BRITISH COLUMBIA

Environmental Appeal Board

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APPEAL NO. 2001-WAS-010

In the matter of an appeal under section 44 of the *Waste Management Act*, R.S.B.C. 1996, c.482

BETWEEN:	Ermes Culos	**APPELLANT**
AND:	Assistant Regional Waste Manager	**RESPONDENT**
AND:	Village of Cache Creek Wastech Services Limited	**THIRD PARTIES**
BEFORE:	A Panel of the Environmental Appeal Board Alan Andison, Chair	
DATE OF HEARING:	Conducted by way of written submissions concluding on October 15, 2001	
APPEARING:	For the Appellant:	Ermes Culos
	For the Respondent:	Carol Danyluk
	For the Third Party Wastech Services Limited:	T.E. Rattray

APPEAL

This is an appeal by Ermes Culos against the May 15, 2001 decision of T.R. Forty, Assistant Regional Waste Manager (the "Manager"), Southern Interior Region, Ministry of Water, Land and Air Protection, to amend section 6.1 of Operational Certificate MR-7577 (the "Certificate") held by Wastech Services Limited ("Wastech") and the Village of Cache Creek. The Certificate authorizes Wastech and the Village of Cache Creek to manage municipal solid waste at a landfill near Cache Creek, B.C. The amendment to section 6.1 of the Certificate reduces the frequency of leachate testing within the landfill, for the period from June through September of each year, from monthly to quarterly testing.

The Environmental Appeal Board has the authority to hear this appeal under section 11 of the *Environment Management Act* and section 44 of the *Waste Management Act* (the "*Act*"). Section 47 of the *Act* gives the Board the power to confirm, reverse or vary the decision being appealed, send the matter back to the original decision-maker with directions, or make any decision that the person whose

decision is appealed could have made and that the Board considers appropriate in the circumstances.

Pursuant to section 11(12) of the *Environment Management Act*, the Board invited Wastech and the Village of Cache Creek to participate in the hearing as third parties. Both accepted the invitation and have been joined as parties to the appeal. However, the Village of Cache Creek made no submissions on the appeal.

The appeal was conducted by way of written submissions.

Mr. Culos seeks an order overturning the decision of the Manager. He requests that monthly leachate sampling during the period from June through September be continued and made more rigorous.

BACKGROUND

Operation of the Cache Creek landfill was first authorized in 1987 under a permit issued by the then Ministry of Environment and Parks, now the Ministry of Water, Land and Air Protection (the "Ministry"). Waste discharged to the landfill comes from the Greater Vancouver Regional District ("GVRD"), the Village of Cache Creek, and from the surrounding Thompson Nicola Regional District (the "TNRD"). The landfill is located on Crown land, and is bordered by the Trans-Canada Highway to the east and the Village of Cache Creek municipal boundary to the west. The Bonaparte River is located approximately 400 to 500 metres east of the Trans-Canada Highway where it borders the landfill. Mr. Culos advises that his domestic well is located "a stone's throw" from the Bonaparte River.

Mr. Culos has filed several previous appeals concerning this landfill, primarily based on concerns that leachate from the landfill may be contaminating local groundwater. In 1987, the Board received sixteen appeals against the permit, including one from Mr. Culos. On September 21, 1987, the Board dismissed the appeals, subject to certain amendments to the permit (Appeal No. 87/13 - Waste)(unreported). After the permit was reissued in January 1989, Mr. Culos filed another appeal. In that appeal, Mr. Culos raised concerns about groundwater contamination and non-compliance with the permit. The Board dismissed the appeal in a decision dated December 14, 1989 (Appeal No. 89/20 - Waste)(unreported).

In 1995, Wastech and the Village of Cache Creek applied to amend the permit, primarily to create consistency with newly approved solid waste management plans for the GVRD and the TNRD. Rather than amending the permit, the Regional Waste Manager issued the Certificate in June 1996. Under sections 18(5) and 21 of the *Act*, a manager is authorized to issue "operational certificates" to replace permits as a means of authorizing a waste management facility under an approved solid waste management plan.

The Certificate included the operational requirements set out in the original permit, and the amendments sought in the application. The Certificate also included requirements for a gas management plan and a storm management plan, which

were developed after the permit was approved. The gas management plan was developed, among other reasons, to assess the potential impacts of landfill gas emissions and subsurface gas migration. The storm management plan was developed to control the effects of surface water runoff within the landfill. In addition, the Certificate included an environmental protection monitoring program, including quarterly sampling of fluid from the leachate collection sump.

In January 1997, Mr. Culos appealed the issuance of the Certificate. On December 18, 1997, the Board upheld the Certificate, subject to minor amendments (*Ermes Culos* v. *Deputy Director of Waste Management*, Appeal No. 97-WAS-01)(unreported). In particular, the Board directed the Manager to:

> …take into account the concerns in the Ministry's Technical Report (Major) about the need *to mitigate the impacts from spring snow melt and summer rain storms*, by increasing the requirement in the storm water management plan from quarterly sampling to monthly sampling, during the June to September storm season, for at least three years *to more closely monitor the effectiveness of the storm management plan*. After three years, the Certificate should revert to quarterly sampling at the discretion of the Regional Waste Manager;
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> [italics added]

On February 2, 1998, section 6.1 of the Certificate was amended in accordance with the Board's direction to increase the frequency of leachate monitoring during the summer storm season. The amended section read as follows:

6.1 Management of Leachate Collection System Fluid

> A sample of fluid from each of the leachate collection sumps shall be collected monthly from June through September. During the remainder of the year samples shall be taken from the leachate collection sumps as [sic] a frequency corresponding to the sampling of the groundwater monitoring wells. Following a period three calendar years beginning from the date of this amendment, the Regional Waste Manager may reduce the frequency of leachate collection sump fluid sampling if warranted.
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> Laboratory analyses of all fluid samples collected from the leachate collection sumps shall be undertaken for leachate indicator parameters identified in the approved monitoring program.
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> Leachate collection sump fluid levels shall be monitored on a monthly basis and fluids shall be removed from the leachate collection system as specified in the approved design, operating and closure plans. Fluid recovered from the leachate collection system may be used within the landfill footprint for irrigation or dust suppression unless otherwise directed by the Regional Waste Manager. Other methods of treatment

> and/or disposal of the leachate collection sump fluids must have the prior approval of the Regional Waste Manager.

In 2001, Ministry staff considered whether it was necessary to continue monthly leachate testing during the period from June through September. In her April 30, 2001 Technical Report, Carol Danyluk, a professional engineer and Pollution Prevention Officer for the Southern Interior Region, recommended that the frequency of leachate testing at the landfill be reduced to a quarterly basis from June through September. In support of her conclusion, she cited the 2000 Annual Report prepared on behalf of the Certificate holders by Golder Associates Ltd. ("Golder Associates"), which stated:

> An automated pumping system was installed in the sumps in November 1999 to maintain low liquid levels for landfill gas extraction. Given the presence of the automated pumping system and the fact that significant seasonal variations in sump liquid have not been observed, in our opinion, sampling of the sumps should be continued on a quarterly, rather than monthly, basis.

Ms. Danyluk concluded that, based on the available data, there were "no significant trends or variations in the analytical results of the leachate collection sump fluid sampling program over the June to September storm season over the past three years." Ms. Danyluk recommended that the Manager amend section 6.1 of the Certificate to require quarterly sampling and analysis of the leachate collection system fluids, with a provision for the Manager to require more frequent testing if warranted.

On May 15, 2001, section 6.1 of the Certificate was amended in accordance with Ms. Danyluk's recommendation. Section 6.1 now reads:

6. LEACHATE CONTROL AND TREATMENT

6.1 Management of Leachate Collection System Fluid

> Leachate collection sump fluid levels shall be monitored and fluid removed from the leachate collection system as specified in the approved design, operating and closure plans. A sample of fluid from each of the leachate collection sumps shall be collected on a quarterly basis and laboratory analyses obtained for the leachate indicator parameters identified in the monitoring program. The Regional Waste Manager may vary the location and frequency of sampling and analyses of leachate collection system fluid should conditions warrant. Fluid recovered from the leachate collection system may be used within the landfill footprint for irrigation, dust suppression and/or re-circulated within the buried waste unless otherwise directed by the Regional Waste Manager. Other methods of treatment and/or disposal of the leachate collection sump fluids must have the prior approval of the Regional Waste Manager.

On June 4, 2001, Mr. Culos appealed the decision to reduce the frequency of leachate sampling during the summer. He appealed on the basis that the requirements of the Board's 1997 decision "have not been carried out appropriately", and that more frequent leachate testing is needed because groundwater under and downstream of the landfill is being contaminated by leachate.

The Respondent and Wastech oppose the appeal and request that it be dismissed.

ISSUE

Whether quarterly testing of leachate within the landfill will provide adequate protection of the environment.

Mr. Culos raises several additional issues in his submissions to the Board. In particular, he raises a number of arguments concerning the adequacy of groundwater monitoring outside the landfill boundaries. He also argues that the Pollution Prevention Office in Kamloops should be provided with the means of increasing their staff to monitor more thoroughly the Cache Creek landfill. However, the decision that is the subject of this appeal only affects the frequency of leachate monitoring from the leachate collection sumps within the landfill as required in the Certificate. Therefore, the additional issues raised by Mr. Culos are beyond the jurisdiction of the Board and will not be addressed by the Panel.

RELEVANT LEGISLATION

The following sections of the *Act* are relevant to this appeal:

Powers of manager respecting operational certificates

21 A manager may exercise a power or authority in relation to an operational certificate in the same manner and to the same extent as provided by this Act with respect to a permit.

Amendment of permits and approvals

13 (1) A manager may, subject to this section and the regulations, *and for the protection of the environment*,

(a) on the manager's own initiative if he or she considers it necessary…

amend the requirements of the permit or approval.

[italics added]

DISCUSSION AND ANALYSIS

Whether quarterly testing of leachate within the landfill will provide adequate protection of the environment.

Mr. Culos submits that Ms. Danyluk's conclusion in her Technical Report that the sampling frequency can be reduced is improperly based on the conclusion stated in Golder Associates 2000 Annual Report.

Mr. Culos believes that two assumptions found in this Technical Report need to be examined more closely; namely, whether Golder Associates' statement is accurate, and whether the Ministry's review of the Golder Associates data is sound.

With regard to the first assumption, Mr. Culos cites several passages from Golder Associates' *Review of Groundwater and Soil Gas Monitoring results, Cache Creek Sanitary Landfill*, dated February 28, 2000. He cites a passage from Golder Associates' discussion of volatile organic compounds ("VOC's")[1] in groundwater samples taken *outside* the landfill, which reads:

> Generally higher concentrations of VOC's were measured in wells that were partially screened across unsaturated sediments. These observations combined with the presence of VOC's in upgradient wells supports the hypothesis that the VOC's in groundwater are most likely related to partitioning from landfill gas.[2]

Mr. Culos then states that another question still needs to be asked; namely, what materials or processes in the dump produce such toxic substances. Mr. Culos continues:

> Why not be consistent & suggest that there are toxic substances in the dump that, as they turn to gaseous form and/or leach, contaminate both air & groundwater?...And if, to this, one responds that a certain amount of toxic material will inevitably find its way in a dump like this one, then the least one should expect is the need for the most rigorous, truthful & ongoing monitoring possible to ensure an early detection & possible containment of toxic leachates. And an early detection is hardly likely to occur if months are allowed to elapse between testing periods.

Mr. Culos also refers to a report by EBA Engineering Consultants Ltd. ("EBA") (employed by the Village of Cache Creek), which audited the testing and monitoring carried out by Golder Associates for the period from March 1, 1998 to February 28, 1999. According to Mr. Culos, the EBA report states that, in the summer of 1998, sump samples were collected at 2 to 6 week intervals and were not obtained during the month of September. EBA recommended that sumps be sampled at four week intervals during the summer months (instead of the 2 to 6 week intervals) to provide for an adequate data spread for the subsequent analysis. According to Mr. Culos, EBA recommended that Golder conduct a more rigorous analysis of the database to determine potential leachate indicators and identify landfill-related

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[1] As defined in the January 1996 *Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills* (the "Guidelines),"VOCs" are volatile organic compounds, which participate in atmospheric photochemical reactions, related to the generation of ground level ozone.

[2] As defined in the Guidelines, "landfill gas" is gas produced by the anaerobic decomposition of solid wastes, and includes primarily methane and carbon dioxide, with lesser amounts of other gases such as hydrogen sulphide, and numerous volatile organic compounds.

changes to groundwater quality, and investigate the cause and potential effects of rising groundwater levels downgradient of the landfill.

Mr. Culos submits that the existing evidence from groundwater monitoring suggests that a significant leachate problem exists. He argues that more frequent testing and analysis of sump fluids should be conducted because "there is bound to be a strong correlation between the substances found in the sump fluids and those found in the groundwater downslope of the leachate collection system….Hence careful and frequent monitoring would give a head start to whatever actions might be necessary to contain the spread of leachates outside the dump."

Mr. Culos also states that "while it may be true that monthly chemistry results are not related to storm events, it remains questionable that continued sampling would provide little additional insight into the chemistry of sump liquids."

Another reason invoked by Mr. Culos for increased frequency of tests "is the importation and mixing in with the regular refuse of very high quantities…of incinerator ash from GVRD."

The second assumption Mr. Culos believes needs to be examined is that the Ministry's review of Golder Associates' data is sound. He submits that "given the iffiness of many of Golder's conclusions, the Ministry's tacit acceptance of whatever Golder says is…carelessness at best." He adds that "the Ministry is willing to accept as reliable and true [Golder' Associates'] views & recommendations and appears little inclined to look at these views and recommendations with the sort of questioning & aggressive manner that would ultimately better help people and the environment."

On behalf of the Manager, Ms. Danyluk submits that Mr. Culos' argument does not directly pertain to the leachate collection sump monitoring, but rather to the interpretation of data collected from the groundwater monitoring wells. She submits that he has not provided any grounds for appeal that relate to the monitoring frequency in the leachate collection sumps.

Ms. Danyluk further submits that:

> The leachate collection sumps are located within the landfill to allow the removal of fluid that has accumulated within the leachate collection and containment system. Groundwater monitoring wells are installed in native soils around the landfill to monitor groundwater quality outside of the landfill garbage. In a previous decision that was directed by a …Board ruling, the Operational certificate had been amended to increase the monitoring frequency in the leachate collection sumps from quarterly to monthly during the summer storm season. The monitoring frequency in the groundwater monitoring wells was not altered by this decision.

She adds that monitoring to date has shown that "constituent concentrations within the sumps are more variable than those measured in the groundwater, but the variations have not indicated a seasonal fluctuation."

Ms. Danyluk further submits that the decision to allow a reduction in the monitoring frequency of the leachate collection sumps is reasonable and sound. She states that she thoroughly reviewed the leachate collection sump monitoring data again, and saw no appreciable trends in the composition of the leachate that have been revealed by monthly monitoring during the summer storm season. She maintains that quarterly sampling is sufficient at this time to provide an indication of the characteristics of the landfill leachate. She also notes that the Manager may require more frequent monitoring at any time that it is determined to be warranted.

In its submission on behalf of Wastech and Wastech's President, T.E. Rattray, Golder Associates states:

> The purpose of the enhanced sump monitoring frequency was to assess the effectiveness of the storm management plan after 1998 – storm water runoff event. Subsequently, in November 1999, an automated pumping system was installed in the sumps to maintain low liquid levels for landfill gas extraction. With the presence of this system, monthly chemistry results are no longer related to storm events. Therefore, continued sampling of the sump liquids on a monthly basis would provide little additional insight into the sump liquid chemistry.
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> The Ministry…has approved the reduction in monitoring of the sumps *within the landfill.* There has been no reduction in the sampling frequency or constituent analyses at groundwater monitoring wells…surrounding the landfill. The groundwater monitoring well system around the landfill have [sic] been designed to provide an early warning of water quality problems resulting from the operation of the facility. This critical monitoring system has not been changed or compromised by the sump monitoring frequency. [italics in original]

Golder Associates submits that most of the comments and questions raised by EBA have already been addressed. Golder Associates argues that EBA presented three recommendations based on the review of Golder's 1998 annual report, which are summarized by Golder Associates as follows:

a) Undertake a more rigorous analysis of the chemical database to determine additional potential leachate indicators and identify landfill-related changes to groundwater quality;

b) Investigate the cause and potential effects of rising groundwater levels downgradient of the landfill; and

c) Include hydrogeological cross-sections through the landfill in subsequent annual monitoring reports.

Golder Associates states that it addressed these issues in its 1999 and 2000 Annual Reports. It states that it subsequently conducted a rigorous analysis of the chemical database. In addition, water level data indicates that water levels appear to have been relatively stable in all down gradient monitoring wells since October

1997. Furthermore, Golder Associates states that a hydrogeological cross-section will be reproduced in its 2001 annual report.

Golder Associates further submits that it agrees with Mr. Culos that monitoring for VOCs in both groundwater and air within and around the landfill provides important information on overall landfill performance. Golder Associates acknowledges that the results of groundwater monitoring down gradient of the landfill have indicated trace levels of VOCs. To date, however, the concentration of VOCs in groundwater have not exceeded applicable criteria and standards for the groundwater uses around the site. Golder Associates maintains that it has considered all potential sources for the low levels of VOCs identified in groundwater, including the partitioning from landfill gas.

Finally, Golder Associates submits that it is unaware of a correlation between the presence of incinerator ash and the generation of VOC's at the landfill.

The sole issue before the Panel is whether the amendment to section 6.1 of the Certificate will provide adequate protection of the environment in accordance with the objects and purposes of the *Act*. More specifically, the Panel must consider whether the requirement for quarterly monitoring of leachate within the landfill will protect the environment from the deleterious effects of any pollution that may be released from the landfill. Mr. Culos' primary concern is that leachate from the landfill is contaminating groundwater.

Issues concerning leachate creation and groundwater pollution in relation to this landfill were thoroughly canvassed in the previous hearings before the Board. In its 1987 decision, the Board accepted the evidence of Golder Associates that leachate creation and migration was not a significant concern at the site. The Board held:

> The conclusions of Golder and the fail-safe provisions in the Permit on the subject appear to be valid and rational, namely:
>
> 1. The potential for leachate generation and migration at this site is very low because of the significant absorption capacity of both the refuse and site soils, and the tremendous evapotranspiration potential relative to precipitation.
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> 2. In the event that some leachates are created, their migration in the very dry conditions and dry soil in this area can be expected to be very slow (i.e. more than 100 years to migrate from the site to the nearby Bonaparte River).
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> 3. The proposed leachate monitoring system specified in the Permit would give very ample and very early warning of this problem (if any) and allow the Permittees and Waste Management Branch to isolate and deflect the migration process. (p.12).

In its 1989 decision, the Board held that "leachate will only be produced, if at all, in small quantities; that this small quantity will almost certainly not reach the

groundwater; and, if it did, it would be adequately diluted. There is uncontradicted evidence that the groundwater is already of poor quality and is not potable."

In its 1997 decision, which led to the initiation of monthly leachate sampling during the summer, the Board referred, at page 11, to a portion of Ms. Danyluk's 1996 Technical Report that concerned rainstorms. Ms. Danyluk stated that "summer storms…have resulted in damage to the landfill diversion works, liner and cover soils, ponding of surface water in the active waste discharge cell, and infiltration of surface run-off which should have been diverted around the landfill. As a result, a storm management plan has been prepared and implemented in the fall of 1995 to deal with all surface water flow at the site…"

This evidence led to the Board's finding that "the leachate control has been effective, with the exception of the summer rain storms which appear to have been effectively addressed for the last two years in the storm management plan."

The Board then concluded that "leachate control appears to be good but one rainstorm caused a problem. A rain event in July of 1992…resulted in surface erosion and overtopping of internal surface water diversion and drainage facilities…. As a result, a new storm plan was created to address such events."

However, as an extra precaution, the Board held that sampling within the sump should be increased to monthly during the summer season in order "to better monitor the impact from spring snow melt and summer rain storms."

As demonstrated by these previous Board decisions, there was little evidence to indicate that groundwater contamination by leachate was likely, and that even if it did occur, the existing quarterly sampling of both leachate and groundwater would provide adequate warning of such a problem. The Board ordered that sampling frequency be increased in order to address concern about *surface runoff from snowmelt and storms*. This concern was based on the July 1992 rainstorm referred to in Ms. Danyluk's 1996 Report, which caused erosion and overtopping of drainage facilities in the landfill. The Panel finds that this concern has since been addressed by installation of a pump in the leachate collection sump, to control the level of liquid.

The Panel agrees with Mr. Culos that leachate composition is an important factor in determining whether leachate may be infiltrating groundwater supplies, and the potential impact that leachate may have on surface and groundwater quality, if the leachate escapes the landfill boundaries. Data on the chemical composition of leachate samples can be used to establish trends or irregularities within the leachate, and provides information that can assist in assessing irregularities in groundwater chemistry. However, given that groundwater sampling occurs on a quarterly basis, the Panel agrees with the Respondent that monthly leachate sampling would not assist in identifying whether leachate is infiltrating groundwater.

It should also be noted that section 5.3 of the January 1996 Ministry policy *Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills*, provides:

> The data collected from…indicator parameters will be used to establish the presence of trends and/or irregularities within the leachate and provide a standard against which irregularities detected in the baseline groundwater chemistry can be measured.

Section 3.5 reads:

> It is the responsibility of the owner/operator to choose an appropriate statistical method consistent with the number of samples collected and distribution pattern of the parameter. The statistical method must satisfy or be agreed to by the Ministry of Environment, Lands and Parks.

There is no indication that these Guidelines have not been followed.

Furthermore, in absence of direct evidence to the contrary, the Panel accepts the submissions provided by the professional engineers employed by Golder Associates and the Ministry, that continued monthly summer monitoring is no longer necessary. The Panel accepts that the engineers for the Ministry and Golder Associates have analyzed the data, and based on their professional opinions, the data has not revealed any appreciable trends in the composition of leachate in the sumps.

As such, the Panel finds that Mr. Culos has provided insufficient evidence to establish that the reduction of leachate testing within the landfill, from monthly to quarterly, during the four months in question poses any risk to the environment.

Accordingly, the Panel finds that the amendment to section 6.1 of the Certificate is reasonable, and adequately protects the environment.

DECISION

In making this decision, the Panel has considered all of the evidence before it, whether or not specifically reiterated herein.

For all of the above reasons, the appeal is dismissed.

Alan Andison, Chair
Environmental Appeal Board

December 21, 2001