

**DPS****Montgomery County  
Department of Permitting Services**2425 Reedy Dr 7<sup>th</sup> Floor

Wheaton, MD 20902

Phone: 311 in Montgomery County or (240)777-0311

<https://www.montgomerycountymd.gov/dps/>

## Commercial and Large System Design

**Definition:** Originally this applied to onsite systems over 5000 GPD but evolved to any system that is a multi-use facility that is not a SFD. Examples of commercial systems include:

1. Churches
2. Group Homes
3. Daycare facilities (up to 8 children/day)
4. Daycare centers (greater than 8 children/day)
5. Restaurants
6. Riding Stables
7. Park police facilities
8. Kennels
9. Veterinarian Clinics
10. Schools
11. Storage facilities
12. Museums

**Process:**

1. Plans go to the plan reviewer assigned to the area the project is in.
2. The applicant needs to provide information regarding proposed water use. For example, a church will need to provide the number of proposed seats, proposed number and size of large gatherings (weddings), floor plans and plans for any food preparation.

**Basic requirements:**

1. Setback requirements are generally consistent with SFD distances
2. Minimum 10,000 square foot septic area per 500 GPD.
3. New facilities- provide sufficient area initial and 3 replacement areas
4. Existing Facilities - initial and 2 replacement areas
5. Systems greater than 1500 GPD need DEP category change to multi-use
6. In the RDT, the maximum design capacity for new multi-use sewerage systems must not exceed the lesser of the following capacity limits:
  - a. 4,999 gallons per day; or
  - b. The equivalent design capacity from the residential development of the site under the current zoning standards. The equivalent residential design capacity calculation shall be based on the design capacity for a four-bedroom single-family house: 600 gallons per day (gpd), or 150 gpd per

bedroom. For example, a property in the that could accommodate 8 homes under current zoning standards and 8 TDR's are retained with the site, that property could build a multi-use sewerage system with a maximum design capacity of up to 4,800 gpd (8 x 600)

7. Systems greater than 5,000 GPD require State approval – refer to the March 25, 1996 *MDE Guidelines for Large On-Site Sewage Disposals Systems Pertaining to ON-Site Community and Multiple Use Sewerage Systems with Accumulative Flow Exceeding 5000 Gallons per Day*
8. Water Appropriation Permit: site specific
9. Compatible with SWM(concept) plan
10. System capacity must be recorded as a covenant in State Land Records and the recordation must be completed prior to permit issuance – a sample covenant is included in this document.

Design Guidelines and Plan Requirements:

1. Septic tanks are designed to for two times the daily flow (48 hour treatment capacity), but no less than 1500 gallons
2. The following application rates shall be applied:

Percolation Rate – minutes per inch	Maximum Application Rate
Passing to 10	.390
11 to 15	.317
16 to 20	.248
21 to 25	.200
26 to 30	.177

To calculate the total linear feet of trench needed:

$$\text{GPD} / \text{application rate} = \text{Total square feet}$$

$$\text{Total square feet} / 2 \times \text{the stone depth} = \text{Total linear feet}$$

3. Septic trenches shall be 15' center on center unless a variation is granted by staff.
4. Shallow drain fields can not exceed 500 GPD
5. Over 2000 GPD requires LPD
6. A licensed engineer is needed to design systems over 2000 GPD
7. Restaurants and other high strength waste producers will require pre-treatment as part of the system design
8. Grease interceptors are required on separate kitchen waste drains from restaurants and other establishments discharging large amounts of grease
9. System flows:
  - a. Use MDE's memo dated October 30, 1990: *Wastewater Flows for use in Designing On-Site Sewage Systems.*
  - b. COMAR requires a minimum 400 GPD design flow
  - c. Real water use figures from similar existing uses can be used on a *limited* basis

- d. Policy on **retail, office or warehouses**: calculate the design flow on total square footage. Do not base the flow on the number of employees. Even if a consent agreement is signed, it is not possible to monitor the number of employees for compliance.
  - e. Policy on **in-home day care** facilities:
    - i. 15 GPD per child and employee – this is in addition to 150 GPD/bedroom
    - ii. only calculate flows based upon the number of people living in the home (rather than number of bedrooms) if there is a special exception granted with the maximum number of persons allowed to live in the home restricted by the special exception
  - f. Policy on **veterinary clinics** with no grooming:
    - i. .62 GPD per square feet
  - g. Policy on **landscaping** operations:
    - i. Use the square footage for office space
    - ii. 5 GPD per field employee
  - h. Policy on **group homes**:
    - i. 150 GPD per bedroom (75 GPD/person)
    - ii. 75 GPD for full time staff
    - iii. 30 GPD for part time staff (8 hours per day)
  - i. Policy on **churches**:
    - i. 3 GPD per seat with no kitchen facilities
    - ii. 5 GPD per seat with a warming kitchen
    - iii. 10 GPD per seat with a commercial kitchen
10. See below for design options using Flow Equalization

## Attachment 1:

### FLOW EQUALIZATION FOR LARGE ON-SITE SYSTEMS

- A. In some cases large septic systems are required for facilities such as a Place of Worship-where there is a large flow anticipated on a single day of the week; and a much lower flow for the remainder of the week. In most cases, these systems have been designed for the peak flow generated by the “sanctuary” day-and for the rest of the week the system is unused.
- B. The theory of flow equalization (FEQ) is that the primary treatment works (septic tanks) and any secondary treatment devices (ATU’s) would be designed to handle the peak flow. The soil disposal unit (drain-fields) would then be designed based upon 50% of the peak flow- a number that can be considered the “average” flow.
- C. Of course, a pumping station would be required with pumps and relays to dose the drain-fields over the course of the week to distribute the “sanctuary” flow and any flow generated during the remainder of the week.
- D. The flow equalization would be designed according to the following:
  - 1. Start with 50% of the peak flow.
  - 2. Add the expected flow from the next highest single day’s flow (i.e.: daycare center that operates Monday-Friday).
  - 3. Design the drain-field for the aggregate total- with the total flow dispersed over a 5 day period.
  - 4. Example: A 500 seat church with a “warming” kitchen has a peak flow of  $500 \text{ seats} \times 7 \text{ gal/seat/day} = 3500\text{gpd}$ . The average flow would be  $1750\text{gpd}$ . A daycare center with 50 children and 4 employees will operate Monday-Friday with an expected flow of  $850 \text{ gpd}$  ( $15\text{gal/child plus } 25\text{gal/employee}$ ). The “drain-field” flow would be  $2600\text{gpd}$ . The pump chamber would be set to deliver  $520\text{gpd}$  to the drain-field each day until the floats are not activated. This would reduce the size of the drain-fields by 26%.
- E. There may be instances where flow equalization is not preferred. This might include churches that have schools or other flow-intensive accessory uses. The typical FEQ situation would be one where the non-worship days are expected to be very low flow.

## Attachment 2:

### List of Engineers for Commercial Septic System Design

T.W. Services  
Tom Ashton  
703-554-8788  
P.O. Box 220  
Bluemont, VA 22012

Marshall Engineering  
Grant Marshall  
717-776-3008  
[grant.marshall@comcast.net](mailto:grant.marshall@comcast.net)  
149 Kerrs Road  
Carlisle, PA 17013

CNA  
Bruce Mc Millin  
410-879-7200  
P.O. Box 850  
Bel Air, MD 21014

McCrone, Inc.  
Rob Sell  
410-267-8621  
20 Ridgely Avenue  
Annapolis, MD 21401

## Attachment 3:

### DECLARATION OF COVENANT FOR SEPTIC FIELD USE

Montgomery County, Maryland (hereinafter the "County"), by and through its lawful agent, the Montgomery County Department of Permitting Services (hereinafter the "Department") and the \_\_\_\_\_ (hereinafter the "Owner") do hereby consent and agree to the following stipulation of facts and resolution of issues regarding the approval of the Conceptual Site and septic permits, and a building permit for the property at \_\_\_\_\_ (hereinafter the "Property").

#### A. STIPULATION OF FACTS

1. The property contains \_\_\_\_\_ acres of land, is further identified as Liber \_\_\_\_\_ Folio \_\_\_\_\_ recorded among the Land Records of the County; and
2. The Owner submitted Conceptual Site Plan which proposed a new church building containing \_\_\_\_\_ square feet of space with kitchen facilities, a church office with no more than 5 employees, and a maximum seating capacity of \_\_\_\_\_ seats in the sanctuary; existing single family house for church pastor residence and related church activities; and
3. The Property is currently assigned to the W-6 category for public water and the S-6 category which means no public water and public sewer is available to serve the property and
4. Conceptual Site Plan indicates the proposed location of the buildings and a proposed septic reserve area; and
5. The Department approved Conceptual Site Plan for testing with reservations and subsequently conducted sufficient water table and percolation testing to define \_\_\_\_\_ square feet of septic area (maximum sewage flow of \_\_\_\_\_ gallons per day) for the proposed church and \_\_\_\_\_ square feet of septic area (maximum sewage flow of \_\_\_\_\_ gallons per day) for the existing \_\_\_\_\_ bedroom single family dwelling; and
6. Conceptual Site Plan was approved by the Department on \_\_\_\_\_ with reservations, among which were notations that no commercial kitchen or daycare facilities are to be provided in the building; and
7. The Department is willing to approve the plans subject to the forgoing information and the following conditions.

#### B. RESOLUTIONS OF ISSUES

The Department will approve the septic permit and building permit for the Property when the following conditions have been agreed to or completed by the Owner to the satisfaction of the Department:

1. The Owner agrees to construct the septic system for the proposed church building and single family residence in a manner consistent with the Conceptual Site Plan and septic permit plan submitted to the Department in compliance with appropriate septic regulations.
2. The Owner agrees that approval of future permits to further expand any structure on the Property will be dependent on a connection to public sewer or to an expanded septic reserve area.
3. The Owner agrees that intensification or change of use of the proposed church structure on the Property may require the provision of additional approved septic reserve area.

4. The Owner agrees to record this agreement in the County Land Records as covenant to the deed for the Property and stipulate that the agreement is binding on current and future owners of the Property.
5. The Owner agrees to provide the Department with a copy of the recorded agreement, complete with liber and folio numbers stamped on it by the Court, prior to approval of the septic permit, or building permit by the Department.
6. The Owner agrees to allow the Department access to the Property at reasonable times to determine that the conditions of this agreement are being complied with.
7. All parties agree that this agreement will become null and void if and when the structure on the Property is connected to a public sewage system acceptable to the Department.
8. The Owner, for itself, its agents, legal representatives and assigns, released and forever discharges Montgomery County, Maryland, its agencies and officers, agents and employees, from any and all claims they may now have or that might subsequently arise out of or connected with the approval of the record plat, septic permit, or building permit for the Property. This release includes but is not limited to, a release and covenant not to sue the aforementioned persons in any administrative forum, State or federal court upon any claims arising out of or connected with the approval of the record plat, septic permit, or building permit for the Property.

IN WITNESS WHEREOF, this consent agreement is executed upon signature of all parties.

\_\_\_\_\_ Date: \_\_\_\_\_  
 Owner

STATE OF \_\_\_\_\_,  
 COUNTY OF \_\_\_\_\_, to wit:

I hereby certify that on this \_\_\_ day of \_\_\_\_\_, 20\_\_\_, before me, the subscriber, a Notary Public of the State and County aforesaid, personally appeared \_\_\_\_\_, the Owner or authorized agent of the Owner in the foregoing Declaration, known to me (or satisfactorily proven) to be the persons whose names are subscribed to the within instrument, and acknowledged the same for the purposes therein contained, and further acknowledged the foregoing Declaration to be their act, and in my presence signed and sealed the same, giving oath under penalties of perjury that the consideration recited herein is correct.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

\_\_\_\_\_  
 Notary Public  
 My commission expires: \_\_\_\_\_

Department:

By: \_\_\_\_\_  
Mitra Pedoeem  
Department of Permitting Services

Date: \_\_\_\_\_

Approved as to form and legality  
Office of the County Attorney

By: \_\_\_\_\_  
Charles Frederick

Date: \_\_\_\_\_

STATE OF MARYLAND,  
COUNTY OF MONTGOMERY, to wit:

I hereby certify that on this \_\_\_\_ day of \_\_\_\_\_, before me, the subscriber, a Notary Public of the State and County aforesaid, personally appeared \_\_\_\_\_, the Director of the Department of Permitting Services in the foregoing Declaration, known to me (or satisfactorily proven) to be the persons whose names are subscribed to the within instrument, and acknowledged the same for the purposes therein contained, and further acknowledged the foregoing Declaration to be their act, and in my presence signed and sealed the same, giving oath under penalties of perjury that the consideration recited herein is correct.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

\_\_\_\_\_  
Notary Public  
My commission expires: \_\_\_\_\_