



Environmental Appeal Board

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APPEAL NO. 2000-HEA-033

In the matter of an appeal under section 8 of the *Health Act*, R.S.B.C. 1996, c.179.

BETWEEN: Frank and Maureen Huber **APPELLANT**

AND: Environmental Health Officer **RESPONDENT**

AND: Margaret Cabral **PERMIT HOLDER**

BEFORE: A Panel of the Environmental Appeal Board
Alan Andison, Chair

DATE OF HEARING: November 7, 2000

PLACE OF HEARING: Vancouver, B.C.

APPEARING: For the Appellant: Cliff Turner
For the Respondent: Nick Potter
For the Permit Holder: Tony Mikes

APPEAL

This is an appeal by Frank and Maureen Huber of the August 23, 2000 decision of Shendra Brisdon, an Environmental Health Officer (the "EHO") with the South Fraser Health Region, to issue a permit for an on-site sewage disposal system for Lot 5, Section 33, Township 7, N.W.D., Plan 27958, (the "Property") located at 4569 - 190 Street, Surrey.

The Environmental Appeal Board has authority to hear this appeal under section 11 of the *Environmental Management Act* and section 8(4) of the *Health Act*. The Board, or a panel of it, may vary, rescind or confirm the decision of the EHO.

The Appellants seek an order rescinding the permit.

BACKGROUND

The Permit Holder, Margaret Cabral, seeks to build a new four-bedroom home on the Property, which is approximately ten acres in size and slopes slightly towards the west. There is a well on the northeast portion of the Property. The Appellants' home is located on a lot bordering the south side of the Property.

When Ms. Cabral purchased the Property in 1997, it had no house on it. The house that had stood on the Property burned down sometime in 1995. That house was served by an on-site sewage disposal system that included a drainage field in a raised mound consisting of fill, located on the southeast corner of the Property. The mound was installed in 1993 to replace a failing field located on the northwest corner of the Property.

In August 1999, Roger Cabral applied for a permit for a sewage disposal system on the Property. However, due to concerns raised by the Appellants, the EHO sought an engineer's opinion on the proposed system.

Don W. Miller, Regional Public Health Engineer, inspected the Property on January 18, 2000, and provided a report dated January 24, 2000 to the EHO. Mr. Miller recommended approval of the proposed system, subject to two requirements: "[t]he top of the mound should be sloped and seeded with grass", and "[t]he area between the mound and the south ditch and around the southwest corner of the mound should be filled with perkable soil to about 18 inches in depth."

Ms. Cabral commissioned Tony Mikes, a professional engineer, to conduct a site investigation and evaluate the condition of the existing mounded disposal field and surrounding receiving area. He investigated the site on May 18 and 19, 2000. His observations and conclusions following the investigation are provided in a report dated June 7, 2000, which contains a number of recommendations regarding the proposed disposal system. His report was reviewed by the Boundary Health Unit, which replied with several recommendations concerning the proposed system. The recommendations of Mr. Mikes and the Health Unit were included in Ms. Cabral's subsequent permit application.

On August 18, 2000, Ms. Cabral applied for a permit to repair or alter the existing sewage disposal system. The proposed system is designed to serve a four-bedroom house with an estimated daily sewage flow of 375 gallons. The system includes a 1200-gallon septic tank, a biofilter, a distribution pump, and a drainage field consisting of 500 feet of drainage pipe located in the existing raised mound. In the permit application, the system is described as being over 100 feet from any wells or streams, over 50 feet from any breakout points, and over 10 feet from water lines.

The permit was granted by the EHO on August 23, 2000, subject to the condition that the installation and restoration of the receiving area is supervised by Mr. Mikes, and a well potability test is done. Installation of the system had essentially been completed by the time the Appellants filed their appeal on September 20, 2000.

The permit was issued under section 7(2) of the *Sewage Disposal Regulation*, B.C. Reg. 411/65 (the "Regulation"), which provides the EHO with the discretion to issue a permit to repair or alter certain pre-existing sewage disposal systems where the work could not otherwise be approved. Section 7(2) provides as follows:

Where a sewage disposal system, constructed or installed prior to December 20, 1985 is *in need of repair or alteration* and the appropriate work *cannot reasonably be effected in accordance with this regulation*, the

medical health officer or public health inspector may issue a permit to repair or alter under section 3 if the sewage disposal system, when repaired or altered in accordance with the conditions contained in the permit, *will not constitute a health hazard*. [Emphasis added].

The Appellants are concerned that the system does not properly fall under section 7(2) of the *Regulation* and has insufficient safeguards to protect public health.

Both the EHO and Permit Holder oppose the appeal. They request that the decision to issue the permit be upheld.

ISSUES

The main issues raised in the appeal are as follows:

1. Whether the proposed sewage disposal system falls under section 7(2) of the *Regulation*.
2. Whether the proposed sewage disposal system will constitute a health hazard.

DISCUSSION AND ANALYSIS

1. Whether the proposed sewage disposal system falls under section 7(2) of the *Regulation*.

The Appellants submit that, since there was no house on the Property when Ms. Cabral purchased it, she cannot claim to "replace" something that she did not own. They also submit that while the August 2000 permit application specifies that it is for a repair or alteration of a sewage disposal system, some previous permit applications in relation to the Property were for construction of a new system.

The EHO submits that the permit is for an "alternate" system under section 7(2) of the *Regulation*, as a repair or alteration of an existing non-complying sewage disposal system.

The EHO provided evidence that the site had a sewage disposal field before the mounded field was installed in 1993. The EHO states that the Property was inspected by Public Health Inspector Kerry Schneider on October 21, 1992, after the then-owner filed an application to replace a failing disposal field on the north side of the Property, which was installed in or about 1980. In 1993, a permit was issued to repair the failing disposal field by replacing it with the mounded field. Mr. Schneider's notes state that the southeast corner of the Property is the best location for a replacement field, as there was a well in the northeast part of the Property, while the west half of the Property "drops quickly to flood plain levels."

The Permit Holder provided a copy of a report dated October 25, 2000 by Mr. Mikes, which includes a copy of his site investigation report dated June 7, 2000. The Panel notes that Mr. Mikes is a certified engineer and has taken courses specializing in waste water treatment and disposal.

Mr. Mikes states that he examined the mound and receiving area on May 18 and 19, 2000. He dug several test pits in the mound and receiving area, conducted percolation tests, and observed the level of the ground water table. He found that the mound consists of sandy, loamy, gravelly soil, and that the original drain pipes in the mound had not been covered with a filter layer to protect silt from entering the trenches. He recommended removing the original pipes, replacing them with new pipes, and adding filter paper or cloth. After reviewing Mr. Mikes' investigation report, the Boundary Health Unit recommended that the length of drainage pipe in the field be increased to 500 feet. These recommendations were included in the proposal submitted by Ms. Cabral.

The parties agree that an on-site sewage disposal system that utilized a conventional disposal field was in use on the Property from about 1980 until 1993. While there was no house on the Property when Ms. Cabral purchased it, there is also no dispute that the mounded disposal field that was installed in 1993 remained in use until the house was destroyed by fire in 1995. The mounded field remained on the Property when it was purchased by Ms. Cabral, but it had not been used since 1995. The Panel notes that the proposed system utilizes the pre-existing mounded fill, although the mound has been modified and the drainpipes have been re-built.

The Panel finds that the term "repair or alteration" in section 7(2) of the *Regulation* clearly refers to some change to an existing sewage disposal system. Clearly, there was an existing sewage disposal system when Ms. Cabral purchased the Property, even though it was not in use. The Panel notes that section 7(2) applies to systems installed before December 20, 1985. The mounded disposal field was installed after that date, but was installed as a repair to replace a disposal field installed in 1980 that had failed. Consequently, the Panel finds that the mound installed in 1993 was part of a similar system originally installed in 1980, and, as such, falls within the time frame specified in section 7(2).

The Panel also finds that the existing system was in "need of repair" in order to be brought back into service for a new house. The mounded field had not been used or maintained since 1995, and the Panel accepts the evidence that portions of it needed to be repaired or re-built.

Additionally, the Panel finds that the raised mound was placed in the southeast corner of the Property in 1993 because this was the best location for a disposal field, given the high water table on the Property and the location of a well in the northeast corner of the Property. The Panel further notes the fact that the raised mound and field are now fully in place. In the absence of a demonstrated health risk, the Panel has concluded that it is reasonable to consider the system in its present location pursuant to section 7(2) of the *Regulation*.

Thus, the Panel finds that the proposed system can be considered a repair or alteration under section 7(2) of the *Regulation*. As such, the primary issue is whether the EHO properly exercised her discretion under section 7(2) in deciding that the proposed system does not constitute a health hazard.

The Panel further finds that the permitted system is not a "conventional septic tank system" as described in section 6 of the *Regulation*. The permitted system includes a biofilter and an effluent pump, neither of which are components of a conventional septic tank system. Schedule 2 of the *Regulation*, which sets out construction standards for conventional septic tank systems, does not apply to the permitted system, and does not set out standards for systems using biofilters or effluent pumps in conjunction with a septic tank. As such, the Panel finds that the permitted system may only be considered under section 3(3) of the *Regulation*, if it does not properly fall under section 7(2).

Section 3(3) of the *Regulation* provides the EHO with discretion to issue a permit for construction or installation under the following circumstances:

- (3) No permit shall be issued under this section
 - (a) in the case of construction or installation, until site investigation tests set out in or required by Schedule 1 have been carried out to the satisfaction of the medical health officer or public health inspector, and either of them is satisfied that, having regard to the provisions of that schedule, the construction, installation and ultimate use of the system will not contravene the Act or this regulation...

Section 3(3) of the *Regulation* requires that systems permitted under that section must comply with Schedule 1 of the *Regulation*. Schedule 1 requires an owner to undertake a site investigation before applying for a permit under section 3. Specifically, it requires the digging of test holes in the area of the proposed absorption field, percolation tests, and, where applicable, calculation of the ground water table elevation. The results of the site investigation must be reported to the EHO. The Panel finds that the evidence of the Permit Holder clearly show that Mr. Mikes conducted a site investigation and reported the results to the EHO, as required by Schedule 1.

Systems permitted under section 3(3) of the *Regulation* must also comply with the *Act*. Section 25 of the *Health Act* requires that "a system of sewerage must not be established or continued unless there is maintained with it a system of sewage purification and disposal *that removes any menace to public health...*" [italics added]. As such, the EHO retains discretion to ensure that any system permitted under section 3, and not regulated by Schedules 2 and 3, is constructed in such a way that it does not create a menace to the public health.

Thus, regardless of whether this system is permitted under section 3(3) or 7(2) of the *Regulation*, the next issue for consideration is whether the system will constitute a health hazard.

2. Whether the proposed sewage disposal system will constitute a health hazard.

The Appellants were represented by Cliff Turner, a building inspector and former public health inspector. He raised six main concerns regarding the safety of the permitted system.

First, the Appellants submit that the drainage field has not been inspected during the wet months, and that the water table is too high to support a conventional sewage disposal system even if fill is added. They argue that flooding of the drain field will prevent the system from working properly, thereby posing a health hazard. In support, they provide photos of the site, and refer to chapter 6.1 of the Ministry of Health *On-Site Sewage Disposal Policy*. It states that although a minimum of 18 inches of soil is generally required to adequately attenuate effluent, this soil depth may be reduced in appropriate circumstances. The Appellants submit that those circumstances are not found in this case. The Appellants advise that they have experienced water seeping into their basement on three occasions since the mound was installed in 1993.

Second, the Appellants submit that the drain rock used in the fill for the drain field will allow sewage to flow quickly through the disposal area, with little or no attenuation of the hazardous materials in the effluent.

Third, they argue that the mound system is installed too close to the Property boundary. They provide a facsimile dated January 12, 2000 from a Public Health Inspector with the South Fraser Health Region, which states that there must be a minimum of 50 feet between the toe of the mound and the Property line.

The Appellants further argue that the trenches in the drain field are too close together, that required scarifying of the disposal field was not completed, and that topsoil has been removed from the disposal field area. In support, they provide photographs of the site. The Appellants also submit that alternate sewage disposal systems have not been approved by the South Fraser Health Region since 1995, unless the raised mound consists of ASTM C33 sand. Since the mound on the Property consists of soil, the system should not have been approved.

The Panel notes that the Appellants also expressed concern that the new home on the Property may be used to house foster children. They are concerned that this may result in the system failing due to over-use by extra occupants of the home. The Panel is not persuaded that the use of the four-bedroom house as a foster home, which is not admitted by the Permit holder, will cause the system to fail. The system has been built to accommodate a four-bedroom house. The possible future use of that house is not a matter that falls within the jurisdiction of either the EHO or the Board. Accordingly, the Panel will not consider this question further.

The EHO concedes that the depth to the water table would be an issue if this system were a conventional system as described in the *Regulation*. However, the EHO argues that the surface water visible in the Appellants' photos is a capsulation of surface water collected after the topsoil had been scraped off the receiving area, and is not water that has risen to the surface from below. To correct this situation, the receiving area around the southwest corner of the mound has been rebuilt by

adding ASTM C33 type sand and a topsoil cover. The sand covers a greater area than the immediate receiving area.

The EHO also agrees that, since 1995, there has been a policy that any site in the South Fraser Health Region requiring a fill mound for a sewage disposal system will require ASTM C33 sand. However, he argues that the system was approved as a repair or alteration of a system that was installed before the policy came into affect.

The EHO further argues that the drainage pipes will not be laying in water because they are no more than 18 inches from the top of the mound, which is about 3 feet deep. Thus, the EHO submits that contaminated flooding would not occur because the effluent will receive full attenuation, the receiving area exceeds the minimum requirements where it was rebuilt, and the Appellants' property slopes towards and is at a higher elevation than the Property.

In support, the EHO notes that the suitability of the fill mound and rebuilding of the receiving area was confirmed in the October 25, 2000 statement of points by Mr. Mikes, and his attached report. The EHO also provided a report dated January 24, 2000 by Don Miller, Public Health Engineer. Mr. Miller concludes that the replacement of soil in the receiving area will result in further attenuation of effluent before it reaches a ditch along the Property boundary in "the unlikely event that untreated effluent reaches the toe of the mound".

The EHO further submits that the drain rock used in this system is adequate and will serve its purposes, including allowing effluent to escape freely from the pipes, and providing a structure for supporting the trenches and decomposing bacteria. The EHO notes that although the toe of the mound is less than 50 feet from the Property line, the disposal pipe will be no closer than 59 feet from the Property boundary. The EHO notes that in a conventional system, the pipe may be as close as ten feet from a property boundary. Moreover, the drainage pipes are placed ten feet apart, exceeding the six-foot minimum specified in Schedule 2 of the *Regulation*.

Finally, the EHO submits that photos taken in 1993 show that the area of the mound was scarified before the fill was placed there, and that top soil was not removed from the infiltration area. Topsoil was removed from the receiving area (i.e. toe of the mound to the ditch along the Property boundary) and was replaced with the ASTM C33 sand and a topsoil cap, under the supervision of Mr. Mikes.

In conclusion, the EHO submits that the permitted system will not pose a health risk to the Appellants or any other neighbouring property. The EHO notes that several other homes in the area use sewage disposal systems with a fill mound installed before 1995, and the South Fraser Heath Region has received no complaints of these systems causing a health risk.

The Permit Holder refers the Panel to Mr. Mikes' October 25, 2000 report, which includes supporting photographs, sieve analysis of the sand, a plan showing the locations of test holes, and blueprints of the system design. Mr. Mikes states that during the May 2000 site investigation, heavy rainfall did not affect the ground

water level in the observation holes. The water level was 24 to 36 inches below the ground surface of the test holes, which were located in the mound and the surrounding receiving area. Mr. Mikes acknowledges that the water table may rise to higher levels during the winter months, but observations of the exposed hole did not indicate that it would rise to a level of 18 inches from the ground surface. In addition, he states that the trenches underlying the drain pipes were filled with drain rock, the Property is not located in a flood plain, and no water stains were observed on the exterior walls of the Appellants' house foundation.

Mr. Mikes further states that the drain field is sufficient distance from the Property boundary, and that the sand placed in the receiving area serves as added protection, as it will act as a sand filter between the toe of the mound and the Property boundary. He adds that the Appellants' foundation is further protected by the ditch along the Property boundary and the perimeter drain around their home.

In addition, Mr. Mikes states that the length of pipes in the mounded field is six percent larger than required under the *Regulation*, the septic tank is 37 percent larger than required, and the pump chamber is 60 percent larger than required. He also submits that the biofilter will reduce total suspended solids by 85 percent, and reduce biological oxygen demand by 38 percent. In conclusion, Mr. Mikes states that the system will not cause a health hazard provided that it is properly maintained.

Given that the proposed system is either a repair or alteration of a pre-existing system, or an application under section 3 of the *Regulation*, the only issue for the Panel at this stage is whether the proposed system will create a hazard to the public health. While it may be helpful to consider the criteria for setbacks, drain pipe length or septic tank size that are established in the *Regulation* for conventional systems, the Panel notes that this system need not strictly comply with those criteria.

The Panel also notes that the Appellants have the onus to establish, on a balance of probabilities, that the system will pose a public health hazard. In general, the Panel finds that the Appellants have made a number of assertions regarding the inadequacy of the system, but have provided little evidence to show that the system poses a threat to the public health. In contrast, the EHO and Ms. Cabral have each presented substantial evidence, including reports by two engineers, to support their position that the proposed system will not pose a threat to public health. However, the Panel will address each of the specific concerns raised by the Appellants.

The Panel has considered Chapter 6 of the *On-Site Sewage Disposal Policy*, which provides EHO's with guidelines for exercising their discretion to approve alternate systems. Chapter 6.1 of the *Policy* provides guidelines for soil depth:

To meet the requirements of a proposed alternate system, the natural soil on the site must be acceptable and to a depth considered adequate to attenuate the effluent and thus prevent ground/perched water contamination and/or result in the creation of a health hazard.

Historically the soil depth requirement in British Columbia has been established at 18 inches. Recent technical information indicates that this requirement may not be sufficient.

...

(B) Consideration may be given to reducing this depth where the following conditions are encountered:

- large acreage,
- groundwater table is not a factor, e.g. lateral movement of effluent would be in unsaturated conditions,
- existing soil is ideal for treatment,
- slope is not a problem,
- low levels of rainfall,

...

Chapter 6.4 of the *Policy*, which addresses built-up absorption fields, has also been considered. It states as follows:

- Design Criteria:
- All separation distances from a built-up absorption field should be measured from the toe of the mound.
 - The setback from a downslope breakout point shall be in accordance with the general site requirements for setback [which is described as 50 feet in section 4.4 of the *Policy*].
 - Generally, soil should not be stripped or removed within 15.25 metres (50 feet) of a built up absorption field.
- ...
- the natural ground surface below a built-up absorption field should be scarified/tilled to a depth of 15.25 centimetres (6 inches) before fill is placed.

The Panel agrees that the permitted system is not in an area of low rainfall, and that the depth to the ground water table may be a concern if this system did not fall under sections 3 or 7(2) of the *Regulation*. However, the Panel finds that the proposed system will provide adequate attenuation of the waste water before it reaches the natural water table. The Panel accepts Mr. Mikes' evidence that the water table will not rise to within 18 inches of the ground surface. The Panel also accepts that the biofilter will significantly reduce the amount of suspended solids reaching the drain field, thereby reducing the amount of waste that must be attenuated through biological processes in the soil. In addition, the Panel accepts the evidence of the EHO and Mr. Mikes that the drain rock that has been placed in the disposal trenches is adequate. The Appellants presented insufficient evidence to show that effluent will flow too quickly through the drain rock.

Moreover, the Panel finds that the 1993 photos indicate that the ground under the mounded field was scarified in accordance with the *Policy*. These photos show a large pile of soil dumped next to a flat area that appears to have been tilled to expose bare soil, in contrast to the surrounding tall grasses. The tilled area has

not yet been raised to a higher elevation than the surrounding grass-covered surface. The tilled area was identified by the Appellants and the EHO as the area of the mounded field.

The Panel notes that although the toe of the mound is less than 50 feet from the Property boundary, contrary to the *Policy*, there is no evidence that this will cause a threat to public health in this case. The Panel finds that, if partially untreated effluent did break out at the toe of the mound, the Appellants' lot is protected from exposure to contaminated waste water in several ways. First, the evidence shows that the effluent would already be significantly attenuated by the system and the soil in the mound before it reached the toe of the mound. Second, the Property slopes away from the Appellants' lot and is separated from it by a ditch, thereby reducing the possibility that surface water would flow towards the Appellants' lot. Third, the Panel accepts that the ASTM C33 sand fill that has been placed between the toe of the mound and the Property boundary will essentially act as a filter to contaminated ground water. While the natural soil in the southwest corner of the receiving area should not be stripped away, according to the *Policy*, the Panel accepts the evidence that the ASTM C33 sand, underlying natural soil, and top soil cap will provide further attenuation in the event of a break out at the toe of the mound, thereby preventing contaminated ground water from reaching the Appellants' property.

With respect to the South Fraser Health Region's policy that after 1995, mounded disposal fields should be built with ASTM C33 sand, the Panel notes that although the mound itself does not consist of such sand in this case, the use of a biofilter will reduce the amount of waste requiring attenuation in the mound. Furthermore, as noted above, ASTM C33 sand has been added to the receiving area to enhance the safety of the system.

The Panel further notes that, in several respects, this system exceeds what would have been required if this had been a conventional system subject to Schedule 2 of the *Regulation*. The system blueprints and photographs show that the distance between the lengths of drain pipe, the septic tank capacity, the distance between the drain pipes and the Property boundary, and the total length of the drain pipes all exceed the requirements of Schedule 2.

Finally, the Panel notes that there is no dispute that the system is over 100 feet from any wells or streams, and over 10 feet from water supply lines.

In all of these circumstances, the Panel finds that the permitted system will adequately protect the public health.

DECISION

In making its decision, the Panel has carefully considered all of the evidence presented during this hearing, whether or not it has been specifically reiterated here.

The Panel finds that the proposed sewage disposal system is a repair or alteration under section 7(2) of the *Regulation*, and that the proposed system will not cause a public health hazard. Accordingly, the Panel upholds the decision of the EHO to issue the sewage disposal permit.

The appeal is dismissed.

Alan Andison, Chair
Environmental Appeal Board

November 28, 2000