Attachment 21

RAZTEC ASSOCIATES, INC

Civil Engineers Land Planners

Date: June 25, 2014

Revised: November 9, 2016- Updated December 24, 2019

Project: RCCG-Jesus House- Analysis of Hypothetical Septic System

Data:

1. Proposed Seats: 1,600 Seats
2. School: 350 Students, K-12

Regulations/Requirements:

1. 10,000 square feet of septic area for each 500 gallons of water flow per day.
2. Church Use with warming Kitchen: 5 Gallons Per Day (GPD)/Seat
3. Septic trenches are laid out based on topography. Therefore the amount of space required for a septic system is also dependent on topography.
4. Each additional 10,000 square feet of absorption area or portion must be established on 15,000-40,000 square feet or proportional area depending on percolation rates.

School Requirement- Based on Maryland Department of The Environment (MDE), Memorandum of June 27, 2011. Subject: "Decision Framework for Evaluating Project Flows Utilizing On-Site Systems".

Schools (Per Student)

No food or showers- 15 GPD/Student
add for food 5 GPD/Student
add for showers 10 GDP/Student

15 GPD + 5 GPD (Kitchen) + 10 GPD (Showers) = 30 GPD

CALCULATIONS:

1. Determine the required gallons per day based on a 1,600 seat church with a warming kitchen;

5 GPD/seat x 1,600 seats = 8,000 GPD

Determine the area of septic required, based on 10,000 square feet of septic area for each 500 GPD of water flow.

8,000 GPD/500 = 16 x 10,000 = 160,000 Square Feet (3.67 Acres)

2. Determine the required gallons per day based on a 350 Students;

30 GPD/student x 350 students = 10,500 GPD

Determine the area of septic required, based on 10,000 square feet of septic area for each 500 GPD of water flow.

10,500 GPD/500 = 21 x 10,000 = 210,000 Square Feet (4.82 Acres)

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Conclusion: Since the uses for the site are not simultaneous, then the highest daily use will be used. In this case that is for the school use. Therefore, 4.82 acres of existing forest area will be preserved to satisfy the existing sewer category change.

PROFESSIONALS' REVIEW STATEMENT

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER:22742. EXPIRES: JUNE 15, 2020

RAZTEC ASSOCIATES, INC

Civil Engineers Land Planners

December 27, 2019

Mr. Ryan Sigworth
MNCPPC
8787 Georgia Avenue,
Silver Spring, MD. 20910

RE: RCCG Jesus House, Preliminary Plan # 120160040

Dear Mr. Sigworth

We would like to provide further clarification on questions that have been raised regarding the calculations for the septic and public sewer, as follows;

SEPTIC ISSUES

1. In accordance with Montgomery County Department of Permitting Services' (MCDPS) standard practice, septic calculations are based on the use of the property that is the largest sewage usage. In the case of this project, the calculations show the largest use to be the proposed school use. The school use is for 350 students and associated staff. The Maryland Department of Environment (MDE) requires 15 Gallons Per Day (GPD) per student for general school use, an additional 5 GPD per student for food (with warming kitchen), and 10 GPD per student for showers (which has been included in the calculations even though it has not yet been confirmed that this school use will, in fact, have showers). Based on these numbers, the total use would be 30 GPD per student. The calculations therefore show that the total use would generate 10,500 GPD (30 GPD x 350 students). Since the minimum land area required for septic is 10,000 square feet for every 500 GPD, the calculations show an area of 210,000 square feet would be required, equivalent to 4.82 acres. This calculation is based on guidelines provided by MCDPS titled "Well and Septic Guidelines for Commercial and Large Septic System Design," under Basic Requirements, note 2.

2. In regards to the question of whether the calculations should also include a septic reserve area, it is reasonable to conclude that the 4.82 acres would be more than sufficient to also accommodate any reserve drainfields. Although MCDPS is not requiring full design of a septic system for this project, which would involve percolation testing to determine the precise length of septic trenches needed, soil testing and a Geotechnical Infiltration Report provided by Professional Consulting Corporation (PCC) on November 28, 2016, for stormwater management purposes predict a favorable outcome were percolation testing to be performed. Of the six test holes dug for that analysis, all were free from groundwater during drilling. After 24 hours two of the test holes were still free from groundwater and, of the remaining four holes, one hole had groundwater at

eleven feet (11') deep, two test holes had ground water at fourteen feet (14') depth, and one test hole had groundwater depth of eighteen feet (18'). Furthermore the infiltration tests showed very good results, where all the test holes infiltrated above acceptable ranges, ranging from 1.38 inches/hour to 3.91 inches/hour over a four hour average range. These results suggest that deeper and shorter trenches could be used for a septic system on the property, minimizing any reserve areas. Additionally, as has been acknowledged by MCDPS, the 4.82 acre area is, in fact, conservative because the calculations are based on outdated flow numbers that do not account for today's low-flow fixtures, etc. As noted above, the actual school may also not even include showers, which have been included in the calculations at this point to ensure they represent the most intensive use, and the GPD includes evening activities and staffing.

3. In regards to this project, the proposed forest conservation area set aside to be placed in a category 1 forest conservation easement is 5.86 acres. Based on the above septic calculations, 4.82 acres of this area would need to be retained as required by the County Council action approving the sewer category change. This part of the site is wooded with acceptable topography for a septic field. Septic systems are generally placed on topography with slopes below 25% and the topography in this part of the site is well below 25%, and free from any natural bodies of water.

PUBLIC SEWER ISSUES

4. In response to questions regarding the sewer use information shown on the Development By Uses table on the Hydraulic Planning Analysis Plan that was submitted to WSSC, please note that these numbers are based on WSSC code for the uses proposed by this project, namely, sanctuary and school. The actual sewer calculations are performed by WSSC. In our most recent conversations with WSSC, we have confirmed that it is WSSC's policy to perform their analysis based on a cumulative use for this site, which is in contrast to the septic calculation requirements, which are based on the largest use (not cumulative use) as required by MCDPS, Well and Septic Division. Attached please find e-mail from WSSC confirming our conversation.

Should you have any further questions or comments, please contact this office at (301)775-4394

Yours Truly,
Raztec Associates, Inc.

Mike Razavi, P.E.

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From: Atencio, Art <Art.Atencio@wsscwater.com>
Sent: Monday, November 25, 2019 2:08 PM
To: MIKE RAZAVI
Subject: RE: RCCG Jesus House- DA6224Z17

Mike,

As is typical procedure for an HPA we simply add all average daily flows from various uses.

art

Art Atencio
Project Manager, DSD
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From: MIKE RAZAVI <mike@raztecengineers.com>
Sent: Monday, November 25, 2019 9:42 AM
To: Atencio, Art <Art.Atencio@wsscwater.com>
Cc: Erin Girard <egirard@milesstockbridge.com>; Abimbola Fasosin <bimfash@hotmail.com>
Subject: re: RCCG Jesus House- DA6224Z17

EXTERNAL EMAIL!

Art

The HPA for this project was approved some time ago. The project is currently being reviewed by others and contested by citizens, so they staff at MNCPPC is looking for calculations related to HPA which WSSC would have done. They are essentially trying to see if the flow for various uses for the church project, being church use and school use were calculated as separate items or together.

If you can please call me to discuss further.

Thanks

Mike Razavi, PE
(301) 775-4394

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