BERGER ENGINEERING & SURVEYING, PLLC
100 Fulton Ave
Poughkeepsie, NY 12603
(845) 471-7383
 Fax (845) 471-3448

03-20-33

Jason Teed P.E.
Senior public Health Engineer
Environmental; Health Services
Dutchess County Health Dept.
387-391 Main Street
 Poughkeepsie, NY 12601-3316
(845) 486-340
Fax (845) 486-3545

<div align="right">

RE: ENGINEERS REPORT
        Park Plaza
        Town of Hyde Park
        Tax id 133200-6065-04-933017

</div>

Dear Jason:

My client is in interested in placing a coffee kiosk on the Hyde Park Center Site just north of the entrance and near Rt 9. The site is for Ready Coffee and a site already exist in the Rt 9 plaza in Wappinger. My client would also like to re-purpose the existing abandoned Grand Union Building to house the Board of Elections.

The proposed Ready Coffee location will be near the park just north of the entrance from Rt 9 and south of the TEG credit union. The proposal will be to connect to this existing OWTS system currently being used by Mavis. The proposed use will generate approximately 100 gpd while the existing OWTS has additional sufficient capacity.

The proposed existing Grand Union will be used by the Board of Elections. A new OWTS will be constructed to service this re-purposed site.

SITE EVALUATION

The plaza is located in the Town of Hyde Park on the east side of Albany Post Rd.

There are no floodplains streams or wetlands on the parcels.

The sewage disposal system currently serving these the Mavis Bldg. and formerly servicing the old Grand Union Bldg. consists of a septic tank and three seepage pits under the existing asphalt parking lot and entrance drive. The existing septic tank received flows from the drug store and formerly from the supermarket (historic plans and field discoveries). Piping after the septic tank carried the effluent to the three round seepage pits along with a rectangular tank is connected to the northern seepage pit.

Field investigations were made in the fall of 2015 to determine the extent and nature of the existing system and soils and investigation during the construction of the project including OWTS improvements provided information about the existing seepage pits. During initial investigation covers were open and/or the excavations were made to check the existing septic tank and seepage pits. The seepage pits were found acceptable. Additional investigation was made during construction of approved OWTS improvements were third seepage pit was discovered and information obtained.

Three seepage pits were determined to be 8.5 feet in diameter and 9 feet deep below inlet (11 ft surface to bottom). The forth pit was found to be 11 feet long. 10 feet wide and 5.5 ft deep (7.5 ft surface to bottom). The round seepage pits in the parking lot was surrounded by 8 feet of stone. The rectangular pit was surrounded by 6 feet of stone. The round seepage pit in the drive was not excavated. Stone was visible at the bottom the parking lot seepage pits.

From field measurements:

- Existing Septic tank is 1500 gallons
- Round seepage pits have a sidewall area
  8.5 diameter x 3.14 x 9 = 240 sf
  A depth of 8.5 was used as the bottom of the pits were sold for 6 inches resulting in 8.5 effective depth 8.5 feet, Thus 226 sf x 3 = 678 sf of surface area

- Rectangular seepage pit has a sidewall area of 264 square feet and volume 4,800 gallons plus 7,500 gallons in stone voids surrounding pits.

The distance between the rectangular pit and round pit in parking lot is 21 feet. The distance between the two round pits is 58 feet. The distance between the rectangular pit and round pit in drive is 62 feet.

Deep test pits dug next to the two pits in the parking lot and the septic tank revealed gravel and stone from below the asphalt to depths of 10 feet to 11 feet with no groundwater, mottling or rock. Several other test pits dug throughout the project showed gravel to 10 feet from bottom of asphalt. A few test pits had clay loam and/or gravel loam to 5 ft then gravel to 10 feet.   Field data and figure showing deep test and percolation tests is in Appendix A.

Percolation tests were performed next to the seepage pits in the parking lot. The perc results were 2 minutes. The sewage application rate for soils with percolation rates of 1 to 5 minutes is 1.2 gallons per day per square feet (Table E-1, New *York State Design Standards for Intermediate Sized Wastewater Treatment Systems*, March 5, 2014.)

DESIGN FLOW

READY COFFEE SYSTEM
1. Daily Flow for Mavis was previously determined to be 300 gpd
2. The flow from Ready Coffee
    220 gallons a day of use of which 120 gallons is coffee that leaves the site
    Resulting in 100 gpd.
    Using 2 times factor from actual flow results in 100 x 2 = 200 gpd

Existing system serving Mavis has a capacity based on side wall area of existing seepage pits of
    678 sf x 1.2 gpd per sf based on soil condition
    = 814 GPD
    DESGN FLOW 300 + 200 = 500 gpd
    Capacity 814 GPD of seepage pts

    If we use the design flow of 100 gpd for Ready Coffee plus 300 gpd for Mavis Total is 400 gpd with 100% expansion = 800 gpd

    If we calculate a differ way the existing system has a residual capacity of 314 gpd
    814-500 = 314 gpd
    If we double Mavis 300 x 2 = 600 gpd
    That leaves 214 which provides for 107 gpd as flow from the proposed Ready Coffee site.

    If we use 300 plus 200 = 500 gpd the viable expansion area 814/500 = 1.628 times or 63 % reserve capacity

    The existing OWTS will be modified to discharge sewage from Ready Coffee into the existing side of the existing septic tank. A grease trap is also to be installed and an additional line installed after the existing d-box so that equal flow will be distributed to the 3 existing seepage pits.

The existing rectangular seepage pit will be removed so that the Ready Coffee building can be constructed. The area will be excavated and all disturbed soils removed by an approved scavenger.

BOARD OF ELECTIONS PROPOSED SYSTEM

-6 full time people. (6 x 15 gpd = 90 gpd)
-25 person training twice a month

Employees based on 15 gpd
Classes based on 10 gpd per student
(25 x 10) + (6 x 15) = 340 gpd

New OWTS will be infiltrators under the parking lot with vents
340 gpd / 1.2 gpd/sf = 492 sf / 2 sf per lf = 142 lf
= 142 lf / 6.25 lf per chamber = 23 chambers
24 chambers x 6.25 lf each = 150 lf provided
3 lines of 8 chambers = 150 lf provided (24 chambers)

Septic tank 1.5 x 340 gpd = 510 gallons
Use 1000 gallon septic tank