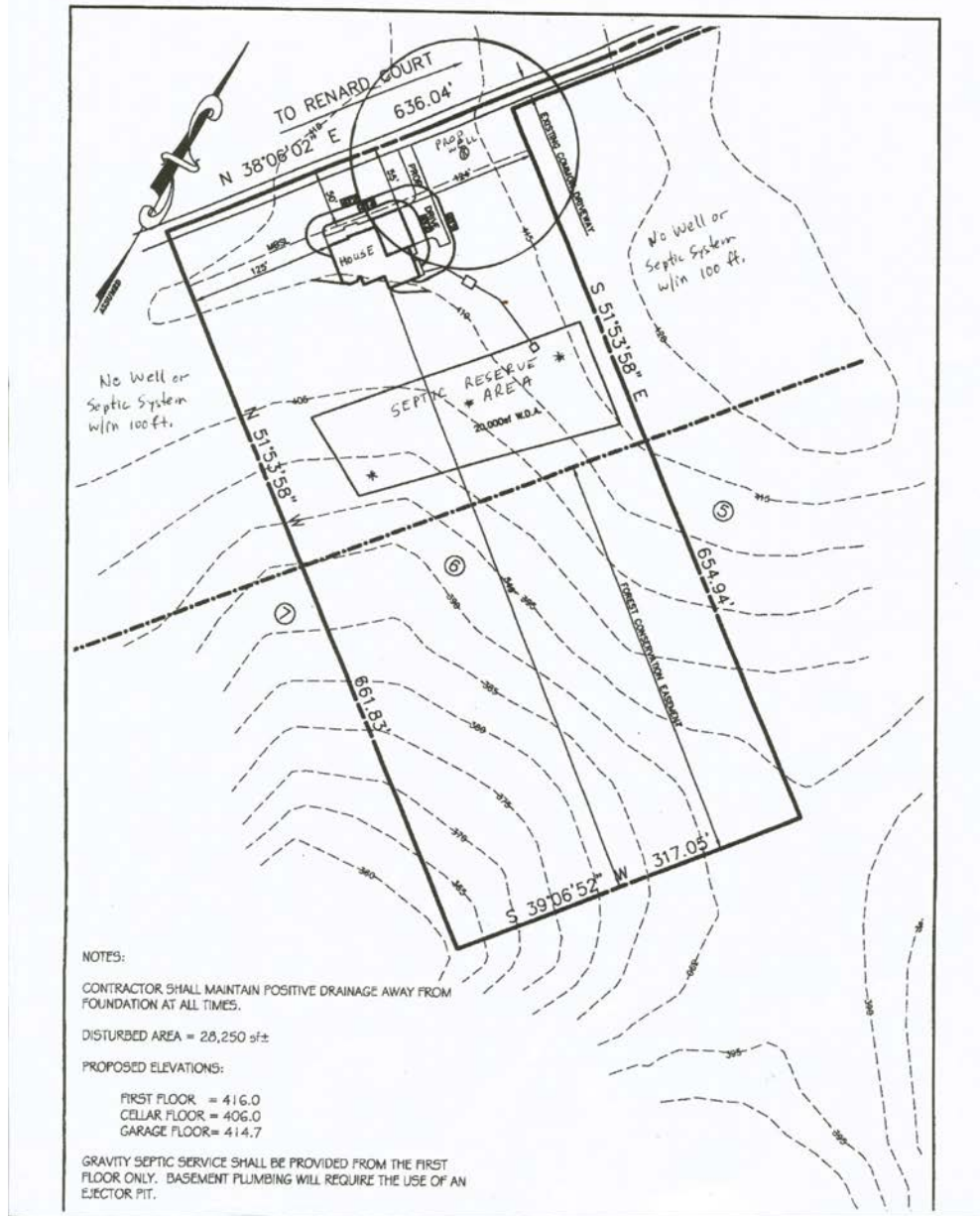
- At least 10 feet from property lines
- At least 15 feet from road right-of-ways and dedicated easements
- At least 30 feet from a building foundation
- At least 100 feet from the septic system/SRA*
- At least 100 feet from neighboring septic systems/SRAs

***NOTE:** Wells should be installed at an elevation above neighboring septic systems. Otherwise, a separation distance of 200 feet is required.

Septic Systems/SRAs Must Be:

- At least 15 feet from property lines, road right-of-ways, and dedicated easements
- At least 100 feet from the well and any neighboring well (See note above regarding well siting requirements)
- At least 100 feet from any stream or body of water
- At least 25 feet from steep slopes (a 25% or greater change in grade)
- Installed outside of designated Forest Retention and Chesapeake Bay Critical Areas (Contact the Department of Planning and Zoning)
- The septic tank must be installed at least 20 feet from the house and any permanent structures
- The drainfields/SRA must be at least 30 feet from the house and any permanent structures

Figure 1: Example of a Site Plan



Note: Existing properties may or may not have recorded septic reserve areas. If a property was created prior to March 1972, it probably does not have a recorded SRA, but must have sufficient area for an initial septic system and one complete repair system. The area required will be based upon the results of the percolation test. Lots legally created (subdivided) after March 1972 will have a recorded 10,000 to 40,000 sq. ft. septic reserve area. The official legal description of the lot and/or recorded plat of the property should be checked at the Circuit Court Building on 20 West Courtland Street in Bel Air. Please contact the Clerk of the Court for further information.

Step 2: Apply for a Percolation Test

County certified soil percolation tests, or “perc” tests, are required to determine the suitability of soils for installation of a sewage disposal system on your property. To file for a perc test, an application must be submitted to the Bureau of Environmental Health of the Harford County Health Department. The application form may be obtained at the Health Department or downloaded from the Health Department’s website (www.harfordcountyhealth.com). The application form must be submitted with the appropriate fee.

Most soils in the county may be tested at any time of the year. However, about 20% of properties contain “wet weather” soils. Typically, these soils may only be tested between February 1st and April 30th of each year. Each perc test application will be reviewed to determine if the property contains soils which require testing during the restricted period, or if the property may be tested at any time of the year. If the property has wet weather soils, and it is outside the designated testing period, the percolation test application will be returned to the submitter. Application for a wet weather percolation test must be made after January 1st. An application received late in the restricted testing season may or may not be processed depending on the backlog of requests. Typically, there is a four to five week waiting period due to heavy demand during this time of year. In some cases, it may become necessary to resubmit the application the following year.

The percolation test application must be accompanied by an accurately drawn, scaled site plan. This office will contact the applicant to schedule a mutually convenient date to perform the perc test. The house site, property corners, and SRA (if present) should be staked in advance of the scheduled appointment.

The property owner must hire a backhoe operator to excavate the soil testing pits, while a representative of this office performs the actual testing and recording of soil descriptions for each pit dug. Typically, three pits, up to 14 feet deep, will be dug during the percolation testing of the property.

Upon completion of the percolation test, results will be forwarded to the applicant. If satisfactory results are obtained, this office will formulate requirements for the septic system based upon house specifications (number of bedrooms) and will disclose any necessary limitations.

If the percolation test results are unsatisfactory, the property may not be suitable for an on-site waste disposal system. However, if the initial testing demonstrates some limited potential, additional evaluation could be attempted. Please see the Health Department’s website regarding innovative and alternative sewage disposal systems. Please keep in mind that there is no guarantee that a lot can be developed.

Step 3: Perform the Percolation Test

A backhoe contractor is hired by the applicant or property owner to excavate the soil testing pits. The backhoe must be capable of digging to a depth of at least 14 feet. Water must be available on site to conduct the timed soil evaluation. Generally, five (5) gallons of water per testing pit should suffice.

A Health Department sanitarian must be present to determine the location of the test pits. The sanitarian will record the soil characteristics, ground water level (if encountered), and the depth to bedrock (if encountered). Water will be utilized to assess soil permeability at each test pit. Soil characteristics and percolation test results must meet State and local regulatory criteria in order for the lot to be considered buildable (absent the availability of public sewerage).

Note: A satisfactory perc test does not mean that the lot is acceptable for any sized home. Limitations may result from marginally acceptable soils, topography, surface drainage conditions, and encroachment from neighboring wells and septic systems.

Figure 2- Soil Percolation Test



Step 4: Obtain a Well Permit and Drill the Well

Upon receipt of satisfactory percolation test results, arrangements must be made to drill a well for the domestic water supply. Only a well driller licensed in the State of Maryland may file an application with the Health Department for a well permit. A contract to drill a well should be executed between the well driller and the property owner.

Most wells drilled in the county are considered “rock” wells, drawing water from fractures in the bedrock. Air-percussion drilling rigs are used for developing these wells. Wells drilled in the coastal plain, east of Interstate 95, are considered “sand” wells. “Mud” rotary drilling equipment is utilized to produce these wells.

A site plan, acceptable to the Health Department, must accompany an application for a well permit. A sanitarian will review all appropriate documents, including the Environmental Concerns Map for the immediate area. If everything is in order, the permit will be issued to the well driller.

The well driller must drill the well as indicated on the site plan. At times, drilling at the designated location will prove unsuccessful and a “dry hole” will be encountered. Prior to moving to another site, the driller must first obtain approval from the Health Department.

Once the well is drilled, the driller is required to perform a yield test to determine adequate availability of water. Depending on the well’s production, the procedure may take from three to six hours. The driller must record the water level in the well and pumping rate every 15 minutes until the test is completed.

As stated in the Maryland Well Construction Regulations, C.O.M.A.R. 26.04.04, a well must produce at least 1 gallon per minute and provide 500 gallons within a two hour period. The well must also sustain that production for at least six hours at a pumping rate of 4 gal per minute or less and for at least three hours at a pumping rate exceeding 4 gal per minute.

Upon verification of adequate yield, the well driller seals the casing of a “rock” well to the bedrock by a process known as grouting. Sealing of “sand” wells is accomplished by injecting grout around the outside of the well’s casing down to the impervious clay layer above the aquifer. The grout is typically a mixture of cement and bentonite clay which prevents surface water from entering and contaminating the well and ground water.

A cap is placed on the well’s casing and a tag containing a unique State identification number is affixed to the casing. It is recommended that the well cap be securely fastened to the casing to prevent contamination of the well prior to its connection to the house.

Once well construction is completed, the driller forwards the well completion report and yield test results to the Health Department for review and approval. Submittal of this information is required prior to release of a building permit.

Figure 3- Well Drilling Rig



Figure 4- Completed Well with Casing, Tag, Cap, and Conduit



Step 5: Apply for Construction Permits

The following permits are required prior to the commencement of home construction:

- Building Permit (Issued by the Department of Inspections, Licenses and Permits)
- Sediment Control/Grading Permit (Issued by the Department of Public Works)
- Electrical Permit (Issued by the Department of Inspections, Licenses and Permits)
- Plumbing Permit (Issued by the Department of Inspections, Licenses and Permits)
- Sanitary Construction Permit (Issued by the Harford County Health Department)

Once the location of the septic system/SRA has been established by percolation tests*, and a satisfactory well‡ has been drilled, it is time to apply for a **building permit** (See notes below). An application must be filed at the County Planning and Zoning Office, along with your site plan, which will be reviewed for all setback requirements. At least six copies of the site plan and two copies of the construction plans are required with your submitted application for a building permit. The building permit fee is based upon the square footage of the proposed house. A copy of the application will be distributed to all reviewing agencies as identified above. The application is reviewed concurrently by all regulatory entities to ensure it is expeditiously processed.

Electrical and plumbing permits will not be issued until the application for a building permit has been approved.

To obtain a **sanitary construction** (septic system) **permit**, a licensed septic system installer or licensed plumber must file an application with the Health Department. In limited situations, a homeowner may apply for the permit if he will be performing the work, living on the property, and has the technical competence to install the system. An inspection of the on-site disposal system by the Health Department is required prior to backfilling and covering system components.

***Note:** Soil percolation requirements have been amended over the years. Therefore, if it has been more than five years since soil percolation tests were conducted on the property, additional percolation tests will be necessary unless a percolation test waiver is obtained in writing from the Health Department.

‡Note: If the water yield test on the well was performed more than ten years ago, it is recommended that a new yield test be performed to ensure the adequacy of the well.

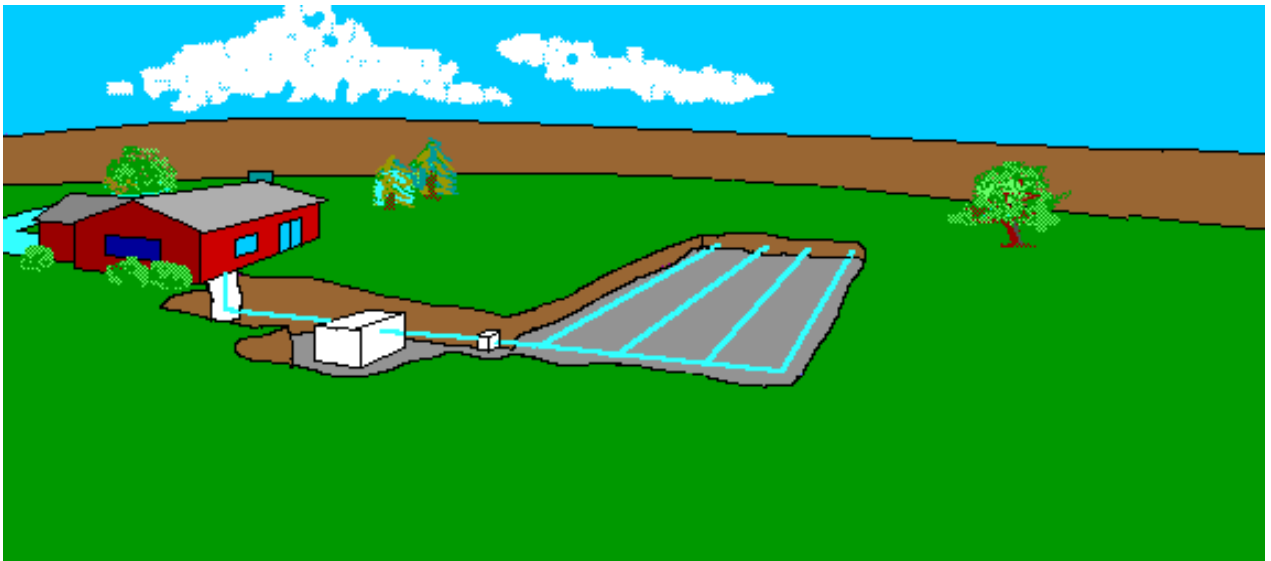
Step 6: Build the Home and Install the Septic System

During construction of the home, care needs to be taken to ensure adherence to approved plans and prevention of damage to the well and septic reserve area (SRA). Vehicular traffic and heavy equipment should not be allowed in the SRA. In addition, no trenching, cutting or filling of soils can be performed within the SRA without prior written approval from the Health Department. Compaction, addition, or removal of soils in the SRA may severely impact the proper operation of the septic system.

Once construction of the house is well under way, the septic system should be installed. Specifications of the septic system (tank size, trench length, trench depth, etc.) developed by the Health Department are made available to the installer or plumber. The system must be placed in the area designated by the satisfactory percolation tests. The Health Department must be contacted for an inspection of the system to ensure its proper installation.

In fact, all steps of the construction process must be inspected by the appropriate agencies to ensure conformance with building codes and allow release of a final Use and Occupancy Permit at the completion of the building process.

House and Septic System



Step 7: Perform Water Quality Testing for a Certificate of Potability

Once the well service line and plumbing distribution system has been fully installed, the plumbing and well must be disinfected through chlorination (see website for instructions) and the water sampled for quality. Samples may only be collected after all chlorine has been flushed from the system. Water samples are tested to ensure compliance with bacteriological and chemical standards. Please refer to the Health Department's website for a listing of laboratories which will collect and analyze water samples.

The laboratory will test your drinking water for bacterial organisms (total coliforms and E.coli). If these organisms are present, the disinfection procedure must be repeated. The laboratory will also perform a chemical analysis of your water supply. Standard tests performed include nitrate, turbidity and sand. These are the minimum tests specified in C.O.M.A.R. 26.04.04 (Well Construction Regulations). Additional water quality tests (iron, pH, volatile organic compounds (VOCs), etc.) may be required by the Health Department. This is determined by the initial review of the well permit application and nearby sources of contamination as noted on the Health Department's Environmental Concerns Maps.

Good bacteriological results, from two consecutively collected samples at least seven days apart, are required to meet the current standard. Only one nitrate, turbidity and sand test is required if initial test results are within specified limits. If standards are not met, water treatment may be required.

The Health Department may be contacted to collect any necessary water samples, which are then submitted to the State Laboratories Administration in Baltimore for processing. Otherwise, you must utilize a State certified private laboratory to collect and analyze the required water samples. Your laboratory will submit a report to the Health Department for review and approval. Use of a private laboratory will often expedite the approval process.

Once the Health Department is in receipt of satisfactory water test results, a Certificate of Potability will be issued allowing the well to be placed into service.

Step 8: Obtain the Use and Occupancy Permit

The Use and Occupancy Permit is issued by the Harford County Department of Inspections, Licenses and Permits following approval of all governmental agencies involved in the oversight of home construction. Agencies include:

- Harford County Department of Planning and Zoning
- Harford County Department of Public Works
- Harford County Health Department
- Harford County Plumbing Services
- Harford County Electrical Services
- Harford County Building Services

Under limited circumstances, a Temporary Use and Occupancy Permit may be issued if a reviewing agency determines that only minor, non-life threatening deficiencies remain to complete construction of the home. The Temporary U & O Permit is usually granted for 30 days, during which time all deficiencies must be brought into compliance. A final Use and Occupancy Permit will be issued when all agencies are satisfied.

The Health Department will consider issuance of a Temporary U & O Permit upon receipt of satisfactory chemical water test results and one satisfactory bacteriological test result. Once in receipt of satisfactory results on the second bacteriological water sample, the Health Department will authorize release of a final Use & Occupancy Permit.

For questions regarding the status of agency approvals, please contact the Licensing Office at the Department of Inspections, Licenses and Permits at 410-638-3305.

For questions regarding water sampling requirements, Certificates of Potability (legally required to place a well into service), and septic system inspections, please contact the Health Department at 410-877-2300.

We hope the building of your home will be a pleasant experience!