MOREY ASSOCIATES LTD.
CONSULTING ENGINEERS

2672 Highway 43, PO Box 184
Kemptville, Ontario, K0G 1J0
T:613-215-0605• F:613-258-0605

February 18, 2020 019336

Bergeron Construction 2010 Inc.
172 St. Thomas Road
Vars, Ontario
K0A 3H0

Attention: Mr. J. P. Bergeron

RE: HYDROGEOLOGICAL REVIEW UPDATE
IMPACT ASSESSMENT STUDY AND DEVELOPMENT PLAN
VILLAGE OF VARS EXPANSION AREA
5574 ROCKDALE ROAD, VARS
CITY OF OTTAWA, ONTARIO

Dear Sir/Madam:

This letter is further to our previous two letters for the subject project dated September 19, 2013 and December 12, 2019. The purpose of this present letter is to compile the relevant and current information provided in the above noted previous two letters into one letter.

The previous September 19, 2013 letter summarized the results of a hydrogeological review of the Impact Assessment Study and Development Plan for the Village of Vars Expansion Area in view of the proposed residential development at 5574 Rockdale Road in the Village of Vars, Ontario. The purpose of the review was to check that the Impact Assessment Study in question meets the current requirements of the Ministry of the Environment, Conservation and Parks (MOE) with regards to the presently proposed residential development, and that the proposed development is in general accordance with the Impact Assessment Study and the associated Village of Vars Development Plan. The letter of December 12, 2019 provided an update for the September 19, 2013 letter.

BACKGROUND

The site in question consists of about a 1.8 hectare (4.4 acres) parcel of land located on the west side of Rockdale Road about one kilometre north of Devine Road within the north central portion of the Village of Vars, in the City of Ottawa, Ontario (see Key Plan, Figure 1). The proposed development of the site consists of the construction of a 12 unit residential apartment building serviced by a private septic system and municipal water supply. Six of the apartment units for the

proposed apartment building will have one bedroom and six apartment units for the proposed apartment building will have two bedrooms.

The Impact Assessment Study reviewed consists of the Jacques Whitford Environment Limited Report for Project No. 30332, dated July 22, 1994 and entitled "Township of Cumberland, Impact Assessment Study, Village of Vars Expansion Area". Based on the results of that report the former Township of Cumberland prepared a planning report entitled "The Village of Vars Development Plan" approved in December 1995. In brief, the above mentioned Impact Assessment Study and the Village of Vars Development Plan Report approved the development of some 300 additional lots/dwelling units within the expanded village area.

The Village of Vars is serviced by municipal water supply and private septic sewage disposal systems.

REPORTS OVERVIEW

Impact Assessment Study

For the impact assessment study in question, Jacques Whitford Environment Limited (JWEL) carried out extensive detailed field work providing widespread coverage of both the existing and proposed expanded village area. The field work consisted of test pit excavating, borehole drilling, monitoring well installation, ground surface elevation surveying, groundwater sampling and hydraulic testing. The field work was augmented by laboratory testing of soil, groundwater and surface water samples.

The results of the field and laboratory work were used to characterize the natural environmental conditions (surface water features/surface water chemistry/terrestrial habitat), geology (overburden/bedrock) and hydrogeology (aquifers and aquitards/groundwater flow/groundwater chemistry and nitrate dilution).

Based on all the information obtained a groundwater impact assessment was carried out. The impact assessment was addressed as two parts: an evaluation of the existing development using actual measured nitrate impact on the groundwater, and nitrate dilution calculations carried out in accordance with 1992 MOE development guidelines.

The 1992 MOE guidelines required it be demonstrated that a proposed development using subsurface sewage disposal systems would not result in or cause degradation of groundwater resources in exceedance of an acceptable nitrate limit of 10 milligrams per litre. This was to be demonstrated based on septic system isolation of the supply aquifer or contaminant attenuation considerations.

The nitrate testing of the groundwater within the existing and proposed village expansion area gave results significantly below the Ontario Drinking Water Standard for nitrate of 10 milligrams per litre, with 90 percent of the results below the method detection limit of 0.10 milligrams per litre. The highest nitrate concentration measured was 2.83 milligrams per litre.

Two of the specific objectives and tasks were: to "estimate the minimum lot size and maximum number of lots in each of the six areas (A to F) that would be allowed based on the current MOE guidelines which allow a maximum concentration of nitrates (as nitrogen – N) of 10 mg/L at the property boundary"; and to "determine and recommend typical leaching bed design characteristics in terms of type and size and general arrangement for the six development areas (A to F) and the infill areas. From this, estimate the minimum lot size and check against the minimum lot size determined through impact assessment." It should be noted that, "the scope of the study was expanded to investigate the hydrogeology and soil conditions in eight other potential development areas (G to N) bordering the original six areas. Therefore, the study area for this report [Impact Assessment Study report] included development areas A to N."

The required lot sizes for four types of leaching beds (R.1 to R.4) and their associated sewage envelope areas were determined for development planning purposes. The leaching beds were designed for a four bedroom dwelling. The report indicates areas with leaching bed types R.1 to R.4 as shown on Figure No. 30332-3. The report also indicates that areas having percolation rates in excess of a "T" time of 50 minutes per centimetre require larger lots.

Figure No. 30332-3 within the text of the report indicates that the site of the proposed development is located in an area requiring leaching bed type R.3. The figure also indicates that the site of the proposed residential development is contained within a portion of development area IF-1 (infill). The test pits indicated in the report for this area identify the surficial material as consisting of sand with an estimated percolation rate "T" of 5 to 10 minutes per centimetre.

The report makes the following recommendation: "Results of the impact assessment indicate that approximately 183 hectares should be set aside to accommodate 303 new lots. Of this area, 128 hectares can be subdivided into the 303 lots, if the remaining 55 hectares is set aside as a peripheral zone for nitrate attenuation."

Village of Vars Development Plan

The above mentioned Village of Vars Development Plan sets out policies for land uses in both the existing built up sections of the village and the village growth areas identified in the plan. The plan indicates appropriate lot size and estimates of the appropriate number of dwelling units for various expansion areas for the village. The significant guidelines/recommendations provided by the plan with regards to the present development are outlined in Section 5.1 and Section 10 which describe the average lot size for new development, the estimated number of units for specific areas of the village expansion, the total number of new units and the rules for allocation of the new dwelling units available.

The total number of new units allotted for the Village of Vars expansion area plus vacant and infilling is approximately 311. The subject development site is within the Vars Development Area IF-1 indicated on Figure No. 30332-2 of the above mentioned JEWL report. The above mentioned Township of Cumberland planning report indicated that Area IF-1 was approved for the development of 10 additional units.

The Plan acknowledges that for actual subdivisions minor variations in the number of lots will be permitted provided the overall intent of the Plan is maintained.

DISCUSSION

Based on our review of the Impact Assessment Study it is considered that the study was an in depth evaluation of the hydrogeology of the existing village and proposed village expansion area. Although the actual septic system groundwater impact assessment was carried out in view of the MOE guidelines available at the time, it is considered that the impact criteria and parameters used for the assessment are in accordance with current methodology and MOE guidelines for private services studies.

MOE guidelines available at the time, it is considered that the impact criteria and parameters used for the assessment are in accordance with current methodology and MOE guidelines for private services studies.

The horizon soils identified in the test pits by JWEL within development Area IF-1 are similar to those identified at the test pit locations put down at the site for the purpose of Morey Associates Ltd. report No. 013300, entitled "Geotechnical Investigation, Proposed Residential Building, 5574 Rockdale Road, Vars, Ottawa, Ontario".

As indicated above the number of units allowed for Area IF-1 is 10 in addition to the units which existed at the time of the planning report in December 1995. The above mentioned JWEL study report indicates that each unit was considered to be a four bedroom dwelling. Based on discussion with the City of Ottawa it is understood that a four bedroom dwelling can be considered to accommodate 5 people (number of bedrooms plus one). As indicated above, the proposed apartment building has six, one bedroom apartments which can be equated to 12 people and six, two bedroom apartments which can be equated to 18 people for a total of 30 people. The Area IF-1 was approved for 10 units of four bedrooms which can be equated to 50 people ((10 x (4 +1) = 50).

Based on the results of a site visit carried out by the undersigned on December 11, 2019, it is confirmed that 4 dwelling units have been constructed within Area IF-1 since December 1995 (the time of the above mentioned planning report). It is also confirmed based on the site reconnaissance and review of a historical air photograph for the site that all of the other lots within the Area IF-1 were developed prior to December 1995.

In summary, the proposed apartment building can be equated to accommodate 30 people. The four existing dwelling units within Area IF-1, mentioned above can be equated to accommodate 20 people ((4 x (4 + 1)). Accordingly, with the proposed apartment building development plus the existing 4 dwelling units, the total equivalent people to be accommodated within Area IF-1 is 50 which meets the approved number of units/people for Area IF-1.

Based on the results of our review as outlined above, it is considered that the risk of the impact on the groundwater at the down gradient boundaries of the expanded village peripheral zone, due to a septic system at the proposed site, is within currently acceptable limits, taking into account the total number of new units developed to date. No revision to the study is considered warranted at this time.

We trust that this letter is sufficient for your present requirements. If you have any questions concerning this letter, please do not hesitate to contact our office.

Yours truly,
Morey Associates Ltd.

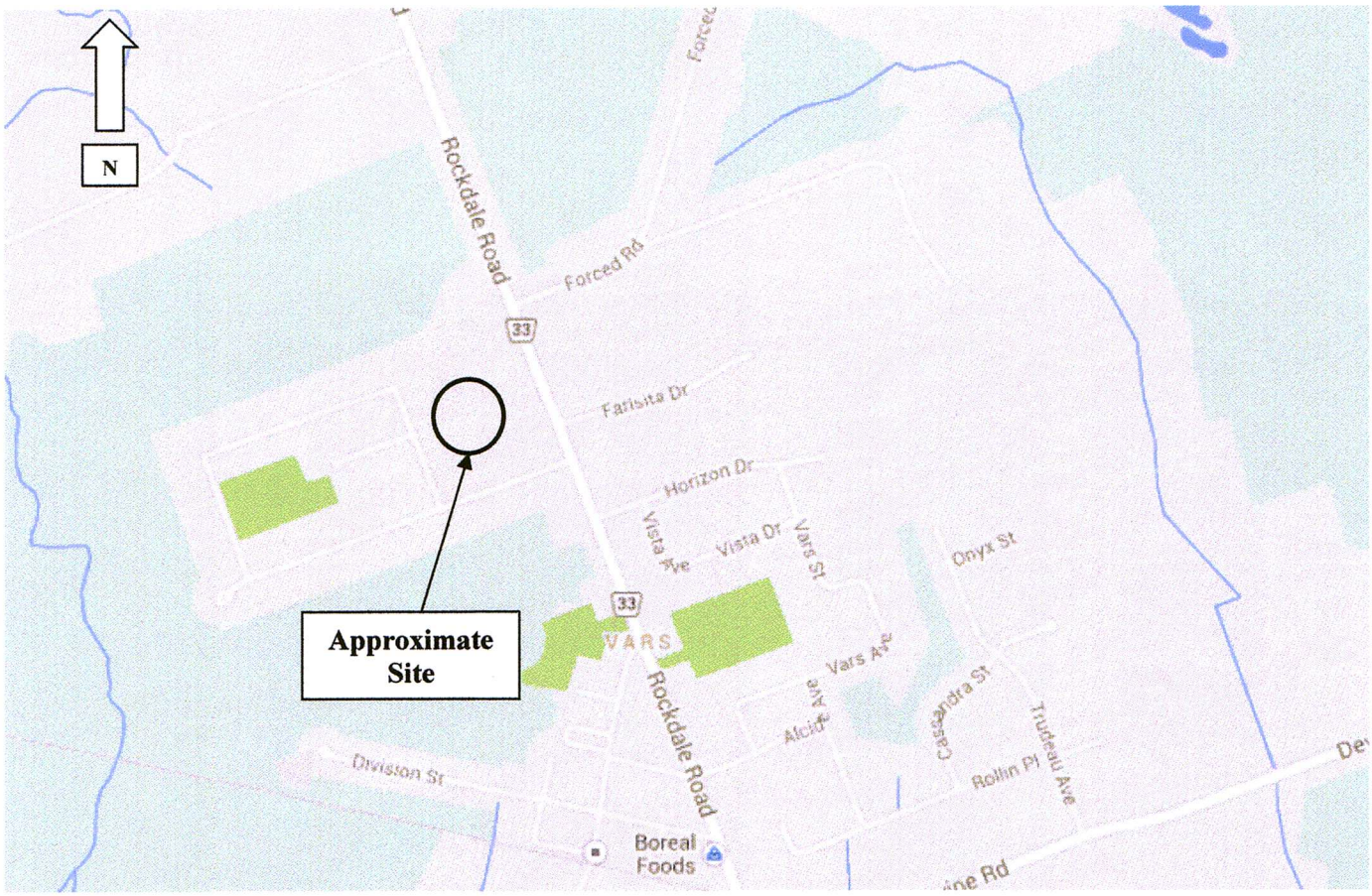
C.R. Morey, M.Sc. (Eng.), P. Eng.

Attachment: Figure 1

File: 019336

KEY PLAN

FIGURE 1



NOT TO SCALE

MOREY ASSOCIATES LTD.
CONSULTING ENGINEERS

Project No. 019336

Date February 2020