

Glynn, Joanne (ENV)

From: Souma, Gerard (ENV)
Sent: Monday, August 09, 2010 11:41 AM
To: Price, Karen (ENV)
Cc: Wilson, Paul (ENV); Glynn, Joanne (ENV)
Subject: Kingston Cliffs Eco-Friendly Riverfront Community Subdivision (48 lots)

Hi Karen,

I've reviewed the Comprehensive Water Supply Assessment (CWSA) version of July 2010 prepared by Fundy Engineering for the proposed Kingston Cliffs Eco-Friendly Riverfront Community Subdivision located in Clifton Royal, NB. The former report of April 12, 2010 had been entirely revised by Fundy Engineering in response to some clarification asked by NBDENV. The CWSA indicates that 48 lots are to be developed. The proposed subdivision will be serviced by individual private wells and on-site septic systems. The following summary and additional comments are offered for consideration by the appropriate planning authority:

- The water requirements for a single lot with a 3 bedroom house is 1800 L/d, based on a value of 460 L/day/person with 4 people per house (3 bedrooms + 1). The peak demand is 15 L/min (3.3 igpm), based on a value of 3.75 L/min/person with 4 people per house during 2 hours per day.
- Three wells (KC-08-03, KC-10-01, and KC-10-02) were drilled, two within and one (KC-08-03) out of the property boundaries proposed for Kingston Cliffs Subdivision, with depth to bedrock of 15.2, 0.3 and 0.6 m, total depth of 45.7, 68.5 and 68.5 m, and estimated yield of 45.4, 45.4 and 68.5 L/min, respectively. Well KC-10-01 was pump tested for 6 hours for the assessment at a rate of 34 L/min (7.5 igpm). Observation well KC-09-03 located 335 m from pumping well KC-10-01 had registered no drawdown. There was essentially no effect of pumping on this observation well. The transmissivity of the aquifer calculated from the time-drawdown data for KC-10-01 and KC-10-02 was estimated as 4 m²/day. The maximum drawdown in the observation well KC-10-02 located 82 m from the pumping well was 4.43 m and attained 24% recovery in 61 minutes.
- KC-09-03, KC-10-01, and KC-10-02 were sampled for microbiology, general chemistry and trace metals at three different phases of the pumping test. The results indicated that the Canadian Drinking Water Quality Guidelines (CDWQG) were exceeded for iron, manganese, pH, lead, barium and turbidity. The Guidelines for iron, manganese, pH and turbidity are aesthetic guidelines, not health guidelines and the water can be treated using standard methods. Lead and barium are assigned Maximum Acceptable Concentration under the CDWQG and pose a health risk. This means that any exceedance must be properly dealt with to ensure safe potable water.

The results of the pumping test and information from well logs in the area indicate that there should be adequate water quantity to support the development of 48 single family residences as proposed, however, we consider that recovery observation data after the pumping test stopped are not enough (should be 90% or for 24 hours, according to the guidelines for CWSA) to confirm the calculated long term safe yield of 74 m³/day for insurance of sustainability withdrawal. Furthermore, according to the desktop well log review, low yields (<15 L/min) are possible but do not appear to be an issue.

Water quality from the on-site wells that were sampled indicated exceedances for iron, manganese, pH, lead, barium and turbidity and standard treatment methods are available for these parameters. Water quality data from desktop analysis indicates the potential for CDWQ exceedance for arsenic, which is health parameter that would require water treatment in order for the water to be considered potable. If development proceeds, all new wells should be thoroughly developed, disinfected, and tested for general chemistry, trace metals, and microbiology before being used by homeowners. This will determine if any specific parameters may require water treatment.

If development of this subdivision proceeds, potential homeowners should be made aware of the possibility of low yielding wells and the potential need for water treatment so they can consider the costs involved.

Please feel free to contact me if you have any further questions or require clarification.

Regards,

Gerard Souma, P.Eng.

Civil Engineer,
PhD in Hydrogeology
Department of Environment / Ministère de l'Environnement

Drinking Water Source Protection (Unit) / Protection des Sources d'Eau Potable
Sustainable Development, Planning and Impact Evaluation (Branch) / Développement Durable, Planification et Evaluation des Impacts
Community Planning and Environmental Protection (Division) / Urbanisme et Protection de l'Environnement
20 rue McGillivray Street
Fredericton, NB E3B 5T8
Phone/Tél: (506) 457-4923
Fax: (506) 457-7823
jeanard.sauva@enb.ca



Please consider the environment before printing this e-mail
Prière de considérer l'environnement avant d'imprimer ce courriel