Province of British Columbia

Environmental Appeal Board

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APPEAL NO. 97-HEA-35

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

BETWEEN:	Chris Blumhagen	**APPELLANT**
AND:	Environmental Health Officer	**RESPONDENT**
BEFORE:	A Panel of the Environmental Appeal Board Bob Radloff, Chair	
DATE OF HEARING:	Conducted by written submissions concluding on February 2, 1998	
APPEARING:	For the Appellant: Rob Arden	
	For the Respondent: Nick Potter	

APPEAL

This is an appeal against the October 17, 1997, decision of the Environmental Health Officer ("EHO") to refuse to issue a permit for a sewage disposal system for Lot 14, N.W. 1/4, Section 7, T.W.P. 11, N.W.D. PL 4530, Langley, British Columbia.

The Environmental Appeal Board has the authority to hear this appeal under section 11 of the *Environment Management Act* and section 8 of the *Health Act.* The Board, or a panel of it, may, after hearing all evidence, decide to confirm, vary, or rescind the decision of the EHO. The Appellant seeks an order that a sewage disposal permit be issued for the proposed system.

At the request of the parties, this appeal was conducted by way of written submissions.

A site visit was performed on March 20, 1998, attended by the Panel and both parties.

BACKGROUND

The Appellant wants to construct a 3-bedroom house on his approximately 4.3 acre lot in Langley. He retained Levelton Engineering Ltd. (“Levelton”) to evaluate the subsurface conditions for the property and design an appropriate system. Levelton studied the property and conducted various tests. The results of its evaluation were presented in a June 30, 1997, report to the Appellant.

In the report, Levelton states that there is approximately 0.45 m of brown clayey silt overlaying 0. 15 m of compact reddish brown silt, overlying a gray clayey silt layer of very low permeability. Due to the low permeability of the underlying clay/ silt layer and the relatively level grade of the site, a shallow water table approaches the ground surface during extreme rainfall events. In one test hole, water was observed up to 10 cm below the ground surface. Levelton notes however, that the water level drops relatively quickly after the rainfall ceases.

In light of the high water table, Levelton proposed a system that includes pretreatment in combination with a raised mound disposal system in order to safeguard public health. It submitted an application to the Boundary Health Unit ("B.H.U.") for a sewage disposal system consisting of secondary sewage treatment from a DF-50-FF Whitewater package treatment plant, disinfection using a Sanuril 200 chlorination and dechlorination unit (using Sodium Sulfite), and final discharge using pressure distribution to a raised mound field with 114.8 feet of drainage pipe.

Levelton asserts that the Whitewater plant is capable of producing effluent with a biochemical oxygen demand (BOD) of 10 mg/l, total suspended solids (TSS) of 10 mg/l, and fecal coliform bacteria of 200 cfu/ 100 ml. It presented test results on existing similar systems which, it states, confirm this assertion. Levelton states that this pretreatment of sewage must be carried out prior to discharge in order to protect public health.

Blair Choquette, EHO with the B.H.U., rejected the proposed system. He found that the proposal did not meet the current B.H.U. standards for "non conforming lots" (B.H.U. SEW 005). This guideline was developed for lots that do not conform to all the requirements of the relevant schedule in the Regulation. The EHO also stated that he "would have no objection to the issuance of a sewage disposal permit once the applicant complies with the 30.5 m (100 ft) setback requirements" as detailed in this guideline. This suggested to the Panel that the 30.5 m setback was the prime concern for the B.H.U.

In his submission to the Panel, the EHO expanded on his grounds for rejecting the proposed system. The EHO submits that the proposed system was properly rejected as the lot is very wet with ponding occurring at various locations near the proposed field. Further, the EHO states that the interceptor ditches adjacent to the field are too close and represent a potential breakout location. The EHO suggested that effluent may reach local wells through these ditches. In addition, these interceptor ditches are connected to the ditch alongside 61st Avenue, which runs adjacent to the northern boundary of the property. This ditch ultimately flows to the Nicomekl River, a fish-bearing river. This makes for the potential for chlorinated effluent to be discharged to the Nicomekl River, which will create a fisheries concern.

Finally, the EHO submits that, given the wet spots on the lot, the potential for breakout is high. Consequently, it would have to meet a 30.5 m setback to the lot boundary, as required by the B.H.U.'s non-conforming policy guidelines, to ensure that the system safeguards public health. In support of the setback requirement,

the EHO referred to an extensive study of sewage disposal system criteria conducted for the Health Unit by Dayton and Knight Ltd. and Piteau and Associates.

The Appellant argues that the EHO had the discretion to approve the system but he failed to properly consider the scientific evidence in support of the application. He argues that, in rejecting the application, the EHO rigidly relied on the B.H.U.'s policy regarding setbacks to parcel boundaries rather than good science. The Appellant also proposed that an ozonator be installed instead of a chlorinator/ dechlorinator unit, in order to address the Respondent's concerns about the potential impact of chlorine on fish while continuing to assure that disinfection of the effluent occurs prior to disposal to the field.

LEGISLATION

The construction and installation of on-site sewage disposal systems is governed by the Sewage Disposal Regulation, B.C. Reg. 411/85, enacted pursuant to the Health Act. Under section 3(l), "No person shall construct, install, alter, or repair a sewage disposal system unless he holds a permit."

Section 6 of the Regulation states:

Standards for systems

6. Subject to section 7, no sewage disposal system constructed after the date of this regulation which involves the use of a septic tank or a package treatment plant is permitted unless the system conforms with the standards of construction, capacity, design, installation, location, absorption, operation and use set out

(a) for conventional septic tank systems, in Schedule 2,

(b) for conventional package treatment plant systems, in Schedule 3, …

The subject system involves a package treatment plant, therefore the relevant schedule is Schedule 3.

According to section 11 of Schedule 3, the proposed field area is required to have a minimum of 4 ft. [1.2 ml of unsaturated, permeable native soil. Where this requirement cannot be met, as in this case, the EHO has discretion to issue a permit under section 7(1) of the Regulation provided certain conditions are met. Section 7(1) states:

Alternate methods

7. (1) Where a medical health officer or public health inspector is satisfied that it is impossible for a person to comply with

…

> (b) in the case of a conventional package treatment plant system, sections 11 [soil depth], ... of Schedule 3,
>
> but that the person can comply with *all other provisions of the appropriate sched*ule, he may issue a permit to construct ... containing conditions that he considers appropriate to meet the omitted standards having regard to safeguarding public health. [emphasis added]

Based upon the wording of these sections, the key questions to be answered in this appeal are (1) whether all other sections of the relevant schedule can be met, and (2) whether the proposed system will safeguard public health in spite of the lack of native soil.

Other sections of the relevant schedule which are at issue in this appeal are sections 9(b) and 14(b) which establish the minimum setbacks to the parcel boundary: in the case of a package treatment plant, the setback is 1 m [3 ft]; in the case of an absorption field, the setback is 3 m [10 ft]. Section 14(d) states that an absorption field shall be located no less than 30.5 m [100 ft] from a source of domestic water (e.g. a well).

Reference is also made in this appeal to the Code of Good Practice. This “Code” is stablished in section 3.01 of the Regulation which states:

3.01(l) A person may apply under this section if the person

> (a) wishes to construct or install and to operate a sewage disposal system on a parcel of land that
>
> (i) measures 10 acres or more,
>
> ...
>
> (b) elects to construct or install a sewage disposal system that will meet the standards in the Code of Good Practice.

The standards for the Code of Good Practice are set out in Schedule 6. Relevant portions of this schedule are as follows:

> **3.** The ultimate disposal to the environment must be at least 30.5 m [100 ft] from the property line and 15.25 m [50 ft] from the potential breakout point....
>
> **4.** The point of discharge must be at least one foot above the highest water table for that parcel of land.

ISSUES

The issues raised by the evidence and argument of the Appellant are:

1. Whether the disposal field effluent will impact fish-bearing streams?

2. Whether the disposal field effluent will impact local wells?

3. Whether the 30.5 m setback from property line required by the EHO is appropriate?

4. Whether the level of sewage treatment and disinfection is adequate to protect the public health?

5. Whether the maintenance of the treatment facility is adequate to ensure continued satisfactory effluent quality?

6. Whether the breakout points are a health concern?

DISCUSSION AND ANALYSIS

1. Whether the disposal field effluent will impact fish-bearing streams?

The EHO stated that the drainage ditches discharge to the ditch in front of the property in the 61st Avenue ditch line. This ditch ultimately discharges to the Nicomekl River which is a fish-bearing stream. The Appellant proposes to chlorinate and then dechlorinate effluent prior to disposal to the field. The EHO argues that there is potential that the dechlorination equipment will fail. Consequently, there is potential for discharge of chlorinated effluent to the Nicomekl River which can have a negative impact on fish.

The Appellant did not dispute the existence of this ditch or its connection to the Nicomekl River; rather, the Appellant has offered to substitute ozonation in place of chlorination for disinfection purposes. The Appellant argues that ozone does not persist in the environment for more than several minutes. As such, based on Levelton's travel time calculations, the ozone disinfectant will not have a negative impact on the water in the ditch or the Nicomekl River. According to the Appellant, an added benefit of ozonation will be enhanced oxygen levels in the effluent and ground water under the fields.

The Panel accepts this substitution of disinfectants and finds that, based on this substitution, there will be no negative impact on fish, the ditch or the Nicomekl River.

2. Whether the disposal field effluent will impact local wells?

The EHO raised concerns about the potential for effluent from the proposed field to impact local wells. Specifically, he is concerned that the effluent exiting the system will travel to the onsite interceptor ditches and, from there, to the local drainage ditch parallel to 61st Avenue. He states that this ditch may act as a source of recharge to local wells.

The Appellant presented evidence showing that local wells draw their water from a confined aquifer that is located 285 to 312 feet below ground surface. The aquifer is overlain by a minimum of 285 feet of impermeable soils Well logs of local wells were provided. The Appellant concluded that it is not physically possible for Mr. Blumhagen's proposed disposal field, or any other field in the area, to be a source of groundwater recharge to these wells based on this evidence. The Respondent refutes this stating "Mr. Hugh Leibscher, Regional Hydro Geologist, has indicated to us there is a possible chance that ditch water can recharge the aquifer." He presented a memo by Mr. Leibscher to this effect.

The Sewage Disposal Regulation requires a 30.5 m setback from a source of domestic water. The Respondent provided evidence indicating that there are no wells within 30.5 m of the proposed field. The Panel concludes that the proposal complies with the regulatory requirements regarding distance to wells.

While it is difficult to say definitively that the disposal field will not act to recharge local wells, it is possible to conclude, on the evidence that it is very unlikely that it will. This, coupled with the fact that the field location meets setback requirements in the Regulation, satisfies the Panel that the field does not reasonably pose a risk to public health by reaching local wells.

3. Whether the 30.5 m setback from property line required by the EHO is appropriate?

The EHO contends that the sewage disposal system must maintain a 30.5 m setback from adjacent property lines as detailed in the B.H.U. policy guideline SEW.005. Section 2 of this guideline states:

> 2. The disposal mound toe must have a minimum setback of 30 meters or 100 feet from boundary lines...

The EHO gave evidence that this guideline was developed as a result of the findings of a 1994 study of onsite ground disposal issues conducted by Dayton and Knight/Piteau and Associates. The EHO also points to the provisions of the Code of Good Practice (Section 3.01 of the Regulation) which mandates a 30.5 m setback for lots of 10 acres or larger. The EHO contends that the 30.5 m setback requirements of the Code of Good Practice should be maintained or increased when a parcel size is less than 10 acres. It was the EHO's contention that the 30.5 m setback was his overriding concern, noting that he "would have no objection to the issuance of a sewage disposal permit once the applicant complies with the 30.5 m (100 ft) setback requirements."

The Appellant indicates that he is not applying for a permit under the Code of Good Practice and that, to comply with the 30.5 m setback, would compromise the system design and result in a higher public health risk.

The Panel notes that the Code of Good Practice provisions apply only to lots in excess of 10 acres. The Appellant's property is 4.3 acres in size. Consequently, the provisions of the Code of Good Practice do not apply.

Further, the Panel notes that there are significant differences between B.H.U.'s guidelines and the Code of Good Practice. One of the principal differences being the permitted vertical separation between the effluent disposal point and the high water levels *on* the lot. The B.H.U. guideline requires 0.6 m vertical separation. The Code of Good Practice requires only .3 m. Presumably the increased setback provisions of the Code of Good Practice reflect this much reduced vertical separation. As a result, the increased setback provisions of the Code of Good Practice are justified. It is difficult to justify similar setbacks *in* the B.H.U. guideline.

The B.H.U. guideline requires a minimum setback of 30.5 m from property lines. By comparison, the relevant section of the Regulation dealing with regular sites (less than 10 acre parcels) only requires a 3 m setback from the absorption field to the property lines (section 14(b) of Schedule 3). As such, the B.H.U. policy setback requirement is significantly more stringent than the Regulation. Ostensibly, the difference is due to a reduced vertical separation between effluent disposal and water table allowed for under the B.H.U. guideline.

The Regulation requires the vertical distance to water table to be greater than 4 feet (1.22 m) below the ground surface. Allowing for effluent disposal pipes being installed to a maximum depth of 23 inches (0.58 m) as per section 18 of Schedule 3 of the Regulation, the resulting potential vertical separation based on the Regulation is .64 m. A figure marginally more than that permitted in the B.H.U. guideline of .60 m. Some would say there is virtually no difference.

In short, B.H.U. guideline requires, in this instance, significantly more separation (10 times the distance) to the parcel boundary than the Regulation, for a marginally reduced separation. Is this reasonable? Is this supported by the detailed study undertaken by Dayton and Knight/Piteau and Associates referred to by the EHO?

Pages 2 - 46 of the above referenced report show that setbacks to property lines vary from 1.5 to 15 m in the 12 other jurisdictions studied. The majority of jurisdictions studied had a 3 m setback requirement similar to the BC Regulation. These were combined with vertical separation requirements less than those in the BC Regulation (i.e. less stringent vertical separation.) The study recommends that the Health Unit adopt a table of setbacks similar to “The Oregon On-Site Sewage Disposal Rules”. These rules provide for, amongst other things, a setback of disposal fields from property lines of 3 m. Based on this, it was apparent to the Panel that the study referred to by the EHO does not support the 30.5 m setback requirement. Consequently, the Panel finds that the 30.5 m setback from property line requirement is not justified or supported by scientific study.

Is the 30.5 m requirement reasonable in this case despite the study results? Again, it may be argued that setbacks may be increased for reduced vertical separation. As detailed in evidence provided by the Appellant however, the vertical separation

for the proposed field will be a minimum of .7 m (during worst case conditions) and consequently greater than permitted by Regulation. In addition, the Appellant proposes to provide disinfection of the effluent prior to its entry in the disposal field, a feature that in itself reduces public health risk. Both of these facts point to a relaxing of setback requirements set out in the B.H.U. guidelines.

The Appellant argued that the EHO rigidly applied this policy guideline thereby fettering his discretion. The Panel notes that policy is not law. Even though the B.H.U. guidelines state that the disposal mound "must" have a minimum setback of 30 metres, this cannot be applied rigidly - an EHO must be willing to deviate from the guidelines in appropriate cases. In the Panel's view, the guideline was applied inflexibly and unreasonably in the circumstances of this case. The system can meet the setbacks required by Regulation that is, sections 9(b) and 14(b) of Schedule 3.

4. Whether the level of sewage treatment and disinfection is adequate to protect the public health?

Point #5 of the B.H.U. policy guideline states:

> Boundary Health Unit will receive only design proposals from a professional engineer competent in wastewater treatment and B.H.U. SEW. 004 guideline. The design engineer must certify that the system will produce effluent at the point of discharge to the environment, which does not exceed the following criteria:
>
> - 400 CFU of fecal coliform per 100 ml.
> - 10 mg of suspended solids per litre.
> - 10 mg of biological (should read biochemical) oxygen demand per litre.

Levelton, a Professional Engineering firm, on behalf of the Appellant, stated that the proposed treatment system is capable of achieving these treatment levels on a regular basis and presented evidence of this. The system uses a combination of aerobic treatment followed by ozone disinfection. The Panel is satisfied that this level of treatment is more than adequate. However, as it is important that these levels be achieved, and Levelton has asserted that the system will do so, it is reasonable to require that this B.H.U. guideline be met. Thus, Levelton is required to certify under professional seal that these treatment levels are achievable using this system, as proposed, on this property.

5. Whether maintenance of the treatment facility is adequate to ensure continued satisfactory effluent quality?

Proper maintenance of the treatment and disinfection system was a significant concern of the EHO. He stated that proper operation and maintenance of the treatment and disinfection equipment will be essential to ensure that public health

is protected for this site. The Panel agrees. Evidence led by the Appellant also indicated that proper treatment was needed to protect public health. It was Levelton's assertion that, given the constraints of the site, the domestic sewage must be treated prior to disposal.

The treatment and disinfection unit proposed by the Appellant comes with a two-year maintenance agreement included in the purchase price. The EHO pointed to specific cases where maintenance has not been performed by other owners after the two year maintenance agreement has expired. Given the importance of continued maintenance in safeguarding public health, this issue must be addressed.

It is noted that section 4(4)(c) of the Regulation states that it is a condition of "every authorization issued ... with respect to a package treatment plant system that ... the owner has the system serviced and maintained in good condition."

However, to ensure that the problems experienced by the EHO in the past are addressed, the Panel requires that proof of adequate maintenance be provided to the Health Unit annually, after the expiration of the two-year maintenance period. This must take the form of a letter report, sealed by a Professional Engineer experienced in the proposed treatment system, certifying that adequate maintenance of the system has occurred and that effluent quality is acceptable for the treatment and disposal system.

There is always an additional concern that subsequent owners of the property may not keep up the required maintenance, thus jeopardizing the safe and efficient operation of the system. To ensure that this requirement applies to all new property owners, the EHO may order that it be placed in a covenant, registered on title, pursuant to section 219 of the *Land Title Act.*

6. Whether the breakout points are a health concern?

The Appellant proposes to construct a perimeter drainage ditch to assist in reducing the impact on the local water table and rainfall on the disposal system. This interceptor drainage ditch is to be located parallel to, and 6 m offset, from the edge of the disposal field. It was agreed by both the Appellant and the EHO that this ditch represented a potential breakout point. In addition, the EHO contends there are two additional breakout points, identified as "wet areas". The EHO points to a requirement for a 15.25 m setback from these breakout points. This setback exceeds that proposed by Levelton.

The requirement for a 15.25 m setback from breakout points is found in the "Policy for On-Site Sewage Disposal" issued by the Ministry of Health (1992). This document has been used as a reference for Health Units throughout the Province. Page 4.1 of this Policy states:

The Environmental Health Officer may consider reducing the 15.25 m minimum setback distance upon receipt of a report from a Professional Engineer who has

specialized training in soils hydrogeology, indicating that the sewage will be attenuated before it leaves the property.

Levelton completed a detailed assessment of travel times to potential breakout points. In this case, it states that travel times to the breakout points (ditches) are acceptable and that sewage effluent will be attenuated before it leaves the property. It is selfevident that, if the drainage ditches are installed, no breakout to the previously described wet areas will occur, as breakout will be forced to occur first in the ditch.

The Panel accepts Levelton's argument given that no detailed calculations were presented by the EHO to refute Levelton's assertion regarding travel times to breakout points. The EHO did note several instances where viruses and bacteria did show survival times greater than calculated by Levelton and migration of these pathogens to distances as great as 200 to 300 feet. However, Levelton asserts that, in those instances, the study looked at septic tank effluent not effluent treated and disinfected as proposed here. In addition, the EHO's examples refer to studies where hydraulic gradients, soil saturation conditions, and soil type do not match those for this site. The Panel accepts that it is necessary to consider both the level of treatment (in this case secondary treatment with disinfection), and site specific soil conditions when assessing risk to public health. When this is done, the Panel agrees with Levelton that sewage effluent will be attenuated before it reaches breakout points and before it leaves the property.

DECISION

In making this decision, the Panel of the Environmental Appeal Board has carefully considered all of the relevant documented evidence and submissions made by the parties, whether or not they have been specifically reiterated here.

The Panel finds that the Appellant has presented evidence that shows the proposed treatment and disposal system meets or exceeds the requirements of the Regulation and will adequately protect the public health, provided the system is adequately maintained. Further, the Panel finds that the 30.5 m setback requirement from the property line is not consistent with the Regulation or the studies presented by the EHO, and that the Code of Good Practice is not relevant to this lot. While the principles of the Code of Good Practice are supported by the Panel, the Respondent, and the Appellant, it is critical to note that the Code of Good Practice setback requirements reflect a much relaxed vertical separation.

The Panel also accepts the Appellant's evidence that breakout travel time is acceptable to protect public health.

A permit should therefore be issued for the proposed system subject to the following terms and conditions:

1. An ozonator is to be used instead of a, chlorinator/ dechlorinator.

2. The EHO may require an engineer from Levelton, or any other engineer, to verify, in writing, that the system has been installed in accordance with the plans and specifications of the system which were presented to this Panel as modified by (1) above.

3. The Appellant must provide a report sealed by a Professional Engineer, registered in the Province of British Columbia and experienced in wastewater treatment design, stating that the treatment and disinfection system is capable of producing effluent as detailed in B.H.U. SEW. 005 point #5.

4. The Appellant must provide an annual report, on the expiration of the two-year maintenance period, and every year thereafter, sealed by a Professional Engineer, registered in the Province of British Columbia and experienced in wastewater treatment design, stating that the treatment and disinfection system has been adequately maintained and that the effluent quality is acceptable.

5. Any changes to the plans and specifications must be approved by the EHO, or another employee of the B.H.U., who will consider them in accordance with the *Act* and Regulation.

In order to ensure that the public's health and the environment is adequately protected through proper operation and use of the system in the future, as well under the present owners, the EHO may require, as a condition of operation, that reporting requirements 3 and 4 above, be placed in a covenant registerable under section 219 of the *Land Title* Act. The covenant would be made in favour of the Ministry of Health.

For greater certainty, the registration of this covenant does not in any way restrict Ministry employees from exercising any of their enforcement powers under the *Health* Act, as amended, and the Regulation thereunder.

The appeal is allowed.

COMMENTS

The Panel notes that the B.H.U. guideline has been the subject of concern and criticism by the Board in previous cases. In *Ellenwood v. Environmental Health*

Officer, Environmental Appeal Board, Appeal No. 97-HEA-25, November 28, 1997) (unreported) the Board stated:

Finally, the Panel notes with some concern that the language of the Boundary Health Unit policy for "Existing Non-Conforming Land Parcels" requires some amendment. The policy is worded such that it could lead an EHO to fetter his or her discretion because it appears to be mandatory in nature. The policy is not mandatory and all reference to the word "must" within that policy should be deleted.

The Panel in this case agrees and urges the B.H.U. to address this situation.

“Bob Radloff”

Bob Radloff, Panel Chair
Environmental Appeal Board

June 15, 1998