Environmental Appeal Board

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DECISION NO. 2012-EMA-002(b)

In the matter of an appeal under section 100 of the *Environmental Management Act*, S.B.C. 2003, c. 53.

BETWEEN:	Burquitlam Building Limited and Morguard Real Estate Investment Trust	**APPELLANT**
AND:	Director, *Environmental Management Act*	**RESPONDENT**
AND:	Canada Safeway Ltd.	**THIRD PARTY**

BEFORE: A Panel of the Environmental Appeal Board
Alan Andison, Chair
Monica Danon-Schaffer, Ph.D., P.Eng., Member
Dr. Robert Cameron, Member

DATE: Conducted by way of written submissions concluding on December 11, 2012

APPEARING:	For the Appellant:	Richard Bereti, Counsel Una Radoja, Counsel
	For the Respondent:	Dennis Doyle, Counsel
	For the Third Party:	Perry Mazzone, Counsel

APPEAL

[1] Burquitlam Building Limited and Morguard Real Estate Investment Trust (collectively, "Morguard") appeal the February 8, 2012 decision of Peggy Evans, acting as the Director (the "Director"), *Environmental Management Act*, S.B.C. 2003, c. 53 (the "*Act*"), Ministry of Environment (the "Ministry"), refusing to issue certificates of compliance to Morguard for the following two contaminated sites:

a) a portion of a property located at 566A Clarke Road, Coquitlam, British Columbia, owned by Morguard (the "Morguard Site"); and

b) a portion of the adjacent property owned by Canada Safeway Ltd. ("Safeway") and located at 580 Clarke Road, Coquitlam, British Columbia (the "Management Area").

[2] The Environmental Appeal Board has the authority to hear this appeal under section 100(1) of the *Act*, which provides that a person aggrieved by a decision of a director or a district director may appeal the decision to the Board. Section 103 of

the *Act* gives the Board the power to confirm, reverse or vary the decision being appealed, send the matter back to the person who made the decision, or make any decision the person whose decision is appealed could have made and that the Board considers appropriate in the circumstances.

[3] Morguard seeks the following relief on this appeal:

1. The Director's decision should be quashed.
2. The Board should order the Director to issue a numeric certificate of compliance for the Morguard Site.
3. The Board should order the Director to issue a separate numeric or, alternatively, risk-based certificate of compliance for the Management Area.
4. In the alternative, the Board should order the Director to identify for Morguard the specific technical deficiencies in Morguard's applications for certificates of compliance, and provide Morguard with a reasonable opportunity to correct those deficiencies with respect to its applications for the Morguard Site and/or the Management Area and, once the deficiencies are corrected, issue the certificates of compliance for the sites, without requiring resubmission of certificate of compliance applications.

[4] As Safeway is an adjacent land owner and the owner of the Management Area, it has been added as a Third Party to this appeal (see *Burquitlam Building Ltd. and Morguard Real Estate Investment Trust v. Director, Environmental Management Act*, Decision No. 2012-EMA-002(a), May 31, 2012). Its participation in the appeal as a Third Party arises out of its concern that the Morguard property contains groundwater that remains contaminated, and that the possibility of contaminated groundwater poses a "continuing and significant environmental risk to Safeway".

[5] At Morguard's request, and with the consent of the other parties, this appeal was heard by way of written submissions.

BACKGROUND

The Properties and the Contamination at Issue

[6] The Morguard Site is a rectangular area comprising approximately 0.8 hectares. The Management Area is to the north of the Morguard Site, extending approximately 30 metres along the boundary of the Morguard Site and approximately 10 metres onto the neighbouring Safeway property. For clarity, the Safeway property lies to the north of the Morguard property.

[7] There is no dispute that the Morguard Site was contaminated with tetrachloroethylene, also known as perchloroethylene ("PCE"), which is a chlorinated solvent historically used in dry cleaning, as well as trichloroethylene ("TCE"), a degradation product of PCE. There is also no dispute that the contamination migrated into the Management Area on Safeway's property, although

there is now a dispute about the extent to which it migrated and the depth of the contamination.

[8] The contamination at issue was not caused or contributed to by either Morguard or Safeway. It was created by a dry cleaning operation, Rhonda's One-Hour-Dry-Cleaning ("Rhonda's"), which was located in a strip mall on the Morguard Site from the early to mid-1960's until 2005. At the time that Rhonda's was in operation, the land was not owned by Morguard.

[9] The contamination is believed to have originated from an underground storage tank and floor drain inside Rhonda's, from the underground storage tank to the sewer on the north side of the dry cleaner and/or from surface spills on the north side of Rhonda's from the waste PCE storage.

[10] The contamination was discovered in or around 1999. Morguard chose to voluntarily remediate the contamination under section 54 of the *Act*. Morguard's objective is to obtain a certificate of compliance confirming that the PCE in the soil, soil vapours and groundwater on the Morguard Site and Management Area has been satisfactorily remediated to the numeric standards set out in the *Contaminated Sites Regulation*, B.C. Reg. 375/96 (the "*Regulation*"). Morguard's application for those certificates were rejected by the Director, and it is that decision that is now the subject of this appeal.

Legislative Context

[11] If contamination is found on a property in excess of the applicable standards, a person may remediate the contamination voluntarily, or the Ministry of Environment may issue an order to remediate pursuant to section 48 of the *Act*.

[12] Part 4 of the *Act* contains a number of provisions guiding parties that choose to voluntarily remediate a site. Section 54 sets out the procedures for independent remediation. The relevant portions state as follows:

54 (2) Any person undertaking independent remediation of a contaminated site must

(a) notify a director in writing promptly on initiating remediation, and

(b) notify the director in writing within 90 days of completing remediation.

(3) A director may at any time during independent remediation by any person

(a) inspect and monitor any aspect of the remediation to determine compliance with the regulations,

(b) issue a remediation order as appropriate,

(c) order public consultation and review under section 52 *[public consultation and review]*, or

(d) impose requirements that the director considers are reasonably necessary to achieve remediation.

(4) On request of a person carrying out independent remediation and on receiving adequate information respecting the independent remediation, a director may

(a) review the remediation in accordance with the regulations and any requirements imposed under subsection (3) (d), and

(b) issue an approval in principle or a certificate of compliance under section 53 *[approvals in principle and certificates of compliance]*.

[13] Section 53 of the *Act* addresses approvals in principle and certificates of compliance. This is the section under which Morguard applied for, and was refused, its certificates. It states:

53 (1) For the purposes of exercising powers and performing duties under this section, a director may rely on any information the director considers sufficient for the purpose, including, but not limited to, a preliminary site investigation, a detailed site investigation, a risk assessment, a remediation plan or a summary of site condition.

(1.1) On application by a responsible person, a director, in accordance with the regulations, may issue an approval in principle stating that a remediation plan for a contaminated site

(a) has been reviewed by the director,

(b) has been approved by the director, and

(c) may be implemented in accordance with conditions specified by the director.

…

(3) A director, in accordance with the regulations, may issue a certificate of compliance with respect to remediation of a contaminated site if

(a) the contaminated site has been remediated in accordance with

(i) the numerical or risk based standards prescribed for the purposes of the definition of "contaminated site",

(ii) any orders under this Act,

(iii) any remediation plan approved by the director, and

(iv) any requirements imposed by the director,

…

(6) A director may issue an approval in principle or a certificate of compliance for a part of a contaminated site.

[14] Section 49 of the *Regulation* sets out the specific criteria related to the issuance of certificates of compliance:

49 (1) A person may apply for a certificate of compliance under section 53 (3) of the Act by submitting a request in writing to a director.

(2) In support of the application referred to in subsection (1), the person requesting the certificate of compliance must provide to the director the reports described in paragraphs (a) and (b) and ensure that the director has information on the items described in paragraphs (c) and (d):

(a) preliminary and detailed site investigation reports;

(b) a confirmation of remediation report which describes sampling and analyses carried out after remediation of the contamination including

(i) a description of sampling locations and methods used,

(ii) a schedule of sampling conducted, and

(iii) a summary and evaluation of results of field observations and of field and laboratory analyses of samples;

(c) compliance with all conditions set by a director under section 47 (3) if an approval in principle was issued prior to remediation;

(d) the quality and performance of remediation measures on completion of remediation, including compliance with the remediation standards, criteria or conditions prescribed in this regulation.

[15] Remediation standards, criteria and conditions are detailed in various schedules to the *Regulation*. It should be noted that, in addition to the *Act* and the *Regulation*, there are protocols and technical guidance documents applicable to contaminated sites. These will be discussed later in this decision.

[16] Finally, the Panel notes that section 56 of the *Act* addresses the selection of remediation options and sets out mandatory factors that must be considered when issuing an approval in principle or certificate of compliance:

56(1) A person conducting or otherwise providing for remediation of a site must give preference to remediation alternatives that provide permanent solutions to the maximum extent practicable, taking into account the following factors:

(a) any potential for adverse effects on human health or for pollution of the environment;

(b) the technical feasibility and risks associated with alternative remediation options;

(c) remediation costs associated with alternative remediation options and the potential economic benefits, costs and effects of the remediation options;

(d) other prescribed factors.

(2) When issuing an approval in principle or a certificate of compliance, a director must consider whether permanent solutions have been given preference to the maximum extent.

Morguard's Site Investigation

[17] In accordance with the above noted requirements, various consultants performed extensive and costly investigations and a remediation program at the Morguard Site and Management Area between 1999 and 2011. Over the years, the consultants included Jacques Whitford Environmental Ltd., Conor Pacific Environmental Technologies Inc., Gartner Lee Limited and AECOM Canada Ltd. ("AECOM").

[18] AECOM was retained to perform the remediation of the two sites. It reviewed prior investigations and conducted additional investigations before commencing remediating in 2005. Its investigations and the ultimate remediation addressed two separate vertical depth units:

- Zone A - from ground surface to approximately 11 metres below grade ("mbg"); and
- Zone B - consisting of soils and deep aquifer from 11 mbg to approximately 30 mbg.

[19] AECOM determined that the hydrogeological unit directly below Zone B was a low permeability confining layer consisting of silt and clay. AECOM believed that the silt and clay layer would protect deeper geological units, Zone C (the depth region directly beneath the silt and clay layer), from PCE contamination. Therefore, no testing in Zone C was performed.

Sampling Prior to Remediation

[20] Between 1999 and 2005, Morguard's various consultants drilled 41 boreholes within the investigation area (40 by 70 metres) and tested 87 soil samples and 72 groundwater samples.

[21] In addition, in 2003, three soil vapour probes were sampled and tested for volatile organic compounds ("VOCs").

Soil

[22] Of the 87 soil samples analyzed, only two exceeded the commercial land use standard for PCE set out in the *Regulation*, which is 5 micrograms per gram (µg/g). These two exceedances were located in Zone A. None of the soil samples collected and analyzed in Zone B revealed exceedances.

Groundwater

[23] Before remedial excavation, 13 out of 30 groundwater monitoring wells within Zone A contained PCE at concentrations that exceeded the *Regulation's* applicable aquatic life standard of 1,100 micrograms per litre ("µg/L").

[24] The shallow groundwater in wells located farthest to the North, South, West and East contained no exceedances. Groundwater samples obtained from two of 11 deep monitoring wells located in Zone B contained exceedances. However, these two wells with exceedances were bounded to the North, West, South and East by wells which had PCE concentrations below the aquatic life standard.

Vapour

[25] The maximum PCE concentration detected in the three probes was 3.5 million µg/m^3. The maximum TCE concentration in the soil vapour was 467,000 µg/m^3.

History of Applications, Notifications and Approvals

[26] In May 2002, Morguard submitted a remediation plan for the Morguard Site and sought an approval in principle from the Ministry. At this time, the remediation plan was for soil excavation.

[27] In October 2002, the Director provided an approval in principle authorizing Morguard to implement its plan for the Morguard Site.

[28] Subsequent investigations detected contamination at the Morguard Site that was deeper than the proposed remediation under the existing plan. PCE was also detected in the Management Area.

[29] Morguard issued a "notification of migration of contamination" to Safeway, with a copy provided to the Director.

[30] The Director acknowledged receipt of the notification letter on November 4, 2004, and, among other things, recommended that Morguard "initiate discussion with all affected persons so that a mutually satisfactory remediation plan can be implemented."

[31] In January 2005, the original approval in principle was amended to approve remediation of the PCE contamination by a combination of soil excavation and in-situ chemical oxidation. The remediation was carried out on the Morguard Site and the Management Area by Morguard's environmental consultant, AECOM, between 2005 and 2008. Further details about the remediation will be outlined later in this decision. However, AECOM's post remediation sampling results are outlined below.

Soil

[32] After remediation, 47 confirmatory soil samples were analyzed within Zone A. None of these samples revealed exceedances.

[33] Although no soil exceedances were detected within Zone B prior to excavation, Morguard collected 26 samples after remediation. None of these soil samples contained exceedances.

Groundwater

[34] In 2007, confirmatory groundwater samples were collected from three different locations in Zone A. None contained exceedances.

[35] In November 2008, only one groundwater well, located within Zone B, contained marginal exceedances. Additional treatment was applied to this well.

Vapour

[36] The initial vapour points were destroyed during the remediation. Further probes were installed and tested at the Morguard Site in 2008 and the Management

Area in 2010. All soil vapour probes following excavation tested below the applicable regulatory standard.

Applications for Certificate of Compliance

[37] On October 27, 2009, Morguard applied to the Director for a single certificate of compliance for the Morguard Site and the Management Area. Morguard sought certification that the PCE in soil, soil vapours, and groundwater at the Morguard Site and the Management Area had been satisfactorily remediated to the applicable numeric standards set out in the *Regulation.* This was supported by an October 2009 Confirmation of Remediation Report by AECOM. According to Morguard, it provided all of the data and information required for a certificate of compliance application with the exception of:

a) confirmatory data which was to be obtained for a single groundwater well at the Morguard Site that had marginal PCE exceedances (as stated above); and

b) certain additional confirmatory groundwater and soil vapour data for the Management Area which had not yet been obtained (Morguard did not have access to the Safeway-owned Management Area at that time).

[38] By July 2010, Morguard confirmed that the groundwater contained no exceedances.

[39] In August 2010, and January 31, 2011, Morguard submitted an amended Confirmation of Remediation Report and addendums to the Director regarding groundwater and soil vapours in the Management Area. The amended Confirmation of Remediation Report was submitted in order to comply with certain changes to the Ministry's soil vapour guidelines which came into force after October 27, 2009, the date that Morguard had submitted its initial application.

[40] The Director commenced her review of Morguard's application in January 2011. The Director used an external reviewer, GeoEnviroLogic Consulting Ltd. ("GCL").

[41] In February 2011, the Ministry's standards applicable to groundwater changed. Technical Guidance 6 on Contaminated Sites ("TG 6") relies on site-specific factors to determine whether the more onerous drinking water standards apply.[1]

[42] Page 3 of TG 6 reads as follows:

> If there is no aquifer below your site with a hydraulic conductivity greater than 1 x10-6 m/s and a yield greater than or equal to 1.3 L/min, then drinking water use does not apply.
>
> ...

[1] Schedule 6 of the *Regulation* sets out the aquatic life standard for PCE as 1,100 µg/L. The drinking water standard was 30 µg/L.

> If there exists a confining geological unit that adequately protects the aquifer, drinking water use does not apply.

[43] Also in February 2011, counsel for Safeway wrote to the Director, with a copy to Morguard, advising, for the first time, of its plan to construct a multi-level underground parkade on its property. Safeway's re-development plan prompted Morguard to re-evaluate soil vapours.

[44] On May 3, 2011, Morguard submitted soil vapour risk assessment information in order to address the new parkade issue.

[45] Also, in May 2011, GCL encouraged Morguard to divide its certificate of compliance application into two separate applications: one for the Morguard Site and one for the Management Area. Morguard agreed.

[46] In June 2011, the Director's external reviewer (GCL) completed its review of Morguard's applications and concluded that the reviewed reports were "in satisfactory compliance" with the requirements of the *Act* and the *Hazardous Waste Regulation*, B.C. Reg. 63/2009.

[47] In July 2011, the Director forwarded copies of a draft certificate of compliance to Morguard for the Morguard Site, and issued a draft certificate of compliance for the Management Area for Safeway's comment.

Safeway's Investigations

[48] While Morguard was executing its remediation program for the Morguard Site and the Management Area, Safeway was investigating a different type of contamination on its property, which lies to the north of Morguard's.

Background to Safeway's property

[49] From 1965 through to August 2012 Safeway operated a grocery store on its property. The remainder of its property was used for parking.

[50] In or about 2007, Safeway decided to redevelop the property and construct a multi-level underground parkade. In January of 2008, Safeway retained an Environmental Consultant, NEXT Environmental Inc. ("NEXT") to undertake an extensive course of drilling and sampling to determine whether contamination was present on its property. NEXT found hydrocarbon contamination on Safeway's property, originating from a former service station located across Clarke Road, to the northwest of the Safeway property. As a result of this contamination, Safeway ceased operation of the grocery store and the building has been demolished.

[51] Safeway began to remediate the hydrocarbon contamination with the objective of obtaining its own certificate of compliance, a precondition for obtaining the permits and authorizations required for the proposed redevelopment.

[52] Safeway's remediation of the hydrocarbon contamination, and its plans to obtain a certificate of compliance, are not particularly relevant to the issues in this appeal. What is of relevance is that, in 2011, NEXT, when drilling and installing a

series of monitoring wells, detected PCE. The PCE was found to exceed drinking water standard in a number of wells[2], and exceeded the aquatic life standard in three deep monitoring wells (in excess of 30 metres or 100 feet below the ground surface) within the deep drinking water aquifer under Safeway's property. The exceedances were located outside of the Management Area (i.e., beyond the location for which Morguard seeks a certificate of compliance).

[53] The discovery of PCE contamination on the Safeway property led to Safeway being concerned that:

(a) the PCE came from the Morguard Site, and

(b) the Morguard Site contains groundwater that remains contaminated with PCE.

[54] This information is important because NEXT's results were considered by the Director and is one of the reasons, if not the main reason, for her refusal of Morguard's applications for the certificates of compliance.

[55] By letters dated August 2 and 5, 2011, respectively, Safeway's legal and environmental advisors notified the Director that Safeway had concerns regarding Morguard's certificate of compliance applications.

[56] In a letter dated August 22, 2011, approximately two months after the draft certificates of compliance were issued, NEXT advised the Director of the three exceedances detected on Safeway's property. NEXT also suggested that the three PCE groundwater exceedances indicate the presence and mobility of Dense Non-aqueous Phase Liquids ("DNAPL") and Odorous Substances.

[57] The Ministry's Protocol 16 was created for the purpose of "*Determining the Presence and Mobility of Nonaqueous Phase Liquids and Odorous Substances*" and reads, in part, as follows:

> **DNAPL is considered present when any of the following occur at a site:**
>
> a) Free phase liquid is found in soil or on the soil surface;
> b) Free phase liquid is found in monitoring wells at a thickness greater than 2 mm; or
> c) Individual DNAPL substances are detected in water at concentrations exceeding 1% of their theoretical solubility limit.

[58] Section 3.2.2. reads:

> **When DNAPL is mobile**
>
> DNAPL is considered mobile when any of the following conditions occur at a site:

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[2] In order to qualify for its own certificate of compliance, Safeway is required to meet the drinking water standard as its application for a certificate of compliance will be made after the new ground water standards in TG 6 took effect in 2011.

a) DNAPL is present in fractured bedrock;
b) DNAPL is present over an area greater than 10m on the land surface;
c) Quarterly groundwater monitoring events indicate advancement of DNAPL across a monitoring well network;
d) Free phase liquid is found in monitoring wells at a thickness greater than 2 mm;
e) Individual DNAPL substances are detected in water at concentrations exceeding 10% of their theoretical solubility limit.

[59] According to Protocol 16, contaminant mobility is a key factor used in site-risk classification in the contaminated sites regime.

[60] As the NEXT letter is the subject of significant debate and discussion in this appeal, it is quoted in some detail as follows [Note: NEXT's references to the OMA (Offsite Management Area) are references to the Management Area, as defined in this decision]:

> We advise that we have discovered dissolved tetrachloroethylene ("PCE") contamination above 1500 µg/L immediately outside of the OMA and 25 m. downgradient from the OMA on Canada Safeway Ltd ("Safeway") property. According to Protocol 16 Determining the Presence and Mobility of Nonaqueous Phase Liquids and Odorous Substances, this finding is indicative of Dense Nonaqueous Phase Liquid ("DNAPL").
>
> We discovered this contamination while completing a third round of drilling into the drinking water aquifer underlying Safeway property at over 30 m. depth. This contamination occurs at a depth below the maximum limit of Morguard REIT's [Morguard Real Estate Investment Trust] investigation and remediation, inferring even higher concentrations will be found on Morguard REIT property ....
>
> We conclude that dissolved PCE contamination persists on, and continues to migrate from Morguard REIT property onto Safeway property, both (a) at concentrations exceeding Protocol 16 DNAPL standards; and (b) at concentrations exceeding standards for protection of Aquatic Life ("AW"). We note that both of those standards were in effect and applicable to Morguard REIT when it made its COC [certificate of compliance] submission prior to February 1, 2011.
>
> It appears that Morguard REIT has not satisfied Ministry requirements for a Detailed Site Investigation prior to issuance of a COC. It follows that Morguard REIT has not remediated either its own property or the OMA or other off-site Safeway property to meet Contaminated Sites Regulation standards for protection of aquatic life. Thus, it appears that the draft COC for the OMA, and presumably for Morguard REIT property, are incorrect and cannot be issued as presented.
>
> We believe that our observations and conclusions have important implications for both Morguard REIT and Safeway. Morguard REIT's current COC application was submitted prior to February 1, 2011, when drinking

> water standards were inapplicable and AW standards were applicable. Our conclusions mean that Morguard REIT needs to complete delineation of AW contamination both on-and off-site. This delineation will likely discover untreated areas of dissolved AW contamination, which would take significant time and expense to remediate to numerical standards. Presumably, Morguard REIT would be required to resubmit its application, and thus be disqualified from the advantages of submitting before the February 1, 2011 deadline.
>
> …
>
> [Emphasis added]

[61] It should be noted that NEXT did not provide the Director with a detailed map or the data relating to these tests and results. More detailed information was included in its July 11, 2012 Detailed Site Investigation, created after the Director's decision.

The First Decision on Morguard's Application

[62] On August 25, 2011, three days after receiving the NEXT letter, Ardith Gingell, Senior Contaminated Sites Officer with the Ministry, sent a letter to Morguard advising that its certificate of compliance applications were deficient. Ms. Gingell required resubmission of Morguard's applications based on the information in NEXT's August 22, 2011 letter.

[63] On September 2, 2011, counsel for Morguard wrote to Ms. Gingell seeking rescission of her August 25, 2011 decision on the basis that it was rendered without receiving any input from Morguard.

[64] By letter dated September 13, 2011, the Director agreed to rescind that decision on the basis of lack of procedural fairness. The Director invited AECOM to confirm or refute the presence of PCE on the Safeway property. No additional information regarding the presence of PCE was submitted by Morguard.

The Second Decision on Morguard's Application: The Decision under Appeal

[65] On September 29, 2011, the Director received supporting documentation from NEXT indicating that the results reported on August 22, 2011 had been reconfirmed in a second set of samples taken in September.

[66] In a letter to the Director dated October 12, 2011, Morguard's counsel provide detailed arguments in support of granting Morguard's request for a numeric certificate of compliance for the Morguard Site, and a separate risk-based certificate of compliance for the Management Area, based upon the existing information and applications.[3]

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[3] Numerical standards are acceptable concentrations of substances in soil, surface water, groundwater, vapour and sediments. Risk-based standards are acceptable risk levels from exposure to substances at sites. Both numerical and risk-based standards for remediation of a contaminated site are set out in the *Regulation*.

[67] In November 2011, NEXT sent a letter to the Director expressing concern over the condition of the Morguard Site and its effect on Safeway's pending application for a certificate of compliance for its property.

[68] On February 8, 2012, the Director refused Morguard's applications for both the Morguard Site and the Management Area. Her decision is set out in a nine-page letter, which sets out the background to the decision and her response to specific arguments made by counsel for Morguard in his October 12, 2011 letter. Of relevance to this appeal, the Director states, regarding the draft certificates of compliance and site investigations:

> Draft CoCs prepared by the ministry's external reviewer, GCL, were sent to Morguard and Safeway for comment on July 13, 2011. Subsequently, the ministry learned of a change in conditions on the Safeway site, not known to GCL at the time of preparing their recommendations. It should also be noted that GCL never reviewed a Detailed Site Investigation (DSI) for the Management Area as they assumed the DSI had been reviewed by the ministry prior to issuance of the 2005 AiP [approval in principle]. However, the ministry has neither received nor reviewed a detailed site investigation (DSI) for the Management Area, as investigations to delineate the extent of PCE contamination was to be conducted under the 2005 AiP.

[69] The Director states as follows regarding Morguard's compliance with the legislated requirements:

> In accordance with CSR [the *Regulation*] Sections 49 and 59, a CoC must include a detailed site investigation that clearly shows 'specific areas, depths and degree of contamination, including migration which may have occurred to adjoining properties'. The application must also include a confirmation of remediation report that 'describes sampling and analysis carried out after remediation of the contamination' and ensure the director is provided information demonstrating 'compliance with all conditions set by a director under section 47(3) if an approval in principle was issued prior to remediation' and indicating 'the quality and performance of remediation measures on completion of remediation, including compliance with the remediation standards, criteria or conditions prescribed in this regulation'.
>
> Information available to the ministry indicates that the above requirements have not been met on the Management Area and may not have been met on the Morguard Site itself.

[70] Regarding compliance with guidance documents for investigating, risk assessment and remediation, the Director notes that changes had occurred since Morguard's certificate of compliance applications were submitted. However, "the requirement that vapours be assessed on the basis of 'current and reasonable potential future land use', in particular the location and depth of building foundations, has not changed. … No other written record has been provided by Morguard or Safeway indicating that redevelopment of the Safeway property with

underground parking was not a 'reasonable potential future land use' at the time of Morguard's CoC application."

[71] The Director concludes as follows:

> In closing, I confirm that information presented in Next's letter of August 22, 2011, and follow up letter of September 29, 2011 indicates that Morguard's CoC application of October 27, 2009 has not satisfied the requirement of Section 49 of the CSR [the *Regulation*] to ensure 'the quality and performance of remediation measures on completion of remediation, including compliance with the remediation standards, criteria or conditions prescribed in this regulation.' Consequently, I will not be issuing numerical-standards based or risk-based CoCs for the Morguard Site and the Management Area until such time as information satisfying regulatory requirements for issuance of CoCs is received. As indicated in the Ministry's earlier correspondence, available information indicates the application submitted by Morguard [on] October 27, 2009, as subsequently amended and supplemented, is incomplete and containing errors. In accordance with Section 9(10) of the CSR, should Morguard wish to proceed with their CoC applications, resubmission of completed or corrected reports or plans will be required.

[72] During the hearing of this appeal, the Director added that Morguard failed to remediate in accordance with a "requirement imposed by the director" under section 53(3)(a)(iv) of the *Act*. Specifically, Morguard failed to determine "the full extent of the contamination" (i.e., Zone C).

[73] As a result of the Director's decision, in order for Morguard to obtain a certificate of compliance, Morguard was required to undertake a new investigation and potential remediation of its site and the Management Area based on new regulatory standards, criteria and conditions that were not in force when Morguard originally applied for the certificate of compliance. Morguard was also required to prepare new certificate of compliance applications.

Parties' Positions on the Appeal

Morguard

[74] On March 7, 2012, Morguard appealed the Director's decision to the Board. Morguard argues that the Director's decision-making process was "heavy-handed, procedurally unfair, unreasonable and constituting bias". It further argues that the Director's decision is vague and that the specific basis for her rejection is unclear.

[75] Morguard submits that the Director failed to articulate which technical requirements she applied in assessing the application (i.e., did the Director apply the requirements in place at the time Morguard submitted its application in 2009, the requirements in place at the time Morguard submitted additional confirmatory data for the Management Area in 2010, or the requirements in place when the Director reviewed the Morguard application in 2011?).

[76] Regardless of which requirements apply, Morguard argues that its expert, Reg North, P. Eng, P. Geo, and Senior Hydrologist for Core6 Environmental Ltd. ("Core6"), advised that Morguard had satisfied all requirements for the Morguard Site and the Management Area in his expert report dated September 14, 2012 (the "Core6 Report")[4].

[77] In addition, Morguard maintains that, if it can be argued that the requirements for a detailed site investigation even apply, the Director is incorrect when she claims that Morguard did not meet the relevant requirements.

[78] Regarding the Director's claim that Morguard failed to delineate the full extent of the contamination contrary to a "requirement", Morguard submits that no requirement was issued by the Director. However, even if the Director issued a formal "requirement", Morguard says that it delineated the extent of the contamination as required by the legislation and any legal requirements, and that it met all applicable standards that were in place at the time of report submittal.

[79] Morguard also submits that the Director placed undue reliance, or an unreasonable amount of weight, on the NEXT letters without explaining why the NEXT data is relevant to Morguard's application. Morguard argues that there is no probative evidence to support the findings in the NEXT letter. Morguard maintains that the Director erred in relying on NEXT's conclusions to reject its application.

[80] Morguard submits that the Morguard Site and the Management Area were fully remediated to all applicable standards, and that certificates of compliance should be issued for both. Consequently, Morguard asks this Panel to quash the Director's decision and order the Director to issue a numeric certificate of compliance for the Morguard Site, and a numeric or risk-based certificate of compliance for the Management Area.

[81] Alternatively, Morguard asks the Board to order the Director to identify the specific technical deficiencies in Morguard's certificate of compliance application, and to provide Morguard with a reasonable opportunity to correct those deficiencies without requiring resubmission of the application in its entirety.

[82] Finally, Morguard argues that, in this particular appeal, the burden of proof should be reversed such that the Director should be required to justify her decision, rather than the usual burden which is on the Appellant to prove its case.

The Director

[83] The Director submits that there is no reason to reverse the burden of proof in this case, that the decision-making process was fair to Morguard, and that she was entitled to rely upon NEXT's letters as those letters indicate that the investigation of the Morguard Site and the Management Area were not properly carried out.

[84] The Director maintains that her decision to refuse the certificates of compliance, and to require Morguard to resubmit completed or corrected reports or

[4] This report is sometimes referred to by the parties as the "North Report".

plans, was reasonable and appropriate. She submits that her decision should be confirmed.

[85] In an affidavit sworn by the Director on November 27, 2012, Ms. Evans states at paragraph 27 that her rejection of Morguard's certificate of compliance applications was "based on the remediation standards ultimately adopted by AECOM and applied by the Ministry's external reviewer and not on any new and higher standards that became effective subsequent to January 31, 2011". Those will be the standards applied by the Board to this appeal, i.e., the aquatic life standard.

Safeway

[86] Safeway supports the Director's position. It argues that Morguard cannot, at this time, adequately address the presence of the PCE in the deep drinking water aquifer because it did not drill and sample deeply enough into the aquifer or upper basal aquitard (Zone C) to determine if PCE contamination remains.

ISSUES

[87] The primary issue before the Board is whether certificates of compliance, in whole or in part, should be issued for the Morguard Site and the Management Area on a numerical or risk-based standard. In order to determine this primary issue, several other issues must first be addressed. They are as follows:

1. Which party has the onus of proof in the context of this appeal?
2. Whether the Director breached the rules of procedural fairness such that her decision should be quashed?
3. Whether Morguard has complied with the "requirements imposed by the director" in accordance with section 53(3)(a)(iv) of the *Act*?
4. Whether Morguard has provided a detailed site investigation report as required by sections 49(2) and 59 of the *Regulation*?
5. What is the relevance of the NEXT data to Morguard's applications for certificates of compliance? In particular, is this data a basis to refuse Morguard's applications?
6. Depending upon the answers to the above, should a certificate of compliance be issued for the Morguard Site and/or the Management Area based on numerical or risk-based standards?

DISCUSSION AND ANALYSIS

1. Which party has the onus of proof in the context of this appeal?

[88] As noted earlier, Morguard argues that the Director bears the onus to justify her decision in this appeal. Morguard emphasizes that, prior to the August 22, 2011 letter from NEXT, the Director did not raise any concerns regarding

Morguard's certificate of compliance applications. Both GCL and the Director were apparently satisfied that Morguard had fulfilled the relevant regulatory and technical requirements for the issuance of a certificate of compliance for the Morguard Site and the Management Area. Morguard submits that this is evidenced by the July 2011 issuance of the draft certificates of compliance. It is also evidenced by an October 22, 2012 report prepared by GCL after the appeal was filed, which states at page 14:

> In my opinion, the additional contamination found by NEXT on the Safeway Property is a result of contamination migration over several years or decades, and therefore reflects pre-remediation conditions at the [Morguard] Site. Furthermore, I consider the earlier conclusion that the Morguard Site has been adequately remediated to still be reasonable as the confirmation sampling followed standard practice.

[89] According to Morguard, the Director had a positive duty to critically examine the NEXT conclusions and ensure that those conclusions were based on a correct interpretation of all relevant data before rejecting the application. If the NEXT report motivated concern on behalf of the Director, the Director had a duty to explain, in detail to Morguard, those concerns and provide Morguard with the opportunity to respond in detail to those concerns.

[90] Morguard maintains that the Director failed to do any of the above. Morguard submits that this lack of reasoned analysis, combined with ambiguous reasons for the rejection of the application, makes it difficult to resubmit a successful application.

[91] In these circumstances, Morguard maintains that the Director bears the onus on this appeal to justify her decision.

[92] The Director submits that Morguard, as the Appellant, bears the onus on this appeal to establish that it met the necessary certificate of compliance requirements under the *Act* and the *Regulation.*

[93] Safeway made no submissions on this issue.

The Panel's Findings

[94] The Board's *Procedure Manual* states as follows:

> The general rule is that the burden or responsibility for proving a fact is on the person who asserts it. The fact is to be proved on a 'balance of probabilities'. [Emphasis added]

[95] This general rule will only be reversed in exceptional circumstances. One of those circumstances may well be when the decision under appeal is so lacking in reasons that an appellant is unable to prepare its case.

[96] In the present appeal, the Panel finds that there was sufficient information in the Director's decision for Morguard to prepare its case, and that it has done so. Accordingly, there is no reason to deviate from the Board's general rule in this instance. The Panel finds that Morguard bears the onus of proof in this appeal.

2. Whether the Director breached the rules of procedural fairness such that her decision should be quashed?

Submissions of Morguard

[97] Morguard maintains that, from the time that the Ministry received NEXT's August 22, 2011 letter, it proceeded on a "predetermined path" toward requiring resubmission of the certificate of compliance applications. Morguard argues that there is substantial evidence to support this conclusion.

[98] First, Ms. Gingell, the Ministry's Senior Contaminated Site Officer, issued her August 25, 2011 decision letter rejecting Morguard's application only three days after receiving the NEXT letter. Morguard argues that three days did not afford Ms. Gingell enough time to carefully assess the NEXT data, analyze the reliability and reasonableness of NEXT's conclusions or obtain adequate input from Morguard.

[99] Second, Morguard submits that, after asking the Director to rescind the decision on the basis of lack of procedural fairness, the Director made it clear to Morguard that it would be provided with a narrow window of reply: the decision would only be rescinded to provide Morguard with an opportunity to "confirm or refute" the NEXT data.

[100] If the NEXT data was confirmed as accurate, the Director advised that she would reject the application and require resubmission. Morguard contends that, even if the NEXT data is accurate, it cannot reasonably impugn Morguard's applications as the contamination identified by NEXT is located outside of the boundaries of the applied for areas.

[101] Morguard also submits that the Director's February 8, 2012 decision violates other procedural fairness rules due to a lack of adequate reasons. It maintains that the Director failed to explain why the NEXT data was relevant to Morguard's applications, failed to identify any specific technical defects in Morguard's applications, failed to articulate which technical requirements she applied when assessing the applications (pre or post 2011), and that the Director only made ambiguous statements regarding Morguard's failure to meet section 49(2) of the *Regulation*, without relying on any subsection in particular. Finally, no specific technical deficiencies were identified respecting the Morguard Site or the Management Area.

[102] For these reasons, Morguard characterizes the Director's decision-making process as "heavy-handed, procedurally unfair, unreasonable and constituting bias".

[103] Morguard asks the Panel to quash the decision and order the Director to issue the certificates of compliance for the Morguard Site and the Management Area.

Submissions of the Director

[104] The Director denies that the decision-making process was biased and contrary to rules of procedural fairness. The Director states that she went to great lengths to accommodate Morguard and its applications.

[105] First, the Director emphasizes that the supplemental information submitted by Morguard in 2010 was accommodated through the external review process.

[106] Second, the Director submits that Morguard was informed of the Director's concerns regarding the remediation of the Morguard Site, as is evidenced by Ms. Gingell's refusal decision which called for the resubmission of revised applications by Morguard.

[107] Third, the Director states that, in response to objections from Morguard over the lack of opportunity to refute the NEXT data, she agreed to rescind Ms. Gingell's decision so that Morguard could collect independent data to either confirm or refute the data provided by NEXT. The Director submits that no additional information was provided by Morguard. Instead, on October 12, 2011, counsel for Morguard wrote to the Director and advised that Morguard had no obligation to investigate or remediate any contamination that may remain in place outside of the Morguard Site or the Management Area.

[108] The Director submits that every reasonable opportunity was extended to Morguard to provide the information required by the Director to determine whether the Morguard Site and the Management Area had been properly investigated and remediated.

Submissions of Safeway

[109] Safeway made no submissions on this issue.

The Panel's Findings

Bias

[110] As stated by the Board in *Houston and District Chamber of Commerce v. Regional Fish and Wildlife Manager* (Appeal No. 2002-WIL-006, May 29, 2002), at page 12:

> … it is a principle of natural justice that a person is entitled to a decision from an unbiased decision-maker. The test for a reasonable apprehension of bias is set out in *Committee for Justice and Liberty v. National Energy Board*, [1978] 1 S.C.R. 369, at p. 394:
>
> > [w]hat would an informed person, viewing the matter realistically and practically - and having thought the matter through - conclude. Would he think that it is more likely than not that [the decision-maker], whether or not unconsciously, would not decide fairly.
>
> In other words, the test for bias is whether a reasonable, informed person looking at all the facts would conclude that there is a real likelihood that the decision-maker will favour one side over the other. It need not be shown that the apprehended bias actually prejudiced one of the parties or affected the result, it is sufficient that this might occur.

> The Panel finds that there is no evidence of actual bias in this case, nor is there sufficient evidence to find that there is a reasonable apprehension of bias. The Panel notes that the allegation that a decision-maker is biased is a serious allegation, and the onus is on the party alleging bias to make out the claim. This is supported by the British Columbia Court of Appeal's decision in *Adams v. Workers' Compensation Board* (1989), 42 B.C.L.R. (2d) 228 where the Court states:
>
> > This case is an exemplification of what appears to have become general and common practice, that of accusing persons vested with the authority to decide rights of parties of bias or reasonable apprehension of it without any extrinsic evidence to support the allegation. It is a practice which, in my opinion, is to be discouraged. An accusation of that nature is an adverse imputation on the integrity of the person against whom it is made. The sting and the doubt about integrity lingers even when the allegation is rejected. It is the kind of allegation easily made but impossible to refute except by a general denial. It ought not to be made unless supported by sufficient evidence to demonstrate that, to a reasonable person, there is a sound basis for apprehending that the person against whom it is made will not bring an impartial mind to bear upon the cause. As I have said earlier, and on other occasions, suspicion is not enough.

[111] This Panel adopts these findings for the purposes of this appeal.

[112] Although there are two decisions from Ministry decision-makers, both of which reject Morguard's applications, the Panel is not able to find that the Director did not "bring an impartial mind to bear upon the cause". She sought additional submissions, and, receiving none, made her decision. Under these circumstances the Panel rejects the allegation of bias in the decision-making process by the Director or her staff.

Adequacy of Reasons

[113] In *Newfoundland and Labrador Nurses' Union v. Newfoundland and Labrador (Treasury Board)*, 2011 SCC 62, the Supreme Court of Canada clarified the proper approach for judicial review of an arbitrator's reasons under the principles previously set out in *Dunsmuir v. New Brunswick*, 2008 SCC 9 [*Dunsmuir*].

[114] The Court stated that a reasonableness review under the *Dunsmuir* criteria does not involve a separate analysis of the "adequacy" of reasons which could serve as a stand-alone basis for quashing a decision.

[115] The Court also held that a decision-maker's reasons do not need to include all arguments or explicit findings on each element leading to its final conclusion. The Court emphasized that such a requirement would paralyze the purpose of speed, economy and informality underlying the grievance arbitration process.

[116] The Court determined that, if the reasons allow the reviewing court to understand why the decision-maker made its decision and permit the reviewing

court to determine whether the conclusion is within the range of acceptable outcomes, the *Dunsmuir* criteria are met.

[117] While the Director could have issued a more comprehensive explanation for rejecting Morguard's certificate of compliance applications, the Panel finds that the Director's decision cannot be "quashed" or reversed on this basis alone, based on the case law above.

[118] Further, the Panel has conducted this appeal as a "new hearing". The Director has provided additional information and evidence in support of her decision, and the parties have similarly provided additional information and evidence for the Panel to consider. In particular, new expert evidence has been tendered by the specified parties:

- by Safeway, a July 11, 2012 Detailed Site Investigation "to address migrated PCE and TCE contamination" prepared by NEXT (the "NEXT DSI");
- by Morguard, a September 14, 2012 report by Mr. North of Core6, previously defined as the "Core6 Report";
- by Safeway, an October 15, 2012 rebuttal by NEXT to the Core6 Report (the "NEXT Rebuttal");
- by the Director, an October 22, 2012 rebuttal by GCL to the Core6 Report and the NEXT reports (the "GCL Rebuttal"); and
- By Morguard, a November 13, 2012 rebuttal by Mr. North of Core6 to the October 15, 2012 NEXT Rebuttal and the October 22, 2012 GCL Rebuttal (the "Core6 Rebuttal").

[119] This additional evidence will allow the Panel to decide whether the certificates of compliance should be issued, refused or returned to the Director with directions.

[120] Accordingly, this ground of appeal fails.

3. Whether Morguard has complied with the "requirements imposed by the director" in accordance with section 53(3)(a)(iv) of the *Act*?

Submissions of the Director

[121] In the Director's written submissions, she clarified that one reason for her refusal of the certificates of compliance was that Morguard failed to comply with the requirement to determine the full extent of the contamination contrary to section 53(3)(a)(iv) of the *Act.*

[122] Section 53(3)(a)(iv) of the *Act* states:

> (3) A director, in accordance with the regulations, may issue a certificate of compliance with respect to remediation of a contaminated site if
>
> (a) the contaminated site has been remediated in accordance with
>
> …

(iv) any requirements imposed by the director. [Emphasis added]

[123] The Director submits that the requirement to "determine the full extent of the contamination" was set out in a letter dated November 4, 2004. The letter reads in part:

> This letter outlines the ministry's expectations of you regarding contamination. Specifically, the ministry expects you to advise any other affected persons ... of the contamination, determine the full extent of the contamination and prepare and implement a remediation plan. We strongly encourage you to initiate discussion with all affected persons so that a mutually satisfactory remediation plan can be implemented. [Emphasis added]

[124] The Director submits that Morguard "failed to determine the full extent of the contamination" because it did not include the depths and degree of contamination, including migration which may have occurred to adjoining properties. She emphasizes that Morguard's investigation and remediation was limited to Zone A and Zone B within the Morguard Site and the Management Area. The Director relies on NEXT's August 22, 2011 letter which suggests that PCE contamination is still in the groundwater within the silts and sands of Zone C, an area that was not investigated or remediated by Morguard.

[125] The Director considers this PCE contamination "significant", first, because the recorded levels of PCE can be associated with the presence of liquid PCE, a violation of Protocol 16, and second, these results have been confirmed and replicated in subsequent sampling by NEXT.

[126] According to the Director, this new evidence raised the prospect that contamination may remain on the Morguard Site and the Management Area below the depths investigated and remediated. For this reason, the Director submits that Morguard did not comply with all requirements imposed by the Director.

[127] Finally, the Director submits that the draft certificates issued to Morguard in July 2011 included a qualifying statement that they could be rescinded by the Director if the requirements imposed by the Director were not complied with. Given the new information provided by NEXT, the Director submits that Morguard failed to determine the full extent of the contamination as required, and that she was within her right to reject Morguard's applications.

Submissions of Morguard

[128] Morguard submits that Director never imposed any orders or "requirements" pursuant to section 53(3)(a)(iv) of the *Act*.

Submissions of Safeway

[129] Safeway made no submissions on this issue.

The Panel's Findings

[130] The Panel finds that the contents of the November 4, 2004 letter do not constitute a requirement "imposed by the director" under section 53(3)(a)(iv) of the *Act*. There is nothing in the letter that suggests this is a legally enforceable requirement; rather, the use of the phrase "this letter outlines the ministry's expectations" leads one to the contrary conclusion that these are expectations only. In addition, the Panel finds that the imposition of a requirement under the *Act* is a serious matter which should be stated in the clearest of terms. When exercising this authority, the Director should not only make it clear that a mandatory requirement has been imposed but, in so doing, she should cite the statutory authority under which the requirement has been imposed. In this case she did neither.

[131] Although not discussed above, the Director also submits that the requirement to delineate the contamination by determining the depth and degree of the contamination is also found in section 59(3)(c) of the *Regulation*, under the heading "Detailed site investigations". The relevance of this provision will be addressed under Issue 4, below.

[132] Finally, even if the Panel had reached the contrary conclusion, Morguard maintains that it did delineate the full extent of the contamination and that it remediated the contamination at the site. The Panel will consider whether Morguard has delineated the contamination and remediated the site to the extent claimed, and required by the legislation, later in this decision.

4. Whether Morguard has provided a detailed site investigation report as required by section 49(2) and 59 of the *Regulation*?

[133] The relevant portions of section 49 of the *Regulation* are as follows:

49 (1) A person may apply for a certificate of compliance under section 53(3) of the Act by submitting a request in writing to a director.

(2) In support of the application referred to in subsection (1), the person requesting the certificate of compliance must provide to the director the reports described in paragraphs (a) and (b) and ensure that the director has information on the items described in paragraphs (c) and (d):

(a) preliminary and detailed site investigation reports;

[Emphasis added]

[134] The requirements for a detailed site investigation are described in section 59 of the *Regulation*, as follows:

59 (1) A person who is ordered to undertake a detailed site investigation under section 41(1) of the Act must do one of the following:

(a) carry out a preliminary site investigation before the detailed site investigation;

(b) conduct a detailed site investigation in a manner which ensures that the information referred to in section 58 (1) [Preliminary site investigations] is obtained.

(2) A detailed site investigation must provide information necessary for conducting a risk assessment, if applicable, and for developing a remediation plan, and must, without limitation, include procedures to

(a) identify which substances may cause or threaten to cause adverse effects and provide any applicable information on their form,

(b) identify the specific areas, depths and degree of contamination on the site including areas and extent of migration if applicable, and

(c) evaluate contamination relative to standards in the Hazardous Waste *Regulation* and in this regulation.

(3) A report of a detailed site investigation prepared under section 41 (1) of the Act must do all of the following:

(a) describe the relationship of the detailed site investigation and any prior preliminary site investigation and, in particular, explain how the methods of investigation and findings of the preliminary site investigation were used to design and carry out the detailed site investigation;

(b) provide a compilation and presentation of all field observations, field measurement and analytical data and laboratory analytical data;

(c) provide an interpretation and evaluation of the data in a manner which clearly shows

(i) the contamination in soil, groundwater, sediments or surface water in relation to standards in the Hazardous Waste Regulation and the criteria, standards and conditions prescribed and in this regulation, and

(ii) specific areas, depths and degree of contamination, including migration which may have occurred to adjoining properties.

Submissions of Morguard

[135] Morguard submits that the Director's claim that it did not submit a detailed site investigation report is without merit. Morguard submits sections 59(1) and (3) of the *Regulation* do not apply to the Morguard remediation because those sections refer to an "order" of the Director under section 41(1) of the *Act*, and no such order has been made in this case. Accordingly, sections 59(1) and (3) do not apply to Morguard and the Director's reference to section 59(3) in her decision is erroneous, as is her finding that Morguard failed to comply with section 49(2) of the *Regulation.*

[136] In any event, Morguard submits that all of the technical requirements of a detailed site investigation report set out in section 59(1) to (3) of the *Regulation*

were, in fact, met for both the Morguard Site and the Management Area. Specifically:

- Supplementary Site Investigations prepared by Gartner Lee Ltd. dated July 2001;
- Remediation Plan prepared by Gartner Lee Ltd. dated May 2002;
- Letter to Pottinger Gaherty Environmental Consultants Ltd. from Gartner Lee Ltd. dated July 31, 2004;
- Reports and data provided with the Revised Request for Approval In Principle Amendment dated October 2004;
- Confirmation of Remediation Amendment Letter dated August 25, 2010; and
- Letter to the Ministry of Environment from AECOM dated January 31, 2011.

[137] Morguard acknowledges that it did not submit a single document specifically titled "Detailed Site Investigation Report", but submits that there is no specific legislative language that requires the filing of a single "report" in order to meet the requirements set out in section 49(2)(a) of the *Regulation*. Morguard also says that, even if the legislation required the submission of a single report, for the Director to reject its application on this basis is to value "form over substance".

[138] In terms of substance, Morguard submits that the level of investigation completed by AECOM and others, at both the Morguard Site and the Management Area, as outlined in the above-noted reports, met both the specific provisions and the intent for a detailed site investigation under section 59 of the *Regulation*. In support, Morguard refers to page 13 of the Core6 Report as follows:

> Overall, the quality and robustness of the investigation performed by AECOM and others on the Morguard Site and the Management Area, in my opinion, meet the requirements of a DSI (at the time the work was completed). Although the term DSI was not used in the title of the AECOM reports submitted to the BCMOE [the Ministry], in my opinion, the collection of reports submitted in support of the application for the CoCs contain the data and information consistent with that required for a DSI report.

[139] Morguard also refers to the inconsistencies in the Ministry's actions as a reason to be wary of its current assertions and concerns. At various times in its submissions, Morguard questions why the draft certificates of compliance were issued if the Director was concerned that Morguard was failing to comply with the *Act* and the corresponding *Regulation*. It notes that Ministry staff never questioned the completeness or validity of its past investigations or its applications for certificates of compliance.

Submissions of the Director

[140] The Director submits that her external reviewer, GCL, erroneously assumed that preliminary site investigation reports and detailed site investigation reports had

previously been reviewed by the Ministry as part of the approval in principle application. The Director says that she had relied on the GCL review and only realized that Morguard had not submitted a detailed site investigation report when it came to her attention in August 2011. This, the Director says, is the reason for not informing Morguard sooner of its incomplete application.

[141] In response to Morguard's argument that there was no order made under section 41 of the *Act*, the Director submits that this overlooks the definition in section 39 of the *Act* which states:

> "detailed site investigation" means detailed site investigation and report under section 41 *[site investigations]* that complies with the regulations.

[142] The Director submits that this definition effectively incorporates the section 59 requirements into the contents of the detailed site investigation report required by section 49 of the *Regulation* to be filed in support of every application for a certificate of compliance.

[143] In response to Morguard's assertion that it submitted all of the requisite information required in the detailed site investigation, but failed to title this information "Detailed Site Investigation Report", the Director submits that section 49 of the *Regulation* requires a formal report. The Director says that this is evidenced by the distinction between "report" and "information" in section 49(2) of the *Regulation*:

> (2) In support of the application referred to in subsection (1), the person requesting the certificate of compliance must provide to the director the reports described in paragraphs (a) and (b) and ensure that the director has information on the items described in paragraphs (c) and (d). [Emphasis added]

[144] The Director further argues that a number of other provisions in the *Act* are triggered by the filing of a detailed site investigation, such as section 41(3), requiring director notification to potentially affected persons following receipt of a detailed site investigation report, and section 43(1) regarding notice to be included on the site registry.

Submissions of Safeway

[145] Safeway takes no position on whether a detailed site investigation report was provided by Morguard.

The Panel's Findings

[146] The Director's submission is that Morguard failed to provide a detailed site investigation as required by section 49(2)(a) of the *Regulation*, which is a precondition to obtaining a certificate of compliance. Although the Director did not order Morguard to complete a detailed site investigation or a detailed site investigation report, she submits that an order is not required because the definition in section 39 of the *Act* references the *Regulation*. It states:

> "detailed site investigation" means detailed site investigation and report under section 41 *[site investigations]* that complies with the regulations.

[147] Section 41 of the *Act* titled "Site investigations" provides as follows:

> **41** (1) A director may order an owner or operator of a site, at the owner's or operator's own expense, to undertake a preliminary site investigation or a detailed site investigation and to prepare a report of the investigation in accordance with the regulations and any applicable protocol if the director reasonably suspects on the basis of a site profile, or any other information, that the site
>
> (a) may be a contaminated site, or
>
> (b) contains substances that may cause or threaten to cause adverse effects on human health or the environment ...
>
> (2) If a director orders a preliminary site investigation or detailed site investigation ….
>
> (3) On receipt of a report of a preliminary site investigation or detailed site investigation submitted under this section ....

[148] Section 41 contemplates an order being made by the director for a detailed site investigation and a detailed site investigation report. As stated above, Morguard was not ordered to do either.

[149] The Panel is unable to find any specific provision in the *Act* that compels a person going through an independent remediation to undertake a detailed site investigation or to submit a detailed site investigation report, absent a director's order. Although this may be done voluntarily, as it clearly provides relevant information, it appears from section 41 that a detailed site investigation is something that is, by definition, ordered. This interpretation seems to be supported by section 59(1) of the *Regulation* as it states "A person who is ordered to undertake a detailed site investigation under section 41(1) of the Act must do one of the following …", and under subsection (3) which states that "a report of a detailed site investigation prepared under section 41(1) of the Act must do all of the following …".

[150] In statutory interpretation, it is presumed that legislative provisions which apply to the same set of facts are intended to work together to form an internally consistent and rational framework. Applying that presumption to the present case, it is assumed that the legislature intended the relevant provisions of the *Act* and the *Regulation* to work together in regulating the remediation of contaminated sites.

[151] Accordingly, if the Panel's reading of the legislation is correct, then section 49(2)(a) cannot apply unless there has been an order. It must therefore be read as a requirement to provide a detailed site investigation report to the Director, if one had been ordered. If no order was been made, this provision would not apply.

[152] Therefore, the Panel finds that a detailed site investigation and report was never ordered by the Director and that Morguard was under no obligation to produce a detailed site investigation.

[153] Furthermore, based on the wording of section 59(3), which refers back to section 41(1) of the *Act*, Morguard would not be required to submit a single report which, among other things, "interprets and evaluates data in a manner which clearly shows … (ii) specific areas, depths and degree of contamination, including migration which may have occurred to adjoin properties." This is not to say, however, that this information should not be provided. It is clear that the Director has the statutory authority to refuse an application if insufficient information is provided under section 53(3) and 56 of the *Act*.

[154] In the event that the Panel is incorrect in its analysis and finding that a detailed site investigation was not required, the Panel finds it need not be a single report.

[155] Having considered all of the particular requirements of section 59 of the *Regulation*, the Panel concludes that, while it may well be that a single document, clearly titled "Detailed Site Investigation Report" is preferable, there is no legal requirement for a single document.

[156] Given the information before the Director, the Panel finds that the substantive requirements for a detailed site investigation report set out in section 59 of the *Regulation* were met. The Panel also finds that, to reject the certificate of compliance applications on the basis that there is not a single report, would be to reject the application for a technical breach, as opposed to one of substance.

[157] In summary, the Panel finds that no detailed site investigation report was ordered under section 41(1) of the *Act*, and therefore, no report was required under section 49(2)(a) of the *Regulation*. Alternatively, if a detailed site investigation report was required, Morguard complied with the substance of the requirements. This should not be read, however, to be a finding that Morguard's investigation fully identified the areas, depths and degrees of contamination. This is the ultimate issue to be decided in this appeal.

5. What is the relevance of the NEXT data to Morguard's applications for certificates of compliance? In particular, is this data a basis to refuse Morguard's applications?

[158] To understand the evidence on this issue, a description of the contaminants of concern is helpful.

[159] Conor Pacific Environmental Technologies Inc., at page 7 of its August 2000 report titled "*Stage II Detailed Site Investigation Rhonda's One-Hour Drycleaner*", describes PCE and TCE as follows:

> Chlorinated solvents such as PCE and trichloroethylene (TCE) have been commonly used as solvents since the 1960's. PCE is principally used in the dry cleaning/textile production industry. TCE is commonly used in metal cleaning/degreasing operations. Both PCE and TCE are classified as "dense non-aqueous phase liquids" (DNAPLs) or "sinkers",

> because they have a higher density or specific gravity than water. As a result of their higher density, these DNAPLs can vertically migrate or "sink" into the subsurface to depths well below the water table. Both PCE and TCE have relatively low solubilities in water, however, these solubilities are generally orders of magnitude greater than most groundwater criteria or standards ….
>
> The distribution of DNAPLs within the subsurface is controlled by both subsurface topography (gravity flow) and groundwater flow (advective transport). …. The direction and speed of downward DNAPL movement is related to the pressures exerted on it by the air or water in the pore spaces. Although within the vadose (unsaturated) zone this pressure is relatively consistent, within the saturated zone the mobility of a DNAPL is generally negatively correlated with grain size. Therefore, a DNAPL will move more easily through sand than silt. As a result, the vertical migration of a DNAPL can be temporarily redirected horizontally when in contact with a denser lithology (e.g., encountering a silt layer upon passing through a sand layer).
>
> ….
>
> … While, advective transport would follow anticipated groundwater flow paths, the initial distribution of DNAPL would follow gravity flow mechanisms. Therefore, the distribution of both free-phase DNAPLs and resultant dissolved-phase may not be along anticipated flow paths as determined by simple groundwater.

[160] To evaluate the relevance of the NEXT results to the applications for certificate of compliance, it is also important to review the investigations and remediation that took place on the Morguard Site and Management Area in more detail.

Investigations

1) September 30, 1994, *Phase 1 Environmental Site Assessment* by AGRA Earth and Environmental Ltd.

[161] This investigation was sought to "identify potential environmental liabilities" at the site that may have resulted from previous land uses or construction. It consisted of a historical search and records review, a walk-through site inspection and interviews. This report does not contain information relevant to this appeal.

2) November 8, 1999, *Stage I and II Preliminary Site Investigation* by Jacques Whitford Environmental Ltd.

[162] This investigation was into potential and actual environmental contamination associated with various businesses on the property. The investigation considered contamination by asbestos, hydrocarbons, as well as PCE from the on-site dry cleaner.

[163] Nine boreholes (six were completed as monitoring wells) were advanced on site to depths ranging from 3.8 mbg to 12.2 mbg. Evidence of subsurface solvent contamination was identified in groundwater in BH9 (Borehole 9), located at the rear (north) of the dry cleaner, at a depth of 7.6 mbg. The report recommended that a detailed site investigation be conducted to delineate the extent of contamination identified in groundwater in the area of the dry cleaner.

3) December 9, 1999, *Supplemental Site Investigation* by Jacques Whitford Environmental Ltd.

[164] Three boreholes, completed as monitoring wells, were advanced downgradient of BH9 to assess the extent of the identified groundwater contamination. One borehole was advanced inside the dry cleaner. As a result of the drilling program, an underground storage tank was discovered in the vicinity of a floor drain. It had a strong PCE odour.

[165] Groundwater samples from two of the boreholes exceeded the PCE aquatic life standard; one was below the standard. Measurable concentrations of PCE were present in the soil samples from two boreholes, but were below the commercial land use standard.

[166] The report recommended additional investigation work to delineate the extent of PCE groundwater impacts, particularly "to ensure that impacts do not spread offsite".

4) August 2000, *Stage II Detailed Site Investigation, Rhonda's One-Hour Dry-cleaning* by Conor Pacific Environmental Technologies Inc.

[167] The primary objective of this detailed site investigation was to delineate the extent of the PCE soil and groundwater contamination around Rhonda's that was identified by Jacques Whitford Environmental Ltd.

[168] Field work was performed from March to May, 2000. Ten boreholes were advanced at strategic locations in the vicinity of Rhonda's to a maximum depth of 27 mbg. Four wells were completed with multilevel groundwater monitoring wells. Conor Pacific also monitored five wells previously installed by Jacques Whitford in 1999.

[169] Conor Pacific identified three distinct hydrostratigraphic units: a shallow perched zone (4-7 mbg), an intermediate variably saturated zone (9-13 mbg); and a deep saturated zone (15-18 mbg).

[170] No obvious confining unit was encountered, and no DNAPL was detected in the soil samples collected during its investigation.

[171] Conor Pacific's groundwater testing detected the maximum PCE concentrations in shallow wells at the north side of the building (behind Rhonda's). Within these wells, the highest PCE concentration observed was 33,000 µg/L (in a multilevel groundwater monitoring well - CMT1A). PCE concentrations in adjacent wells to the west and east, less than 5 metres away, also exceeded the standards and were 15,000 µg/L and 16,000 µg/L. Further away, PCE concentrations in

groundwater were observed to decline with distance. The maximum TCE concentrations corresponded to the wells with the highest PCE concentrations.

[172] Ten wells were screened at intermediate depths between 8 and 11 mbg. Groundwater was only detected in four of these multilevel wells. One well at the north side (BH10) showed PCE at 2,500 µg/L. PCE concentrations in applicable wells east of BH10 were all less than 1.5 µg/L; PCE concentrations in two wells north of BH10 were less than 0.3 µg/L. TCE concentrations in wells screened at intermediate depths were less than the 200 µg/L aquatic life standard for TCE.

[173] Six wells were screened at depths greater than 14 mbg. Stable and reliable groundwater was detected in four of these multilevel wells. Conor Pacific found that PCE concentrations in these wells were below the 1,100 µg/L standard, the highest being 1,000 µg/L in two of the wells (one to the north and one to the south of the drycleaner) building.

[174] The author's conclusions are summarized in the executive summary which states, in part, as follows:

> Although no DNAPL was detected in the soil samples collected during this investigation, pure phase DNAPL may also be present in shallow soils at approximately 4 to 7 m depth at the north side of the building. The presence of DNAPL may be suggested by concentrations of 33000 µg/L, 15000 µg/L and 16000 µg/L PCE in groundwater in shallow wells on the north side of the building. … A general rule of thumb is that any concentration greater than 1% of the solubility suggests that DNAPL may be present.
>
> The depth of DNAPL contamination is likely shallow as evidenced by the high concentrations in the shallow perched water zone, and much lower concentrations within the underlying soils and groundwater. Given the coarse nature of the sediments in the shallow perched zone, it is probable that any DNAPL that is present is perched by layers of cemented sediments. The heterogeneous nature of the sediments and potential multiple source zones suggests that it is likely that there are several small pools of DNAPL at different elevations and locations within the subsurface. If DNAPL is present beneath the dry cleaner it would continue to act as a source zone until removed or exhausted.
>
> A plume of groundwater impacted with chlorinated solvents has been identified to extend from the primary zone to 10 m beyond the building footprint to the north and south. This plume of impacted groundwater appears limited to the shallow perched water zone, at less than 7 m bgs. …. The presence of PCE in the groundwater in the intermittently saturated, intermediate unit and the deep saturated aquifer suggests that the perched aquifer is underlain by a leaky aquitard. A second groundwater plume has been identified in the deep saturated zone but not at levels exceeding the CSR AW standard. (p. iii-iv)

[175] This report recommended further pilot tests and water level data and the need to confirm initial records of groundwater flow directions.

5) July 2001, *Supplementary Site Investigation, Rhonda's One-Hour Dry-Cleaning* by Gartner Lee Limited.

[176] Gartner Lee Limited ("Gartner Lee") provided this report to the Ministry, along with a request for an external review and a determination of contaminated site under the then *Waste Management Act*. It included an application form, a site profile, a site information summary along with the supplemental site investigation report. The objective of its environmental investigation was to confirm and provide additional information and interpretation on the extent of the impact of chlorinated solvents on groundwater previously identified in the vicinity of Rhonda's.

[177] Gartner Lee advised that investigations to date were limited due to the presence of the building and utilities to the north. Further, it did not perform subsurface soil analysis as part of its study, but noted that previous investigations of over 30 soil samples from various locations around the dry cleaners did not detect PCE above the commercial land use standard.

[178] Gartner Lee did take new groundwater samples of some of the previously drilled wells. Of note, it found a PCE concentration of 17,000 µg/L in CMT1A, the shallow well that Conor Pacific found the PCE concentration of 33,000 µg/L in March of 2000. Thus, the concentration in 2001 was still well above the aquatic life standard of 1,100 µg/L.

[179] It also found a higher concentration of chlorinated solvents in well CMT3 than was previously found in 2000. This well was located close to the Safeway property (0.22 metres south of the property).

[180] Although three other monitoring ports showed dissolved concentrations of PCE and TCE below the aquatic standards, Gartner Lee found that the results "suggest that there may be a northward component of groundwater flow or northward diffusion of PCE." It then states that although current and historical groundwater level data indicates that the direction of groundwater flow is predominantly west, subsurface stratigraphy or the presence of underground utility lines in a west/east alignment on the north side of the plaza may have influenced groundwater movement.

[181] This report provided recommendations for future work and investigation.

6) May 2002, *Remediation Plan* by Gartner Lee

[182] Gartner Lee prepared a remediation plan in May 2002. In this plan, Gartner Lee repeats many of the previous investigative results. It states regarding groundwater: "The high concentrations of dissolved PCE observed in the shallow aquifer (4-7 mbg) on the north side of the Dry Cleaner suggest that DNAPL is potentially present." (p. 19)

[183] It selected excavation as the preferred remedial strategy to address impacted soil and groundwater, with additional delineation of deep subsurface contamination to follow, i.e., a "deep borehole drilling program" with soil and groundwater testing. It proposed the excavation of approximately 4,200 tonnes of contaminated soil (2,000 m^3) associated with the potential shallow source area below the building, but not to remove potential groundwater impacts at depths

greater than 7 metres. It proposed that any residual impacts be addressed through a risk assessment.

[184] The approval in principle for this plan was granted on October 25, 2002.

7) November 21 2003, *Memorandum: Supplemental Investigations*

[185] Additional site investigations that were proposed in the remediation plan were completed in 2003, and contained in a November 2003 letter to the Ministry from Gartner Lee. Of note, three monitoring wells were installed north of the Morguard Site, on Safeway's property to a depth of 6.5 mbg. Groundwater in all three monitoring wells had PCE concentrations in excess of the aquatic life standard (31,000 µg/L; 24,000 µg/L and 4,600 µg/L).

[186] One soil sample at 7.3 mbg, located just north of the northern property line on Safeway's property, contained 25 ug/g of PCE, in excess of the commercial land use standard of 5 ug/g.

[187] Thus, the extent of the impact area was expanded. Written notice was given to Safeway.

8) 2004, *Request for Amendment to Approval in Principle*, Earth Tech Canada Inc.

[188] In 2004, an amendment was requested on behalf of Morguard by Earth Tech Canada Inc. ("Earth Tech"). Earth Tech notes that the excavation proposed in the remediation plan was to a depth of 7 metres. However, based on new site information, the authors provide a revised remediation plan for an approval in principle which excavates a larger area and proposes in-situ chemical oxidation to address the residual contamination remaining after excavation.

[189] In a letter dated October 4th, Earth Tech confirmed the previous plan to conduct further testing and sampling, including two deep monitoring wells, and to then provide final design parameters for the in-situ remediation of residual contamination. The chemical oxidation to address residual contamination would involve the injection of potassium permanganate ($KMnO_4$) into the subsurface.

[190] On January 25, 2005, the Ministry approved the "Amended Approval in Principle" to implement remediation in accordance with the revised request.

Additional Investigations and Remediation

[191] Supplemental investigations by AECOM of the site hydrology identified a sand and gravel unit located at approximately 23-27 mbg. It determined that groundwater flow in this deeper, saturated zone is directed to the west towards Stoney Creek, following surface topography. It also states that a "localized north to northwest groundwater flow component was found at the former Rhonda's area, however the regional flow is to the west".

[192] AECOM conducted the remediation from March 2005 to November 2008. It also performed additional monitoring. Additional boreholes and monitoring wells were advanced, some to a depth of 30 mbg.

[193] The results of the remediation are set out in AECOM's "Confirmation of Remediation Report" dated October 2009.

9) October 2009, *Confirmation of Remediation Report* by AECOM

[194] The site conditions encountered, remediation performed, and monitoring results described by AECOM in this report are of particular relevance to this issue in the appeal.

Site Geology

[195] AECOM states that the site geology that it encountered during its investigation and remediation was as follows:

> The site geology is highly stratified with moderate correlation between boreholes. The ground surface of the Site was formerly asphalt and concrete to a depth of approximately 0.2 m. Below the surface layer to a maximum depth of 1.5 m bgs [below surface grade] is a sand and gravel fill. Extending below the fill unit is a minor (1 to 2 m thick) silt layer underlain primarily by sand to silty sand glacial till to about 10 m below surface grade. This sand to silty sand glacial till unit thins to smaller thicknesses further west of the source area. Variable silty sand to sandy silt intervals are present within the till to depths of 23 metres. Particle sizes decrease to more silt than sand in this range.
>
> At approximately 23-27 m bgs, a coarse sand and gravel (with silt) unit is encountered. Sand layers occur above and below the coarse sand and gravel layer. A silt and clay unit underlies the sand and gravel to the maximum depths of the boreholes (ranging from 25 to 30 m bgs). Detailed cross sections initially developed in 2002 and further updated by Earth Tech are presented in Figures 3A and 3B. Encountered geology during the remediation investigation and remediation are consistent with the conceptual hydrogeological representation as previously outlined in the AiP. (p. 5)

Site Hydrology

[196] The report confirms the presence of three hydrostratigraphic units on the site: a shallow continuous perched aquifer (4-7 metres); a deeper, intermediate partially unsaturated zone (9-20 metres); and a deeper aquifer (at approximately 23-27 metres).

[197] The report states as follows regarding the relationship between the hydrology and the PCE:

> Based upon the overall Site geology and from information from previous hydrogeologic investigations, a strong vertical gradient is deemed evident between the shallow, intermediate and deep aquifers. Variances in saturated units and the non-correlation between high and low permeable layers in the Site till indicate that the downward migration of water (and constituents of concern) was the primary migration pathway of contaminants of concern. (p. 6)

Zones investigated & remediated

[198] Due to the stratified and distinct hydrostratigraphic zones of the site, two different remediation approaches were integrated to reach cleanup. As stated earlier in this decision, the site was divided vertically into two different units:

- Zone A – from ground surface to 11 mbg
- Zone B – from 11 mbg to approximately 30 mbg, and includes the saturated sand and gravel unit identified at 23 to 27 mbg

1) Zone A

[199] According to AECOM's Confirmation of Remediation Report, Rhonda's portion of the building was demolished in May 2005 to prepare for the remediation works and allow access to install test pits and wells within the building footprint. The underground storage tank was removed from beneath Rhonda's.

[200] In accordance with the Remediation Plan, and approval in principle (as amended), additional investigations, including test pitting and soil sampling were undertaken for further contaminant delineation. In particular:

- May 31-June 1, 2005: 8 test pits dug to maximum depth of 6 metres near the underground storage tank location.
- June 6 – June 27, 2005: 11 monitoring wells were advanced in the shallow stratigraphic region of the site to a depth of 7.5 mbg, 8 of which were advanced on the footprint of the building, and 3 were advanced in the Management Area (MW 05-1, MW05-7, MW05-8). Groundwater sampling of the 11 new wells and 3 existing wells in the shallow stratigraphic region were sampled.

[201] The results of the subsurface investigation in the shallow stratigraphic region were analyzed to determine the extent of the contamination and the excavation limits. Only one soil exceedance (commercial land use standards) was observed during its 2005 testing. It was found in a test pit located just south of Rhonda's floor drain (1,400 µg/g at 1.0 mbg). However, AECOM also identified a 25 µg/g exceedance that was previously reported at MW03-1, located in the Management Area at a depth of 7.3 mbg.

[202] Groundwater samples from four of the new monitoring wells with screen intervals from 1.4 to 7.5 mbg exceeded the aquatic life standards for PCE (BH12, MW05-4, MW05-9, MW05-10). They were primarily in the location of the building footprint, and one to the south of the building footprint (BH12). The highest concentration of 9,400 µg/L was found in MW05-4, near the location of Rhonda's floor drain. Prior investigations had identified exceedances in a number of other monitoring wells: in 2000, a high of 33,000 µg/L in CMT1A; in 2003, a high of 31,000 µg/L in MW03-1.

[203] Soil excavation commenced on July 4, 2005. The soil was excavated to address dissolved phase groundwater impacts within the variably saturated subsurface less than 11 mbg, by removing associated contaminated soils and by pumping groundwater from the excavation. The excavated area was 1,318 m^2 and

7.5 metres to 11 metres deep. Approximately 17,309 tonnes of soil was removed off site. A total of 141,000 litres of water was removed during excavation. It was analyzed for volatile organic compounds ("VOCs").

[204] Following the excavation and backfilling, the report notes that the former perched groundwater present above finer-grained materials "is now absent, therefore these perched conditions are no longer evident."

[205] Confirmatory sampling was done at three monitoring well locations installed within, and just below, the bottom elevation of the excavation cavity near the source area of impacts. There were no PCE exceedances. The only results of note came from a deeper well (MW06-38), installed below the excavation at 16.5 metres. This well showed PCE at 1,100 µg/L in both October 2006 and January 2007. In July of 2007, the level was 430 µg/L.

[206] Confirmatory samples were not obtained in the Management Area due to access issues. However, AECOM notes that such confirmation "are deemed not required", among other reasons, because the groundwater flow at this level is to the southwest, and the samples taken at the property line indicated clean samples.

[207] AECOM concluded that groundwater quality appears to be below the aquatic life standards for PCE in the shallow Zone A and, "No further remediation of this zone is required." (p. 21)

[208] It should be noted that a quality assurance/control program for the sampling was performed, including confirmatory samples and blind duplicates, and travel blanks.

2) Zone B

[209] AECOM explains that, following the excavation in Zone A, the plan was to address "remaining deep residual groundwater impacts through a series of investigations and in-situ chemical oxidation (ISCO)".

[210] AECOM found that a deep continuous saturated zone exists at a depth greater than 23 mbg in a distinct sand and gravel unit. Investigative drilling and groundwater sampling was conducted to determine the degree and nature of the contamination in this unit.

[211] The investigation into Zone B was as follows. A total of 9 monitoring wells were advanced to depths of approximately 23.8 to 30 mbg between June 7 and November 29, 2005 to determine the depth extent of contamination and, subsequently, to delineate the deep groundwater impacts.

[212] From November 29 to December 1, 2005, drilling of 3 monitoring wells within the sand and gravel unit was conducted to be used as injection and observation wells.

[213] PCE groundwater impacts were present in the continuous sand and gravel aquifer between 23 to 28 mbg in four groundwater samples collected prior to chemical injections: one well northwest of Rhonda's had a PCE concentration of 1,100 µg/L; one well in the building footprint had a concentration of 1,200 µg/L; and one well located southwest of Rhonda's showed PCE at 1, 500 µg/L on two

occasions (June and July 2005). The remaining six wells showed PCE below aquatic life standards.

Chemical injections

[214] The chemical oxidant selected was potassium permanganate. Potassium permanganate is a technology used for expedited remediation of chlorinated solvents. Permanganate is an oxidizer that has an affinity for organic compounds with double carbon bonds such as PCE. The double carbon bonds are broken spontaneously and the intermediate products are unstable and convert to carbon dioxide. According to the information provided in support of the approval in principle amendment by Earth Tech, permanganate oxidation of PCE is "rapid with a reaction half life reportedly of a few minutes"(p. 9, October 4, 2004 letter). It may last in the subsurface for several months to over a year. In this document, Earth Tech states that the permanganate materials would be controlled mostly by groundwater flow directions and velocity.

[215] In its Confirmation of Remediation Report, AECOM explained the chemical injection approach that it used to address the deep groundwater and potential residual contaminants in intermediate soils was as follows:

- In-situ chemical oxidation of groundwater between 23-30 mbg using 8 vertical injection points;
- In-situ chemical oxidation of groundwater at the source zone through 2 horizontal perforated pipes (11 mbg) present at the deepest section of the excavation ; and
- Injection of water within the previously treated area in 9 deep monitoring wells to enhance the potassium permanganate radius of influence and clean the sand pack around the well.

[216] The approach was to "immediately address the impacts in deep groundwater and to address over a longer term, any residual impacts that may be present between the base of the excavation and deep groundwater." (p. 30).

[217] A total of four ISCO injections were performed over the course of the remediation beginning on December 6, 2005 and ending on November 16, 2006.

[218] In addition, a volume of water was later injected from June 2 and 4, 2008 into nine wells, and on June 29, 2009 into one well (MW06-35).

[219] A total of 3,025 kilograms of potassium permanganate was injected into the deep zone. A total of 91,650 liters of solution was injected.

[220] During and after the injection, observation wells were monitored to determine the application radius of the potassium permanganate. In addition, groundwater was collected and sampled in selected monitoring wells prior to, during and after the chemical injections to provide a trend analysis of the VOC impacts within the remaining deep groundwater.

Monitoring post remediation

[221] After the initial ISCO event, further drilling was completed. Seven monitoring wells were advanced in the sand and gravel unit to depths of approximately 27 mbg in October 2006 "to determine the complete extents of deep groundwater impacts and to verify the completion of the chemical injection events." An additional monitoring well was installed at 16.5 mbg to confirm the completion of remediation in the intermediate saturated zone.

[222] From July 23 to 27, 2007, a fourth drilling event took place to install seven monitoring wells within the deep sand and gravel unit.

Results

[223] AECOM states that, previously, PCE was found in the deep sand and gravel aquifer at concentrations up to 3,000 µg/L. Based upon the sampling results obtained in September 2008 and November 2008 (over two years after injections occurred), PCE concentrations were mainly reduced to levels below the aquatic life standard of 1,100 µg/L, except for well MW06-35 (located on the north side of the Morguard Site at 24.7-27.7 mbg) where a concentration of 1,200 µg/L remained as of the time of the report (2009). A small treatment of this well occurred in November 2008 to address this exceedance. This was confirmed in later results provided to the Board. Other than this exceedance, each of the remaining confirmatory groundwater samples had PCE parameters below the aquatic life standard.

[224] After two years from the last chemical injection, AECOM states that $KMnO_4$ was not present in any of the injection wells or monitoring wells. No residual chemical was found in the deep aquifer.

[225] The laboratory results from the soil investigation of Zone B indicated that "there was no VOC soil impacts in any of the submitted soil samples."

[226] AECOM recommended that the Ministry issue a certificate of compliance to Morguard for the Morguard Site.

10) August 25, 2010, *Amendment to Confirmation of Remediation Report* by AECOM

[227] In this amendment letter, AECOM advises that on June 21-22, 2010, four boreholes converted to monitoring wells, and three soil vapor points, were completed in the Management Area within Zone A to 7.5 mbg (MW10-49, MW10-50, MW10-51).

[228] One borehole was completed within Zone B of the Morguard Site to 27 mbg (MW10-52). [This was to replace MW06-35, the well with the previous exceedance still showing. AECOM suspected that there was residual chemical trapped in the sand pack, so the well was replaced.] Soil samples were collected every 0.6 metres throughout the soil column. Soil vapour points were also installed.

[229] AECOM advises that testing on June 29, 2010 of five wells, including the new ones, produced results below the aquatic life standards for PCE.

[230] This document supported an application for a certificate of compliance for the Management Area.

11) May 3, 2011, *Comments by AECOM in response to questions from GCL regarding the Confirmation of Remediation Report*

[231] In April 2011, AECOM undertook a further round of confirmatory sampling within Zone B wells. In this letter, AECOM answered certain questions from the soil vapour checklist. It also included data from the groundwater testing in 2011. Seventeen wells were tested at various locations on the Morguard Site, between the depths of 14.5 and 30 mbg, with the majority of the tests between 23 and 28 mbg. These results show groundwater tested well below the PCE aquatic life standard.

THE NEXT DATA

[232] Although draft certificates of compliance were initially distributed for both the Morguard Site and Management Area following an external review by GCL, the certificates were not approved after the Ministry was provided with the August 22, 2011 letter from NEXT regarding the three exceedances found in Zone C on the Safeway property. The important text from this letter was quoted earlier in this decision. There was no detail or data provided with this letter in relation to the exceedances. However, the Board has been provided with that detail and data in the NEXT DSI.

[233] NEXT was commissioned by Safeway to conduct a detailed site investigation of its property to address a particular portion of Safeway's property where "there is known migration" of volatile organic compound contamination, particularly PCE and TCE, from Rhonda's.

[234] On July 11, 2012, NEXT produced a "*Detailed Site Investigation to Address Migrated PCE & TCE Contamination; 580, 584& 590 Clarke Road, Coquitlam, BC*", previously defined in this decision as the NEXT DSI.

[235] In the NEXT DSI, it identified the stratigraphy and the hydrogeology of the Safeway property as follows:

Stratigraphy encountered.

- 3m – 23m below grade: a sand (till) layer with varying degrees of silt, gravel, cobbles and boulders. Silt and sand lenses were identified at varying depths throughout this layer;
- 23m -30 m below grade: sand and gravel layer or loose sand layer; and
- 30m – 38 m below grade: an upper silt layer (with some sand regions), followed by a silty sand layer. Beneath this was sand and silt to a maximum investigation depth of 45 m.

Groundwater Zones – hydrogeology

[236] Investigations identified several zones:

- 0-3mbg: upper aquitard;
- 3-10 (+) mbg: upper perched zone;
- 10-17 (+) mbg: upper intermediate zone (partially saturated);
- 17 (+) to 23 mbg: lower intermediate zone (unsaturated);
- 23 to 29 mbg: deep drinking water aquifer ("DDWA"); and,
- >29 mbg: basal aquitard.

[237] NEXT focused on the DDWA where PCE and TCE contamination was identified, and the underlying basal aquitard, to vertically delineate the contamination.

[238] From its groundwater level surveys completed on select wells screened in the DDWA, it identified three levels of basal aquitard (upper, intermediate and lower). It states that the upper and intermediate basal aquitard flow directions were identified to flow towards the northwest. Insufficient groundwater level data was collected to determine the groundwater flow direction in the lower basal aquitard. The groundwater levels screened in the different basal aquifer depths indicated a vertical gradient.

[239] Under the heading "Objectives of the Report", NEXT states that the objective of the DSI was to verify, characterize and delineate the horizontal and vertical extent of soil, groundwater and/or vapour contamination on the Safeway property in the area of contamination where there is "known migration" of volatile organic compounds from Rhonda's, in preparation for a risk assessment.

[240] NEXT notes that, currently, the ground water is not used for drinking water at the Safeway property or for the surrounding area.

Explanation for extent and distribution of sampling locations

[241] NEXT drilled three series or boreholes (BH800-BH1000) on the Safeway property, totaling 17 locations, with the majority completed as "nested monitoring wells". Twenty groundwater monitoring wells were also installed.

[242] Two groundwater monitoring wells (BH805 and BH806) were screened in the DDWA to assess the extent of the PCE and TCE contamination.

[243] The BH900 series drilling program was completed for two separate investigations. As part of this DSI, six pairs of nested groundwater monitoring wells (BH901, 902, 905–908, 913-918) were installed. They were screened in the upper and intermediate basal aquitard.

[244] The 1000 series drilling program was used to vertically and coarsely horizontally delineate the PCE and TCE contamination. Three locations (BH1001, 1002 and 1004) were advanced down into the lower basal aquitard.

Groundwater Analytical Results

[245] Because the more restrictive drinking water standard of 30 µg/L (as of February 2011) had to be met for Safeway's certificate of compliance, NEXT tested

for exceedances of this level as well as the aquatic life standard of 1,100 µg/L (in force prior to February 2011). It found PCE and TCE contaminated groundwater above drinking water standards in 17 well locations on the property.

[246] However, for the purposes of this appeal, only the results showing exceedances of the aquatic life standard (1,100 µg/L) are relevant and are set out below. The three wells showing exceedances are as follows:

Borehole / Monitoring Well	**Date sample collected**	**Depth collected**	**Results** (µg/L)
AW standard			PCE: 1,100 ug/L
BH908	Aug 16/2011 (Aug 16/2011- BH958 = duplicate for BH908)	30.5-32.0 m 30.5-32.0 m	***PCE= 1,700*** ***PCE= 1,500*** *(RPD or max spread 13%)*
	Sept 21/2011	30.5-32.0 m	***PCE= 1,600***
BH906	Aug 12/2011	32.0-33.5 m	***PCE= 1,800***
	Aug 17/2011	32.0-33.5 m	PCE= 890
	Sept 21/2011	32.0-33.5 m	***PCE= 2,000***
BH914	Aug 22/2011	27.7-29.3 m	***PCE = 1,100***
	Sept 21/2011	27.7-29.3 m	***PCE = 1,400***

[247] No TCE aquatic life exceedances were identified during NEXT's testing.

NEXT's discussion of results

[248] NEXT states at page 20:

> The leak [from Rhonda's] resulted in groundwater contaminated with PCE, and its breakdown product TCE, which has migrated from … [the Morguard Site] to the Site [the Safeway property]. The migration pathway is greatly influenced by the complex stratigraphy and hydrostratigraphic units ….
>
> The contamination has cascaded downward due to a strong vertical gradient through the upper perched and upper intermediate zones, comprising till with silt lenses imbedded in sand. Contamination in these two zones was limited to the Source [the Morguard Site] and on-Site OMA [the Management Area] and was remediated to numeric

> standards. However, NEXT has confirmed that historic contamination from the upper perched and upper intermediate zones has migrated downward, passed through the unsaturated lower intermediate zone, and reached the DDWA at approximately 23 and beyond into the basal aquitard.
>
> The highest contaminant concentrations were generally observed at the bottom of the DDWA and the top of the basal aquitard. PCE and TCE are Dense Non-Aqueous Phase Liquids ("DNAPLs"), which means they are heavier than water and would be expected to sink to the bottom of the DDWA. The PCE and TCE will then pool in the top basal aquitard layers where there is a transition from the permeable sand and gravel of the DDWA to the much less permeable silt of the basal aquitard. The DDWA groundwater flow then caused the associated contamination plume to migrate to the north onto the Site beyond the OMA [the Management Area], and then off the Site to the north and west. The low permeable aquitard limited the vertical contamination migration, and PCE/TCE concentrations were below applicable standards in the lower basal aquitard.

[249] In regard to Safeway's remediation of its property, NEXT notes that, because the PCE and TCE soil and groundwater contamination begins so deep, in-situ remediation would be cost prohibitive given the vast lateral extent of the contamination. However, "because the contamination is so deep and the vapours already meet numeric standards, the PCE and PCE soil and groundwater contamination would be amenable to risk assessment." (p. 20).

EXPERT REBUTTAL EVIDENCE

[250] During the appeal, various expert reports were submitted in response to the NEXT DSI.

[251] Morguard submitted the September 14, 2012 Core6 Report in response.

[252] Safeway then tendered an October 15, 2012 NEXT Rebuttal to the Core6 Report.

[253] The Director submitted an October 22, 2012 GCL Rebuttal in response to both of the above reports.

[254] Finally, Morguard submitted a November 13, 2012 Core6 Rebuttal in response to the October 15th NEXT Rebuttal and GCL's October 22nd rebuttal.

Core6 Report (also known as the "North Report")

[255] Reg North performed the review of the NEXT DSI for Core6, and was the sole author of the opinions contained in the report. Mr. North is a professional engineer and geoscientist in BC, with graduate courses in physical and contaminant hydrogeology. He is a partner and senior hydrogeologist at Core6.

[256] Mr. North has 23 years of environmental consulting experience focused on contaminated sites investigation and remediation on sites located in Canada and

the United States. He has been a member of the roster of Contaminated Sites Approved Professionals ("CSAP") in BC since 2000. He also performs external reviews for the CSAP and is a member of the Science Advisory Board for contaminated sites in BC, which focuses on research and science directly applicable to contaminated sites.

[257] Mr. North's expertise to provide the opinions in the Core6 report were not challenged.

[258] Of relevance to this issue, Mr. North considered the following question:

> What is the source of the PCE detected by NEXT in the groundwater on the Safeway property outside of the Management Area, and does it imply anything about the current conditions of the Morguard Site and the Management Area?

[259] Mr. North accepted AECOM's description of the site geology and accepted AECOM's description of three hydrostratigraphic units beneath the Morguard Site and the Management Area to the depth investigated – roughly 30 metres below ground.

[260] He also considered the site investigation and remediation. In response to challenges to the vertical delineation, particularly in and beyond Zone B, Mr. North points out that, at the time of the groundwater investigations, the Ministry's Technical Guidance 8 ("TG 8"), which addresses the vertical delineation of groundwater, was not required. TG 8 came into effect on February 1, 2011.

[261] Prior to TG 8, the Ministry did not require wells to be screened within the silt/clay aquitard for vertical delineation purposes; it only required lateral delineation of groundwater within the sand aquifer. The standard practice before TG 8 was for detailed site investigations to include lateral delineation of dissolved plumes. However, given that the contamination identified at this site was a DNAPL, well screens would have been placed deeper (i.e., down to the contact of the sand unit and silt/clay unit). This is because if DNAPL did manage to migrate vertically down to the sand aquifer, the underlying silt/clay unit would act as a barrier, preventing continued downward vertical movement.

[262] As such, Mr. North states that AECOM was not required to investigate the lower aquitard at the time that its work was completed. In any event, he notes that one of the Zone B wells was partially screened in the lower aquitard, and the PCE concentrations prior to, and subsequent to, the in-situ groundwater treatment was lower than the aquatic water standard.

[263] Regarding NEXT's research, its August 22, 2011 letter and its DSI, Mr. North disagreed with certain conclusions as follows:

DNAPL

[264] NEXT states in its August 2011 letter that DNAPL remains at the Morguard Site. Mr. North states that this is not supported by the totality of the data available for the Morguard Site and the Safeway property (including the Management Area). He notes:

- Measurable DNAPL has never been identified in any of the monitoring wells installed at the Morguard Site or the Management Area, or in the monitoring wells installed by NEXT.
- Even where the highest PCE concentrations were detected at the Morguard Site prior to remediation, which were in the shallow groundwater and displayed PCE concentrations on the order of 20,000 to 30,000 + µg/L, DNAPL was not observed or measured.
- NEXT relies solely on Protocol 16 as evidence of DNAPL at the site. Protocol 16 is considered a "rule of thumb" which is theoretical and highly conservative. It states that if solvents are present at concentrations greater than 1% of their theoretical solubility this suggests that DNAPL is present in the area. For PCE, this would be in the range of 1,500 to 2,000 µg/L, a theoretical value that is conservative by design. The concentrations reported at depth at the Morguard Site prior to remediation were, on average, less than 2,000 µg/L. Based upon this, "it is my opinion that DNAPL was not and is not present in the deep aquifer or basal aquitard at the Morguard Site or the Management Area." (p. 17)
- If DNAPL was present and pooling on the surface of a low permeability silt/clay unit at the base of the deep aquifer, it should have been measured in one of the wells screened at or below the interface of these two units, but it was not.

[265] Therefore, in Mr. North's opinion, identifying DNAPL solely based on groundwater concentrations greater than 1% of their theoretical solubility for DNAPLs, including PCE, is "inappropriate without additional evidence of the presence of DNAPL, especially when the groundwater concentrations marginally exceed this threshold value. This was the situation in the deep aquifer at the Morguard Site prior to remediation."

[266] Consequently, Mr. North opines that DNAPL was not present in the deep aquifer or the basal aquitard at the Morguard Site and the Management Area even prior to remediation.

Groundwater exceedances

[267] Mr. North notes that the three locations where exceedances of the aquatic life standards were found are roughly 10 metres, 25 metres and 75 metres onto the Safeway property, north of the Morguard Site.

[268] The first location is in the NEXT monitoring well BH908 (10 metres). This well is screened from 30.5 to 32 mbg, which would place it in the lower (basal) aquitard. It was constructed in the same borehole as BH907, that is screened from 33.6 to 35.1 mbg.

[269] The PCE concentration reported in BH908 was 1,700 µg/L on August 16, 2011 and 1,600 µg/L on September 21, 2011. In the same borehole (BH907) the PCE concentration was 130 µg/L on August 16, 2011. Mr. North notes that AECOM's well (MW10-53) is located only about 5 metres from this NEXT well nest (BH907/BH908) and was screened in the deep aquifer. The PCE concentration

reported in this well by AECOM was 600 µg/L in July 2010, which is below the aquatic life standard (August 25, 2010 AECOM report).

[270] At the second location (BH906), situated approximately 25 metres onto the Safeway property, NEXT detected PCE above the aquatic life standards in one of four monitoring wells present at this location. The one well that had PCE detected above the aquatic life standard was screened in the upper portion of the basal aquitard. The two wells screened in the deep aquifer above the basal aquitard and in the intermediate portion of the basal aquitard contained PCE, but at concentrations less that the aquatic life standard. Additionally, a duplicate sample from that well contained PCE at a concentration less than the aquatic life standard. In fact, Mr. North notes that the concentration in the sample was 1,800 µg/L and in the duplicate was 890 µg/L, "which is a significant discrepancy and is outside the quality control limits used in our industry thereby making the results questionable". An additional sample was collected roughly one month later in this well (September 21) that indicated PCE at 2,000 µg/L.

[271] At the third exceedance location (BH914), located 75 metres northwest on the Safeway property, PCE was detected in the groundwater above the aquatic life standard. Mr. North notes that three wells were located in this location, two of which were screened in the deep aquifer, and one in the basal aquitard. The PCE concentration in the basal aquitard (BH913) was less than the aquatic life standard. Only BH914, screened in the deep aquifer above, exceeded the aquatic standard and also only during one of two sampling events performed at the well. The other well (07-1D) screened in the deep aquifer, not only contained PCE at a concentration less than the aquatic life standard, but it was at a much lower concentration (i.e., 17 µg/L) than BH914 (1,100 & 1,400 µg/L). Although NEXT's well screens do not overlap completely, Mr. North states that they are still close together, with the bottom of the well screen at 07-1D being near the top of the well screen at BH914.

[272] Mr. North states as follows regarding the exceedance at BH914:

> In my opinion, given the distance that the plume would have travelled to this location if sourced from the Morguard Site the concentrations in the two wells in the deep aquifer should be relatively the same, which they are not. Consequently, it is difficult to believe these results. In addition, if PCE concentrations in the groundwater are as NEXT suggests in well BH914 it is odd that the PCE concentration in well BH301, which is screened in the deep aquifer and is located only 40 metres onto the Safeway property, was low (i.e., 190 µg/L) (Figure 7 & Table 2 NEXT DSI report). I would have expected that given the expected spreading of the plume as it travels, the PCE concentration would have been higher in well BH301 given the much higher concentration observed at a well located a further 35 metres onto the Safeway property.
>
> It is also important to recognize that PCE was detected above the CSR AW [aquatic life] standards at only three locations out of 17 sampled and analyzed by NEXT at the Safeway property …. (p. 16)

Relevance of NEXT investigation and data

[273] NEXT concludes that the Morguard Site remains a source and has not been properly remediated, based on the three exceedances found. Mr. North disagrees for the following reasons:

- Soil contamination was only identified in a localized shallow area at the Morguard Site. This area and a much larger region surrounding this location was excavated to a depth of between 7.5 and 11 mbg and backfilled with clean soil. Soil contamination has also never been detected in the deep soils at the Morguard Site even though numerous boreholes were drilled and soil samples analyzed.
- There has been no free phase contamination observed in the soils and no measurable DNAPL ever detected in any of the monitoring wells installed at the Morguard Site and the Management Area.
- If residual PCE remained in the basal aquitard at the Morguard Site or the Management Area, the PCE would move further downward into the aquitard and would not move laterally onto the Safeway property nor move upward into the deep aquifer and then laterally to the Safeway property.
- Groundwater concentrations remaining at the Morguard Site are less than the concentrations reported by NEXT at the Safeway property and, therefore, could not constitute an ongoing source.
- Extensive remediation was completed at the Morguard Site that eliminated the source. Also, without an ongoing "active" release like continued underground storage tank leakage, it is unreasonable to conclude that a dissolved plume continues to migrate from the Morguard Site onto the Safeway property.
- If a significant source remained at the Morguard Site, elevated concentrations of dissolved PCE would have been detected in one of the many wells that were present at the Morguard Site subsequent to remediation. PCE concentrations in each of these wells did not even exceed the aquatic life standards.
- All of the confirmatory data suggests that the Morguard Site and the Management Area have been remediated to numeric standards. The exceedances of the aquatic life standards in the groundwater at only three locations at the Safeway property should not put into question the quality and comprehensiveness of AECOM's remediation of the Morguard Site and the Management Area.
- The dissolved PCE in the groundwater detected at the Safeway property was likely present prior to remediation of the Morguard Site, since chlorinated solvents can be persistent and consequently their continued presence at the Safeway property does not indicate an ongoing source at the Morguard Site, nor does it in any way impugn the quality of the remediation at the Morguard Site and the Management Area.

[274] Mr. North concludes that the remedial work and confirmatory sampling performed by AECOM on the two sites met the applicable technical requirements, and were remediated in accordance with the applicable numeric standards applicable, whether those standards were from 2009, 2010 or January 31, 2011.

[275] He states at page 18: "There is no source of chlorinated solvent contamination remaining at the Morguard Site and the Management Area and a further investigation of these areas is not necessary."

NEXT Rebuttal

[276] NEXT was retained to review the opinions in the Core6 Report and answer eleven questions posed by legal counsel. The letter of opinion "the NEXT Rebuttal" was jointly authored by Dr. Harm P. Gross, President of NEXT, and Chuck Jochems, P. Eng. Dr. Gross has a doctorate in philosophy from University of Oxford. His H.B.Sc. is in ecology and chemistry from Queen's University in 1972.

[277] Mr. Jochems is a professional engineer, with over 19 years of experience conducting, managing and reviewing environmental site assessments and detailed site investigations and has past experience with a dry cleaning operation.

[278] These authors conclude that Core6 erred as follows.

[279] Core6 is incorrect in saying that Protocol 16 is used to "suggest" when DNAPL is present. NEXT says that Protocol 16 "defines" when DNAPL is present and the Ministry considers it legally enforceable.

[280] Further, Core6's conclusion that, if present, DNAPL should have been measured in one of the wells screened at, or below, the interface of the low permeability silt/clay unit and the deep aquifer is "overly optimistic". They cite J.F. Pankow and J.A. Cherry in a 1996 book titled "Dense Chlorinated Solvents and other DNAPLs in Groundwater", a page 414:

> Of course, if DNAPL free product has not been detected in wells, it cannot be concluded that DNAPL is not present in the aquifer.

[281] NEXT refers to enhanced DNAPL detection methods, such as adding dye to the soil/water shake test, and points out that there is no evidence that any of the available DNAPL detection methods were used by AECOM.

[282] Further, NEXT disagrees with Mr. North's conclusion that groundwater in Zone B was properly remediated, as it was not investigated in Zone B of the Management Area either before, or after, remediation. It states that confirmation would have required installation of un-injected monitoring wells between and around the injection wells in both horizontal and vertical directions to measure the decline in contaminant concentrations. NEXT states that Morguard did not investigate the prospect of contamination in Zone B in the Management Area (only on the Morguard Site), and there are no monitoring wells in Zone B of the Management Area. MW10-53 is not down-gradient from the Management Area, it is "cross-gradient".

[283] In addition, lateral delineation did not occur to the north on the Management Area on the Safeway property, as alleged. Contrary to Mr. North's conclusion,

there was 2006 (more recent) data that PCE had increased in the location that Mr. North relied upon to say the deep plume was properly delineated.

[284] In the absence of vertical delineation, Morguard would not have identified higher contaminant concentrations at depths beyond those investigated by AECOM. Their figure 1 (attachment E) suggests that contaminant concentrations increase with depth in the DDWA and into the upper basal aquitard, before decreasing with depth in the basal aquitard.

[285] NEXT states that there is no data to support Mr. North's speculation on the presence or absence of DNAPL prior to remediation of the Morguard Site and Management Area. Of the 25 groundwater monitoring wells installed on the Morguard Site in the DDWA, only well MW05-28 was screened across the interface between the aquifer and the aquitard. No monitoring wells were installed by AECOM in the basal aquitard on the Morguard Site or Management Area. Therefore, there is no data.

[286] The existence of residual aquatic life standards contamination in the Morguard upper basal aquitard is anticipated for the following reasons:

- Contamination above aquatic life standard was identified in the DDWA;
- There is a vertical gradient from the DDWA downwards to the upper basal aquitard, as confirmed by Core6, which would have caused contaminants to migrate into the upper basal aquitard;
- Morguard did not drill or otherwise investigate the upper basal aquitard, and, therefore, is unaware of the presence of contamination in the upper basal aquitard;
- As NEXT identified contamination above aquatic life standard in the Safeway upper basal aquitard, down-gradient of the Morguard property, it stands to reason that similar or higher concentrations exist in the Morguard upper basal aquitard (which has not yet been investigated) where concentrations in the overlying DDWA would be higher (see figure 1);
- For the upper basal aquitard, Core6 disputes lateral migration without taking into consideration the short travel distance from some of the highest groundwater concentrations on the Morguard Site, which were immediately adjacent to the property line with Safeway; and
- At a number of un-injected wells, Morguard relied on suspect data to conclude contamination had abated. At these wells (MW05-5, MW06-34), contaminant concentrations repeatedly fluctuated below and above aquatic life standards, yet the wells were considered remediated when the most recent samples were below aquatic life standards. There were no second confirmatory samples to confirm concentrations had not again fluctuated above aquatic life standards.

[287] NEXT also alleges that Core6 makes a number of errors in recounting and interpreting information reported by NEXT:

- Core6's disbelief in the actual data presupposes that the uniform conditions and assumptions of a theoretical computer model, wherein concentration gradients and contaminant distribution are generated under idealized flow, can be applied to field conditions. They cannot. "This perspective ignores the difficult-to-predict influence of unseen subsurface geological and hydrogeological heterogeneity on contaminant distribution under actual field conditions." (p. 11)
- Regarding the critique of the second location results, NEXT says that this ignores the confirmatory sample one month later at the same well which showed 2,000 µg/L – which is above the standards. NEXT also notes that Morguard's results showed greater variability. Even though these results show greater variability than NEXT's results, it apparently caused no concern for Core6.
- Regarding Core6's conclusions on the difference in concentration between well 07-1D (17 µg/L) and BH914 (1,100 and 1,400 µg/L) – stating that he would have expected them to be relatively the same - NEXT states:

  > Core6 is incorrect in assuming that proximity of wells provides a basis for comparable dissolved concentrations. The wells are sufficiently spaced vertically to sample water from different portions of the Drinking Water aquifer. In fact, the wells were installed at different depths for that specific purpose. Other wells installed in the Drinking Water aquifer at similar proximity, but different depths (e.g., BH407 and BH805) also revealed a pattern whereby the shallower (sand and gravel) well had lower dissolved concentrations than the deeper (sand) well. Therefore, the data recorded by NEXT reveal a consistent pattern of concentrations. (p. 12)

- Regarding BH914, Core6 is incorrect that this well screened in the deep aquifer only exceeded the AW standard during one of 2 sampling events. One was 1,100 µg/L and one was 1,400 µg/L. The 1,100 is equal to the standard and therefore requires remediation. The other two wells sampled at this location were screened above and below BH914, and therefore it comes as no surprise that they revealed concentrations below the CSR AW standard, while BH914 revealed concentrations above the AW standard. Even when wells are at the same location, different depths may well show different contaminant concentrations.
- Core6 is also incorrect in anticipating a clear pattern of increasing similarity in dissolved concentrations with travel distance from the source of contamination. This is based upon an assumption of uniformity of flow and mixing –which is unrealistic. Similar or greater disparity in dissolved concentrations was reported between nearby wells at the Morguard property, where the influence of geological and hydrogeological heterogeneity would have less impact than after travel of 75 m or more.
- Finally, NEXT states that:

  > Stratigraphy and flow conditions in the subsurface are much too heterogeneous to allow a simplistic expectation that widely spaced

> wells (approximately 30 metres from BH914 to BH301) with differing positions relative to the contaminant flow path should have concentrations more similar than 190 µg/L and 1,100/1,400 µg/L. A distance of 40 metres is not a trivial separation of BH301 from the Morguard Site. (p. 13)

[288] Regarding Core6's conclusion that dissolved PCE in the groundwater on Safeway property was likely present prior to remediation, and continuing presence does not indicate an ongoing source at the Morguard Site, NEXT states at page 14:

> The dissolved PCE contamination on the Safeway property was likely present, at least in part, prior to remediation of the Morguard Site. Its presence does not in itself indicate an ongoing source on the Morguard Site. However, it does indicate that an ongoing source on the Morguard Site would migrate onto Safeway property.

GCL Rebuttal

[289] The Director tendered the GCL Rebuttal. It was authored by Reidar Zapf-Gilje, Ph.D, P.Eng. Mr. Zapf-Gilje has 30 years of experience in environmental assessments, contaminated site investigation and remediation, and human health and ecological risk assessments and management. He is one of only four professionals with the designation as Approved Professionals for both numerical standard-based submissions and risk-based submission. He has completed Approved Professional reviews for over 50 sites. Mr. Zapf-Gilje holds a Ph.D., in environmental and water resource engineering from the University of British Columbia (1985). He holds an M.A.Sc., in environmental engineering from the University of British Columbia (1979) and holds a B.Eng., in civil engineering from McGill University (1977). Mr. Zapf-Gilje is a member and the former chair of the Contaminated Site Approved Professionals Society, BC.

[290] The GCL Rebuttal addresses the Core6 conclusion that PCE contamination on the Morguard Site and contamination that migrated off site have been adequately investigated and remediated to meet the requirements of the *Act* and *Regulation* so as to qualify for a certificate of compliance.

[291] GCL provided "supporting information" which reflects the nature and challenges when investigating and remediating chlorinated solvent contamination in soil and groundwater, and which he relies upon to render the opinions in this rebuttal report. Some of this information is summarized below:

> Unpredictable migration: PCE is a DNAPL that, when released to the subsurface, will migrate along multiple pathways in a tortuous manner, which is sometimes referred to as a dendritic form due to its resemblance to the branches of a tree. The specific migration pathways are governed by the bedding structure of the porous medium, and are largely unpredictable due to heterogeneity and anisotropy of the soil. In horizontally bedded media, such as at the site, significant lateral spreading can be expected, including in directions not coincident with the direction of groundwater flow.

"Trapping" of DNAPL: Migrating PCE will leave behind residual DNAPL in the form of disconnected blobs and ganglia of chlorinated solvent which are held by capillary force in the pore spaces of the soil. Residual DNAPL is strongly held by capillary forces and is not readily mobilized and detectable in monitoring wells.

Limited "Lifespan" of Residual DNAPL: Residual blobs and ganglia in the unsaturated zone are exposed to air and water, allowing for both vapourization into the air phase and dissolution into infiltrating water and subsequent volatilization from the water phase. Because the vapour pressure of PCE is relatively high, the residual DNAPL PCE in the unsaturated zone can be depleted over 5-10 years in relatively warm and dry climates and deep unsaturated zones. This will not eliminate the presence of the vapour phase, absorbed phase and aqueous phase contamination in the unsaturated zone, but can lead to an absence of DNAPL and enhanced conditions for long term natural attenuation of the remaining phases of contamination.

DNAPL 1% rule: This is used because the probability of encountering DNAPL during drilling is relatively small. This rule is "indirect evidence of DNAPL presence". It is used because of the unpredictable and tortuous nature of its migration and the depletion that occurs over time. The majority of porous media within the release zone will not contain DNAPL. Plus, if release was limited and the unsaturated zone thick, then pools of DNAPL may be absent as the PCE could be trapped in pore spaces as residual DNAPL.

Dissolved PCE concentrations in plume: "Both residual DNAPL and DNAPL pools will dissolve into groundwater through the unsaturated and saturated zones, forming aqueous phase plumes. The sporadic presence of DNAPL can cause significant spatial variability in terms of dissolved concentrations in the plumes.

Uncertainty: Given the unique and challenging aspects associated with PCE contamination, there are always uncertainty associated with the interpretation of site investigation and confirmation of remediation data.

[292] From the information reviewed, GCL concludes that the Morguard Site is the likely source of the PCE contamination found on the Safeway property. It also states that the new data from NEXT indicates that the contamination has migrated further off site than predicted and, therefore, that part of the contamination had not been adequately investigated and remediated.

[293] GCL agrees with Core6 that PCE contamination at the Safeway property was likely present prior to remediation of the Morguard Site, as this contamination would likely have migrated from the Morguard Site in the past.

[294] GCL states that PCE contamination migrates slowly in the unsaturated and saturated zones of porous media. Based on the gradient and hydraulic conductivity used in the NEXT DSI (Appendix B), GCL opines that groundwater in the deep aquifer would take in the order of two years to flow from the source on the Morguard Site to the location of the wells BH07-1D and BH914 (approx 75 metres). Dissolved PCE contamination would flow more slowly and attenuate along the flow

path due to dispersion and biodegradation. Travel time for PCE would be 10 times slower (i.e., 20 years). PCE concentration in those wells would be 10-30 times lower than at the source, based on literature.

[295] As Rhonda's operated from 1960s-2005, GCL estimates that PCE contamination may have been present on the Morguard Site for several decades, stating that this is consistent with the estimate of dissolved PCE plume in the deep aquifer having taken in the order of 20 years to reach BH07-1D and BH914.

Horizontal Delineation of contamination

[296] GCL notes that there were no groundwater monitoring wells below 11 metres within the Management Area. Based on the new information, it is likely that the PCE contamination migrated in the deep aquifer through the Management Area and beyond. However, DNAPL may have flowed northwards by gravity on sloping fine grained soil strata found at shallower depths according to the NEXT conceptual model. GCL states that further investigation is needed to confirm conditions within the Management Area.

Vertical Delineation

[297] GCL states that, under some circumstances, vertical delineation with depth has been inferred based on the presence of a confined layer of sufficient thickness and low hydraulic conductivity. TG 6 provides a definition of what is considered to be sufficient confining layer for the purpose of protecting underlying aquifers from vertical migration of contamination from overlying aquifers. The stratum has to be at least 5 metres thick and have a bulk hydraulic conductivity of less than 1x10-7 m/s.

[298] Core6 said that AECOM followed common practice at the time by relying on the interpretation that the aquitard presented the vertical limit of the contamination. GCL says professional judgment with respect to the vertical limit of groundwater contamination has been made in lieu of direct sampling at some sites; however, in Mr. Zapf-Gilje's opinion, this would only have been scientifically defensible if the underlying confining soil/bedrock stratum at least met the recommendation provided in TG 6. He states, "It is unclear if the aquitard at the Morguard Site and the Safeway property met these criteria, as the top few metres of the aquitard appear to be varied and stratified. Furthermore, the overall thickness and hydraulic conductivity of the aquitard were not determined." (p. 11)

[299] Although Core6 concluded that, based on the investigations, DNAPL pools are not likely present at the Morguard Site, GCL states that this may not be true, but admits that it is difficult to ascertain.

[300] Based upon the new information, GCL concludes that, for the Management Area, deep groundwater contamination is likely present as the deep dissolved groundwater plume found by NEXT likely originated from the Morguard Site and flowed through the Management Area and onto the Safeway property. Whether this deep groundwater contamination is present in the Management Area should have been confirmed through additional investigation in response to the new information.

[301] For the Morguard Site, Mr. Zapf-Gilje's previous review was based on the 2009 Confirmation of Remediation Report. From his review of the Confirmation of Remediation Report he identified some issues that were addressed by AECOM. In particular, AECOM resampled monitoring wells to confirm that sufficient time had elapsed between chemical oxidant addition and monitoring; and soil vapour sampling in the Management Area. GCL then states:

> The additional work confirmed that the applicable numerical standards had been met for the Morguard Site. For the Management Area, TCE in soil vapour was found to exceed the ambient air standard for a scenario with underground parking. The risk assessment undertaken confirmed that the risk was found to be acceptable. Based on the confirmation of remediation results in the original confirmation report (2009) and the two confirmation Addenda (2010, and 2011 [the latter is the May 3, 2011 letter referred to earlier in this decision]), I concluded that it was likely that remediation had been completed to numerical standards for the Morguard Site and to risk-based standards for the Management Area. (p. 13)

[302] Mr. Zapf-Gilje then concludes that the additional contamination found by NEXT is "a result of contamination migration over several years or decades, and therefore reflects pre-remediation conditions at the Site." He then concludes that his earlier conclusion that the Morguard Site was adequately remediated was still reasonable "as the confirmation sampling followed standard practice". However, given the new information, he believes that it is "prudent" to perform additional sampling on the Morguard Site to confirm site conditions.

CORE6 Rebuttal

[303] Mr. North notes that neither NEXT nor GCL discuss in any detail "the extensive excavation and removal of soil and groundwater to depths ranging from approximately 7 to 11 metres below grade, the collection and treatment of a large amount of groundwater during the soil excavation and the intensive in-situ groundwater treatment program that removed the source from the Morguard Site and the Management Area. It was only after the extensive excavation program that AECOM completed the in-situ groundwater treatment.

Vertical Delineation

[304] Mr. North disagrees with the NEXT and GCL experts regarding vertical delineation. He says that TG 8 and TG 6 both came into effect on February 1, 2011, after the certificate of compliance applications were submitted. Prior to that time, he states that it "was common practice and considered reasonable and appropriate not to continue to vertically delineate groundwater contamination beyond an aquitard or confining layer." He concludes that AECOM exercised professional judgment in not continuing to sample in that aquitard and beyond: "In my opinion, this was reasonable in all the circumstances and the groundwater was properly vertically delineated in accordance with the standard of the day (i.e. prior to TG6 and TG8)."

[305] Mr. North also notes that NEXT's DSI shows the basal aquitard as approximately 15 metres thick, which is substantially thicker than the 5 metres specified in TG 6.

[306] In addition, Mr. North notes that roughly half of the well screen of MW05-28 was in the upper portion of the basal aquitard and located directly below the former suspected source of contamination. The data obtained from this well, in his opinion, indicates that it is unlikely that groundwater contamination is present in the basal aquitard at the Morguard Site or the Management Area (results were 400 µg/L in 2008 and 270 µg/L in April 2011).

Horizontal delineation

[307] Mr. North states that his opinion on horizontal delineation was not based on the groundwater flow. North says that his opinion was based on the fact that, prior to remediation in the deep aquifer, AECOM identified only two wells that exceeded the aquatic life standards, that there were four wells between these two wells and the northern property line of the Morguard Site, and the PCE concentration in these four wells, was less than the aquatic life standards. Therefore, the contamination in the deep aquifer was delineated to the north towards the Safeway property.

[308] Mr. North further opines that:

> … if there was any deep groundwater contamination present in the past in the Management Area it would no longer be present as demonstrated by the lack of contamination in offsite well MW10-53 (27 m deep). Although it is not located within the Management Area, this well is located roughly 5 m to the west and approximately 7 m onto the Safeway property, which is close to the distance of 10 m that the Managements Area extends onto the Safeway property. The fact that this well is not contaminated (600 µg/L), in my opinion, indicates that the deep groundwater in the Management Area is also not contaminated. (p. 5)

[309] Mr. North explains the variation pre and post treatment in the two deep wells installed on the northern end of the Morguard Site, near the Management Area. He says that "it is not surprising" that the contaminant concentrations in 2006 in certain monitoring wells rose temporarily since an objective of the groundwater treatment process is to induce circulation and mixing of the groundwater with the chemical oxidant in the area of the injection wells to spread the influence of the treatment chemical. If the contamination extended marginally beyond the wells referenced by NEXT this contamination would have been treated and reduced to concentrations below the applicable aquatic life standard as was observed on the Morguard Site.

[310] Mr. North believes that MW10-53 is an indication that the groundwater quality in the Management Area is not contaminated. Results show it below aquatic life standards and the treatment completed on the Morguard Site would have dealt with groundwater contamination, if present, just down-gradient or to the north of the Morguard Site. Further, "since the groundwater at the Morguard Site has been

remediated, there is no opportunity for contaminated groundwater to re-contaminate the Management Area."

[311] In his opinion, it is also notable that the three exceedances found by NEXT were the only exceedances found in the course of its entire DSI for the Safeway property.

[312] In his view, the nature and level of investigation and delineation work undertaken by AECOM was appropriate and reasonable, and the discovery of three minor, isolated exceedances outside the area for which the certificates of compliance were being sought in these particular circumstances and given the totality of the available data, ought not to have put into question the adequacy of the detailed site investigation.

[313] He states that these matters are inherently complicated and difficult: the investigative standards are not ones of perfection.

DNAPL (presence and movement)

[314] Mr. North does not disagree with GCL's description regarding DNAPL movement and attenuation. He remains of the view that DNAPL was never present at depth (i.e., Zone B) at the Morguard Site or the Management Area.

[315] He also remains of the view that Protocol 16 provides a regulatory definition of when it may be present, but it is not a scientific definition that is applicable to all sites irrespective of actual data obtained. Neither NEXT nor GCL discuss the specific conditions outlined in Protocol 16 under which DNAPL is considered mobile (when the concentration exceeds 10% of the theoretical solubility of the compound). Mr. North says that, at the Morguard Site and the Management Area, and the rest of the Safeway property, the only location where the groundwater PCE concentrations exceeded 10% of its theoretical solubility was in the shallow perched groundwater in the area of the former underground storage tank at the Morguard Site (prior to remedial excavation).

[316] NEXT's theory is that DNAPL migrated downward, entered the deep aquifer (Zone B), pooled and spread onto the Safeway property. However, at no time was PCE detected in groundwater in Zone B at the Morguard Site, the Management Area or the Safeway property at concentrations exceeding 10% of its theoretical solubility limit (i.e., 15,000 µg/L).

[317] In Mr. North's opinion, the dissolved PCE concentrations observed at the Safeway property that were greater than the 1% theoretical solubility of PCE do not represent the location where DNAPL was present. This would suggest that DNAPL would have migrated over 25 metres onto the Safeway property. As indicated by GCL, thousands of litres of DNAPL can be immobilized from a volume of soil measuring 20 x 20 x 20 metres. Mr. North states:

> For DNAPL to migrate more than 25 metres onto the Safeway property and to depths of over 30 metres to reach the basal aquitard would require a release on the order of tens of thousands of litres. This supports my previous opinion that the reported concentrations of PCE

> on the Safeway property are reflective of historic dissolved phase PCE which migrated prior to the remediation. (p. 10)

[318] Mr. North concludes that the remediation of the deep aquifer was successfully completed and confirmatory groundwater samples collected and analyzed up to five years after the remediation was completed. In his opinion, "it is unreasonable, from a scientific perspective, for NEXT to continue to hypothesize that groundwater contamination will suddenly appear after this period of time and after the extensive and well documented remediation program conducted by AECOM."

THE PARTIES' ARGUMENTS

Submissions of Safeway

[319] Safeway relies on the exceedances detected by NEXT to support the Director's decision. The basis for Safeway's interest in the certificate of compliance decision is succinctly set out at paragraphs 20 - 22 of its submissions:

> …. Simply put, if the PCE contamination now known to exist in the DDWA below the Safeway Site is static, then it is NEXT's opinion that this contamination is suitable for risk assessment. However, if there is a continuing source of PCE contamination from the Morguard Site flowing on to the Safeway Site, then Safeway will be obliged to address the possibility of future monitoring and perhaps remediation of the groundwater and the soil. ….
>
> The possibility that there remains a source of contamination on the Morguard Site and therefore the risk that Safeway will be exposed to uncertain future liability and cost is a matter of concern to Safeway. Safeway has no mechanism to ensure that the Morguard Site does not pose a risk of recontamination and no mechanism to otherwise treat or remove contamination on the Morguard Site. If the Morguard Site remains contaminated with DNAPL, and if there is a risk of recontamination of the Safeway Site, only Morguard can take the necessary steps to resolve the problem.
>
> It is only this question; whether there remains on the Morguard Site PCE contamination within the DDWA that concerns Safeway with respect to this appeal.

[320] Safeway submits that the discovery of PCE contamination by NEXT on Safeway's property indicates that it is possible, if not probable, that PCE contamination above the applicable standards is present within the DDWA below the Morguard Site and the Management Area.

[321] Safeway submits that Morguard cannot adequately address the presence of the PCE in the deep drinking water aquifer because it did not drill and sample deeply enough into the deep drinking water aquifer or upper basal aquitard (Zone C) to determine if PCE contamination remains. Safeway does not say that it has

proven that PCE in excess of prescribed standards exists. Rather, Safeway submits that the following evidence supports the proposition that further testing is required:

a) .... Vertical delineation through the DDWA was not undertaken by Morguard. Of the 25 groundwater monitoring wells installed by Morguard on the Morguard Site into the DDWA only one was screened across the interface between the DDWA and the aquitard. Further, there were no monitoring wells in the basal aquitard on the Morguard Site or the Management Area. In light of NEXT's discovery of PCE contamination at DNAPL levels in the DDWA and the basal aquitard, there is no evidence available before the Board upon which it can be determined conclusively that there is, or is not, PCE contamination above the requisite standards in that zone on the Morguard Site.

b) NEXT concludes that it is probable that there remains an unremediated source of PCE contamination on the Morguard Site and the risk of future recontamination remains.

c) NEXT further concludes that it anticipates residual contamination in the upper basal aquitard ("UBA") on the Morguard Site for several reasons:

    1. Contamination above AW [aquatic life standards] was identified in the DDWA;
    2. There is vertical gradient from the DDWA downwards to the UBA, as confirmed by CORE6, which would have caused contaminations to migrate to the UBA;
    3. Morguard did not drill or otherwise investigate the UBA and therefore is unaware of the presence of contamination in the UBA; and
    4. As NEXT identified contamination above applicable standards in the Safeway UBA, downgradient of the Morguard Site, it stands to reason that similar or higher concentrations exist in the Morguard UBA (which has not yet been investigated) where concentrations in the overlying DDWA would be higher.

[322] Based on this information, Safeway maintains that the "true facts" will only be known if Morguard undertakes further testing and delineation.

[323] Safeway submits that if PCE contamination in excess of the applicable standards exists, Morguard was not then, and is not now, entitled to certificates of compliance.

[324] Safeway states that it has offered to undertake the required testing at its own expense; however it has received no response to its offer. Safeway submits that Morguard's failure to respond to this offer constitutes a refusal to permit such testing. It also states that Morguard's refusal to permit additional testing on the Morguard Site "speaks volumes" to its confidence in its own testing and delineation efforts. For these reasons, Safeway argues that the NEXT data was relevant to Morguard's applications; moreover, the applications were correctly refused on this basis.

Submissions of the Director

[325] The Director submits that the NEXT data is relevant to her consideration of the applications. Further, no certificate of compliance should be issued for the Morguard Site or the Management Area, in whole or in part, because NEXT's data suggests that the investigation of the Morguard Site was not carried out to a degree that would satisfy the *Act* or the *Regulation*.

[326] The Director notes that Morguard's investigation and remediation was limited to Zone A and Zone B within the Morguard Site and the Management Area because, at the time, AECOM assumed that the silt layer below the base of Zone B would protect deeper geologic units, such as Zone C, from PCE contamination. However, following the Morguard remediation efforts, NEXT identified PCE contamination in the groundwater within the silts and sands of Zone C, "immediately outside of the OMA [the Management Area]".

[327] The NEXT data suggests that full delineation of the contamination had not been made by Morguard and that groundwater on Safeway's property, near the Management Area, remains contaminated above aquatic life standards. The NEXT data also raises the question as to whether adequate delineation of the contaminant plume was complete prior to remediation.

[328] The Director argues that the new information from NEXT "invalidates" AECOM's assumption that the reported silt aquitard at the base of Zone B would prevent the contaminant plume from spreading below Zone B. Because of AECOM's assumption, the deeper silts and sands in Zone C have not been investigated or remediated on either the Morguard Site or the Management Area.

[329] The Director submits that this information is important to her decision because, "If contamination remains in the silt unit underlying Zone B or silt and sand units corresponding to Zone C (referred to by NEXT as a basal aquitard) on the Morguard site that contamination could continue to migrate and impact the Safeway property and beyond."

[330] While she agrees with Core6 that the exceedances detected by NEXT were "minor", the Director submits that they are "exceedances nonetheless", and they do not meet the prescribed standards. In addition, because of the proximity of these exceedances to the Management Area, they cast doubt over the adequacy of the attempted remediation of the Morguard Site and the Management Area for which there was, and remains, a lack of data for the deeper geologic units underlying Zone B (Zone C). She also submits that "no alternative sources [of the PCE] are apparent".

[331] The Director acknowledges that there may be some disagreement over the standard practice and procedure used at the time of Morguard's certificate of compliance applications to vertically delineate contamination through a confining layer. However, she states that there is no doubt that Morguard's conclusions were based upon the assumption that the deep silt unit comprised a confining layer, and that assumption is "wrong".

[332] The Director notes that NEXT has confirmed and replicated its findings on the Safeway property, immediately adjacent to and downgradient from the Morguard

Site and the Management Area. Consequently, the Director submits that there is reasonably reliable evidence to believe that contamination may remain on the Morguard Site and the Management Area below the depths investigated and remediated by Morguard.

[333] Because a director must consider all known site conditions prevailing at the time of the exercise of a statutory power of decision, NEXT's information was relevant to her decision-making process and, given that Morguard has no sampling results from Zone C within the Management Area or the Morguard Site, the Director submits that she appropriately relied upon the NEXT data to refuse the applications. Morguard has not provided sufficient information to the Director to satisfy, in particular, section 49(2)(d) of the *Regulation* which requires information to ensure "the quality and performance of remediation measures on completion of remediation, including compliance with the remediation standards, criteria or conditions prescribed in this regulation".

[334] Although the Director acknowledges that draft certificates of compliance were issued on the basis of GCL's review, the Director points out that GCL did not take into account site investigation information that would include delineation of the contamination. GCL's July 13, 2011 report included the following statements:

> 3.0 SITE INVESTIGATIONS
>
> The Site investigation reports were not provided, since they had been previously reviewed as part of the AIP application.
>
> 4.0 CONTAMINATION
>
> The contamination has [been] delineated as described in the PSI and DSI. As these reports were not part of this review the following description is based on information provided in the COR [completion of remediation report].

[335] Thus, the Director argues that nothing turns on the draft certificates of compliance as they were based on incomplete information.

[336] The Director refers to the GCL opinion which concludes that the ability of the silt layer on the Morguard property to restrict the vertical movement of DNAPL into Zone C was unclear as "the top few metres of the aquitard appear to be varied and stratified" and that the "overall thickness and hydraulic conductivity of the aquitard were not determined". She states that this puts into question the professional opinion by AECOM that vertical delineation was achieved through the identification of the silt layer and indicates that further vertical delineation would be prudent to confirm site conditions. She also notes that GCL's opinion is that further investigation is warranted on the Management Area to confirm conditions in Zone C.

[337] Accordingly, the Director submits that the NEXT data is relevant and that further investigation of the Morguard property is warranted before a certificate of compliance can be issued. The contamination was not properly delineated.

Submissions of Morguard

[338] Morguard maintains that its remediation of the Morguard Site and the Management Area met all applicable numeric standards in place at the relevant time. Its testing established that there is no source of chlorinated solvent contamination remaining at the Morguard Site or the Management Area, and that further investigation or remediation of these areas is not necessary.

[339] Morguard submits that, if the Director had properly considered the PCE exceedances identified by NEXT in its August 22, 2011 letter, applying the same rigour as she must have done to Morguard's applications for certificates of compliance, as well as the correct legal principles and technical requirements governing the issuance of certificates of compliance, she would have concluded that NEXT's letter should have "no" impact whatsoever on Morguard's applications, and that the certificates would have been issued. Accordingly, Morguard argues that the exceedances identified by NEXT should not impugn Morguard's application.

[340] Morguard further argues that there is no authority in the *Act* or the *Regulation* that would allow the Director to refuse a certificate of compliance on the basis that offsite property (Safeway's property) may be contaminated.

[341] Morguard relies heavily on the Core6 Report which concludes that all of the confirmatory sampling data submitted to the Director for soil, groundwater and soil vapour at the Morguard Site and the Management Area met the applicable standards set out in the *Regulation.* Morguard points out that the Director failed to address this fact in her decision.

[342] In addition, Morguard submits that the characterization of the area at the Morguard Site below the deep drinking water aquifer as consisting of lower permeability soils of varying thicknesses or "silts and sands" is incorrect. Morguard maintains that there is no evidence of "sands" being present in this unit at the Morguard Site.

[343] Morguard submits that AECOM followed applicable investigation standards when it determined that the hydrogeological unit below the deep aquifer was a low permeability silt/clay aquitard. Morguard says that the GCL Rebuttal did not criticize the reasonableness of AECOM's assessment of the silt/clay aquitard as a confining layer, nor did GCL express concern with Morguard's vertical delineation work at the relevant time. GCL merely pointed out that the overall thickness and hydraulic conductivity of the silt/clay aquitard has not been confirmed in a manner *currently* required by the technical guidance documents TG 6 and TG 8. However, Morguard submits that when AECOM performed its vertical delineation work and submitted its applications for certificates of compliance, TG 6 and TG 8 were not in effect. They were effective on February 1, 2011.

[344] Morguard also argues that the Director is incorrect when she states that the silt/clay aquitard was never sampled, investigated or remediated. Morguard argues that in April 2008 and April 2011, the upper portion of the silt/clay aquitard was sampled and that no exceedances were found.

[345] Finally, Morguard argues that the three exceedances identified by NEXT were found in the static silt/sand aquitard, below the deep drinking water aquifer, and

not in it. Morguard therefore concludes that Safeway's only concern in this appeal is answered in full: the deep drinking water aquifer at the Morguard Site is clean.

[346] Morguard also submits that, even NEXT concludes that the "three exceedances were likely present, at least in part, prior to remediation of the Morguard Site" and that their presence "does not indicate an ongoing source at the Morguard Site".

[347] Consequently, Morguard maintains that both sites are fully remediated in accordance with the applicable numeric standards.

The Panel's Findings

[348] Certificates of compliance are issued under section 53 of the *Act*, the main portions of which are as follows:

53 (1) For the purposes of exercising powers and performing duties under this section, a director may rely on any information the director considers sufficient for the purpose, including, but not limited to, a preliminary site investigation, a detailed site investigation, a risk assessment, a remediation plan or a summary of site condition.

…

(3) A director, in accordance with the regulations, may issue a certificate of compliance with respect to remediation of a contaminated site if

(a) the contaminated site has been remediated in accordance with

(i) the numerical or risk based standards prescribed for the purposes of the definition of "contaminated site",

(ii) any orders under this Act,

(iii) any remediation plan approved by the director, and

(iv) any requirements imposed by the director

…

(6) A director may issue an approval in principle or a certificate of compliance for a part of a contaminated site.

[Emphasis added]

[349] Section 49(2)(d) of the *Regulation*, expands upon section 53(3)(a) of the *Act*, to require the Director to have before her, and consider, information regarding "(d) the quality and performance of remediation measures on completion of remediation, including compliance with the remediation standards, criteria or conditions prescribed in this regulation."

[350] Morguard applied for certificates of compliance for the Morguard Site and the Management Area. It is clear that its tests went to Zone B, but did not go into Zone C. This is because it determined that the silt/clay unit would act as a barrier to contamination.

[351] It is also clear that, even if there was not a requirement for Morguard to provide a detailed site investigation, it still had to provide sufficient information to the Director to satisfy her that the requirements in section 53 of the *Act* were met, which include establishing that the properties have been remediated. Morguard maintains that it has done so, and relies upon its expert evidence in support of that assertion.

[352] In addition to the information Morguard provided to the Director, the Panel finds that section 53(1) of the *Act* is also broad enough to allow the Director to consider the information provided by NEXT prior to making her decision. Section 53(1) provides that the Director may consider "any information the director considers sufficient for the purpose".

[353] As the NEXT data and submissions could impact these considerations, the Panel finds that they were a relevant consideration. This is further confirmed by the Director's overall objective as set out in section 56(2) of the *Act*:

> (2) When issuing an approval in principle or a certificate of compliance, a director must consider whether permanent solutions have been given preference to the maximum extent.

[354] The next question is, how relevant is this information to Morguard's applications? Put another way, what weight should be placed on this information in the context of the applications? Is there, as the Director asserts, "reasonably reliable evidence" to believe that contamination may remain on the Morguard Site and the Management Area below the depths investigated and remediated by Morguard (i.e., Zone C), such that the certificates of compliance should not be issued for all or part of the site?

[355] In its letter of August 22, 2011 to the Director, NEXT states:

> We conclude that dissolved PCE contamination persists on, and continues to migrate from Morguard REIT property onto Safeway property, both (a) at concentrations exceeding Protocol 16 DNAPL standards; and (b) at concentrations exceeding standards for protection of Aquatic Life ("AW"). We note that both of those standards were in effect and applicable to Morguard REIT when it made its COC [certificate of compliance] submission prior to February 1, 2011.
>
> …. It follows that Morguard REIT has not remediated either its own property or the OMA or other off-site Safeway property to meet Contaminated Sites Regulation standards for protection of aquatic life. Thus, it appears that the draft COC for the OMA, and presumably for Morguard REIT property, are incorrect and cannot be issued as presented. [Emphasis added]

[356] In summary, NEXT asserts that the exceedances found on its property indicate the PCE currently exists, and will continue to migrate, from the Morguard Site onto Safeway's property (a) in the form of DNAPL and (b) in excess of 1,100 µg/L.

[357] In the NEXT DSI, its theory is further explained, in part, as follows:

> The contamination has cascaded downward due to a strong vertical gradient through the upper perched and upper intermediate zones, comprising till with silt lenses imbedded in sand. Contamination in these two zones was limited to the Source [the Morguard Site] and on-Site OMA [the Management Area] and was remediated to numeric standards. However, NEXT has confirmed that historic contamination from the upper perched and upper intermediate zones has migrated downward, passed through the unsaturated lower intermediate zone, and reached the DDWA at approximately 23 and beyond into the basal aquitard.
>
> The highest contaminant concentrations were generally observed at the bottom of the DDWA and the top of the basal aquitard. PCE and TCE are Dense Non-Aqueous Phase Liquids ("DNAPLs"), which means they are heavier than water and would be expected to sink to the bottom of the DDWA. The PCE and TCE will then pool in the top basal aquitard layers where there is a transition from the permeable sand and gravel of the DDWA to the much less permeable silt of the basal aquitard. The DDWA groundwater flow then caused the associated contamination plume to migrate to the north onto the Site beyond the OMA [the Management Area], and then off the Site to the north and west. The low permeable aquitard limited the vertical contamination migration, and PCE/TCE concentrations were below applicable standards in the lower basal aquitard.

[358] There was significant disagreement in the expert reports on the presence of DNAPL at the Morguard Site based on Protocol 19, and specifically, disagreement over whether there is evidence of DNAPL in Zones B and C of the Morguard Site and Management Area. For the reasons set out below, the Panel finds the evidence of Core6 most persuasive.

[359] There is general agreement amongst the experts that drilling is not an effective way to detect the presence of DNAPL. This is why Protocol 19 was developed. As noted by GCL, "This rule is 'indirect evidence of DNAPL presence'. It is used because of the unpredictable and tortuous nature of its migration and the depletion that occurs over time." Protocol 19 states, in part:

> **DNAPL is considered present when any of the following occur at a site:**
>
> …
>
> c) Individual DNAPL substances are detected in water at concentrations exceeding 1% of their theoretical solubility limit.

[360] Section 3.2.2. reads:

> **When DNAPL is mobile**
>
> DNAPL is considered mobile when any of the following conditions occur at a site:
>
> …

e) Individual DNAPL substances are detected in water at concentrations exceeding 10% of their theoretical solubility limit.

[361] Mr. North explains in the Core6 Report that, in relation to the 1% theoretical solubility limit, for PCE this would be in the range of 1,500 to 2,000 µg/L. Based upon this, it was his opinion that "DNAPL was not and is not present in the deep aquifer or basal aquitard at the Morguard Site or the Management Area." He also opined that, if DNAPL was present and pooling on the surface of a low permeability silt/clay unit at the base of the deep aquifer, it should have been measured in one of the wells screened at or below the interface of these two units.

[362] The Panel notes that two groundwater samples taken from one well (MW05-6, located south of the building footprint) by AECOM in June and July of 2005, at a depth of 24.2 – 27.4 mbg, had a PCE concentration of 1,500 µg/L. However, this was the only well, in all of the sampling of this zone, with an exceedance in this range prior to remediation. The Panel also notes that, following remediation, the test results for this well were substantially below the aquatic life standard.

[363] In the Core6 Rebuttal, Mr. North also addressed the 10% theoretical solubility limit for determining when DNAPL is mobile. For PCE, he identifies this as 15,000 µg/L.

[364] Mr. North notes that neither NEXT nor GCL discussed the Protocol in relation to mobile DNAPL. He further notes that PCE was not detected in the groundwater in Zone B at the Morguard Site, the Management Area or the Safeway property at concentrations exceeding 15,000 µg/L. Therefore, there is no evidence to support a finding of mobile DNAPL within this zone.

[365] Mr. North acknowledges that, in the shallow perched groundwater near the underground storage tank beneath Rhonda's, the PCE concentration exceeded 10% of its theoretical solubility, thus suggesting that DNAPL was likely present and mobile in the shallow zone in the vicinity of the former underground storage tank. However, in his opinion,

> … the dissolved PCE concentrations observed at the Safeway property that were greater than the one percent theoretical solubility of PCE do not represent the location where DNAPL was present. This would suggest that DNAPL would have migrated over 25 m onto the Safeway property. As indicated by GCL in its report, thousands of litres of DNAPL can be immobilized from a volume of soil measuring 20 x 20 x 20 metres. For DNAPL to migrate more than 25 metres onto the Safeway property and to depths of over 30 metres to reach the basal aquitard would require a release on the order of tens of thousands of litres. This supports my previous opinion that the reported concentrations of PCE on the Safeway property are reflective of historic dissolved phase PCE which migrated prior to the remediation. (p. 10)

[366] This evidence was not contested and the Panel finds Mr. North's opinion compelling.

[367] The Panel finds that the one well sample in Zone B containing PCE at 1,500 µg/L is very little of evidence of DNAPL in that zone. Having said that, under Protocol 19, DNAPL "is considered present" when PCE is detected at this limit. Nevertheless, even if this was the case in June and July of 2005, the Panel finds that this PCE concentration is at the lowest end of the range for the PCE 1% theoretical solubility limit described by Mr. North, and that the silt/clay layer would have prevented the DNAPL from migrating into Zone C on the Morguard Site and Management Area, as discussed further below.

[368] Regarding NEXT's opinion that PCE contamination continues to persist on the Morguard Site and will continue to migrate to the Safeway property, the Panel has also carefully considered the evidence regarding the investigations, and the opinion evidence.

[369] Each party relied upon expert evidence in support of its respective position on the relevance of the NEXT data to the question of whether the contamination has been properly delineated and remediated at the Morguard Site and the Management Area.

[370] The Panel finds that the contamination on the Morguard site was properly delineated. The investigations early on identified that the PCE contamination was primarily in the shallow soils underlying the perched groundwater table. This is consistent with the evidence regarding PCE characteristics. For instance, in Conor Pacific's description of PCE and TCE, it observes:

> The direction and speed of downward DNAPL movement is related to the pressures exerted on it by the air or water in the pore spaces. Although within the vadose (unsaturated) zone this pressure is relatively consistent, within the saturated zone the mobility of a DNAPL is generally negatively correlated with grain size. Therefore, a DNAPL will move more easily through sand than silt. As a result, the vertical migration of a DNAPL can be temporarily redirected horizontally when in contact with a denser lithology (e.g., encountering a silt layer upon passing through a sand layer). [Emphasis added]

[371] Therefore, given that PCE is a "sinker", the PCE would likely move through the upper sand and gravel layer identified by both Morguard's consultants and NEXT, through the upper perched water table, and then meet the silt and sand layer, which would reasonably slow the vertical progress, and exert horizontal pressure on the contaminant. This may help to explain the high concentrations in Zone A. It also explains some of the spread found in Zone A, given GCL's evidence that "In horizontally bedded media, such as at the site, significant lateral spreading can be expected, including in directions not coincident with the direction of groundwater flow."

[372] In the various tests conducted over the years prior to remediation, very little soil contamination was detected on the Morguard Site (and Management Area) at the commercial land standard. Further, there were few exceedances in Zone B and/or the intermediate depths (as they were referred to in the earlier reports), and, of those found, they were at much lower levels than those detected in Zone A.

[373] In terms of groundwater, in 2000, Conor Pacific screened six wells at depths greater than 14 mbg. Four of these wells had stable and reliable groundwater, and of those four, the highest level of PCE was 1,000 µg/L.

[374] It appears that subsequent consultants took samples, but did not obtain results above the standard.

[375] In 2005, AECOM advanced nine monitoring wells prior to remediation to depths of 23.8 to 30 mbg. Two of the 30 mbg wells were on the north side of the building. The Panel notes that, of the samples taken at this depth, three exceeded the aquatic life standard (1,200 µg/L, 1,500 µg/L, and 1,100 µg/L). Only the 1,100 µg/L was on the north of the Morguard Site, at a depth of 24.2-27mbg. In subsequent years, a number of the wells showed an increase in PCE after chemical oxidation before declining to levels significantly below aquatic life standard.

[376] The fewer exceedances found in Zone B does not, of course, indicate that the contamination did not enter Zone C. However, the Panel does note that the 2005 exceedances found by AECOM in the wells at 30 mbg were 730 µg/L and 38 µg/L.

[377] It is also apparent from the various investigations since 1999 that the consultants were alert to the nature of PCE, i.e., that it is denser than water, the way it travels and the potential for off-site effects. Their investigations of the Morguard Site and the Management Area were conducted with this in mind. From their investigations, the various consultants were satisfied prior to remediation (between 2000 and 2005), that their investigations were deep enough and were delineating the contamination.

[378] Regarding Zone C, Morguard's consultants found a silt/clay confining layer at approximately 27 to 30 mbg. Therefore, Morguard's investigations of the soils, groundwater and contamination ended at this layer. NEXT found no such layer at the Safeway property. Can this layer be present on one property and not the other? The experts seem to agree that this could occur; there could be a confining layer at that depth on the Morguard Site and Management Area, and it could be further down on Safeway's property. NEXT acknowledges the stratigraphy and flow conditions in the subsurface can be "heterogeneous".

[379] In terms of testing below this layer, Core6 asserts, and GCL accepted, that professional judgment can be used to determine whether further sampling in an aquitard is necessary to meet the requirements of section 59 of the *Regulation*; specifically, the requirement to identify the specific depths and degree of contamination.

[380] The Panel accepts the professional judgment of Mr. North that the confining layer identified at between 27 and 30 mbg (approximately 100 feet), would have impeded the downward migration of the PCE. Mr. North opined that "if DNAPL did manage to migrate vertically down to the sand aquifer, the underlying silt/clay unit would act as a barrier, preventing continued downward vertical movement." This was his main rationale for concluding that AECOM was not required to investigate the lower aquitard at the time that its work was completed (pre 2011). In any event, Mr. North also observed that one of the Zone B wells was partially screened in the lower aquitard, and the PCE concentrations prior to, and subsequent to, the in-situ groundwater treatment was lower than the aquatic life standard.

[381] The Panel finds that, in the circumstances, Morguard properly delineated the contamination on its property. The Panel also finds that, based upon the AECOM Confirmation of Remediation Report and addendums, the contamination in the Management Area was delineated to an acceptable degree. As noted by Mr. North, "these matters are inherently complicated and difficult: the investigative standards are not ones of perfection."

[382] Further, the Panel notes that all of the experts appear to agree that the Morguard Site is the source of the PCE contamination found on the Safeway property. Assuming that the PCE migrated from the Morguard Site, and that Morguard was not required to investigate Zone C once it found the silt/clay layer, should it be required to do so now?

[383] In terms of the exceedances found by NEXT, the Panel finds that, while these exceedances are evidence that PCE contamination exists on the Safeway property, it is not evidence, as suggested by NEXT, of continuing contamination on the Morguard Site and the Management Area.

[384] In this regard, Mr. North opines that "The dissolved PCE in the groundwater detected at the Safeway property was likely present prior to remediation of the Morguard Site, since chlorinated solvents can be persistent and consequently their continued presence at the Safeway property does not indicate an ongoing source at the Morguard Site, nor does it in any way impugn the quality of the remediation at the Morguard Site and the Management Area."

[385] Although this logic is compelling, the Panel finds that the expert evidence of GCL is of even greater assistance. GCL was the most independent of the consultants, in that it was not retained by either of the most affected parties: Morguard or Safeway.

[386] GCL agreed with Core6 that PCE contamination at the Safeway property was likely present prior to remediation of the Morguard Site, as this contamination would likely have migrated from the Morguard Site in the past. After describing how PCE slowly migrates through unsaturated and saturated zones of porous media, and after considering the gradient and hydraulic conductivity used in the NEXT DSI, GCL opines that groundwater in the deep aquifer would take in the order of two years to flow from the source on the Morguard Site to the location of the further exceedance well (75 metres). He also opined that dissolved PCE contamination would flow more slowly and attenuate along the flow path due to dispersion and biodegradation. Travel time for PCE would be 10 times slower (i.e., 20 years). PCE concentration in those wells would be 10-30 times lower than at the source. GCL then estimated that PCE contamination may have been present on the Morguard Site for several decades, stating that this is consistent with the estimate of dissolved PCE plume in the deep aquifer having taken in the order of 20 years to reach BH914.

[387] Mr. Zapf-Gilje of GCL concludes that the additional contamination found by NEXT is "a result of contamination migration over several years or decades, and therefore reflects pre-remediation conditions at the Site." The Panel agrees with this conclusion.

[388] Although GCL also states that deep groundwater contamination in the Management Area should have been confirmed through additional investigation in response to the new information that the NEXT data, Mr. Zapf-Gilje concludes his opinion by stating that his earlier conclusion that the Morguard Site was adequately remediated was still reasonable "as the confirmation sampling followed standard practice". It is simply "prudent" to perform further testing. The Panel finds that, although further testing may be prudent, it is not necessary and is extremely expensive. The Panel notes that section 56(1)(c) of the *Act* is to be used as guidance for applicants for certificates of compliance. That subsection states: "A person conducting or otherwise providing for remediation of a site must give preference to remediation alternatives that provide permanent solutions to the maximum extent practicable, taking into account the following factors … (c) remediation costs associated with alternative remediation options and the potential economic benefits, costs and effects of the remediation options".

[389] In this case, that guidance would mitigate against further testing.

[390] In addition, Mr. North opines that the source of the contamination has now been eliminated at the Morguard Site. Without an "active" release, it is unreasonable to conclude that a dissolved plume continues to migrate from the Morguard Site onto the Safeway property (or presumably the Management Area).

[391] The Panel finds that the deep aquifer contamination (below 30 metres or 100 feet from the surface) on the Safeway property likely travelled to Zone C on the Safeway property itself, rather than *through* the confining layer on the Morguard Site, into Zone C of the Morguard Site and Management Area. This finding is based on the AECOM subsurface testing that found a confining layer of silt and clay between Zone B and Zone C on the Morguard property. As noted above, this confining layer would have resulted in the contamination moving horizontally (along the denser lithology) until it found a vertical path to the deep aquifer on the Safeway property. As the source of the contamination has been removed, there is little or no possibility of further migration from those sites onto the Safeway property. Therefore, there is no longer a migration issue from the Morguard Site and the Management Area to the Safeway property.

[392] The Panel also accepts the conclusions of GCL and Mr. North that the Morguard Site was remediated to the applicable standards. The only issue before the Panel was in relation to the groundwater investigation and remediation. The question of whether the soil and vapour standards were also met was not in dispute. Although GCL seems to be wavering on whether the Management Area was fully remediated, the Panel agrees with Mr. North that the deep contamination detected by NEXT represents "isolated, minor exceedances", and, if any deep groundwater contamination was present in the past in the Management Area, it would no longer present a continuing threat to the Safeway property.

[393] The Panel finds that, at the very least, the Management Area has been remediated to risk-based standards. Of note, this is the same standard that is recommended by NEXT for the Safeway property, given the depth of the contamination found on the Safeway property.

[394] Considering all of the experts' reports, the Panel can find no persuasive evidence that there has been vertical contamination through the silty/clay layer on the Morguard Site to Zone C. The information obtained by AECOM during its pre-remediation investigations of the underlying soil layers at the Morguard Site and the Management Area, and the opinions of Mr. North, lead to the conclusion that, even with the new information by NEXT, no further testing is required in that zone.

[395] For all of these reasons, the Panel has concluded that the AECOM data and the Core6 reports should be preferred to the NEXT data when considering Morguard's application for certificates of compliance for the Morguard Site and the Management Area.

6. Should a certificate of compliance be issued for the Morguard Site and/or the Management Area based on numerical or risk-based standards?

[396] Section 53(3)(a) of the *Act* states that a director may issue a certificate of compliance with respect to remediation of a contaminated site if the contaminated site has been remediated in accordance with "(i) the numerical or risk based standards prescribed for the purposes of the definition of contaminated site". The Panel notes that a certificate of compliance may also be issued for part of a site; therefore, the PCE contamination on the Safeway property, which migrated from the Morguard Site, may be the subject of its own certificate of compliance – it is not necessarily legally "tied" to Morguard's applications.

[397] Of relevance to this issue, Mr. North considered whether AECOM and others properly remediated, the Morguard Site and the Management Area to applicable numeric standards. He concludes that the standard in 2009, 2010 and January 31, 2011, applicable to groundwater at the Morguard Site and Management Area, was the aquatic life standard only. He also states that the technical guidance document in effect at the relevant period of time for the applicable water use standard at contaminated sites was TG 6. He notes that the most recent version (Version 2 published July 2010) did not become mandatory until February 1, 2011. Prior to that February date, consultants had a choice to apply either the earlier version of TG 6 published in June 2005 or the updated version 2 published in July 2010. In his opinion, AECOM properly applied the earlier June 2005 version to determine the applicable groundwater standards at the two sites.

[398] Mr. North concludes that the remedial work and confirmatory sampling performed by AECOM on the two sites, as reported to the Ministry, met the applicable technical requirements and were remediated in accordance with the applicable numeric standards in place.

[399] He also concludes that "There is no source of chlorinated solvent contamination remaining at the Morguard Site and the Management Area and a further investigation of these areas is not necessary." After reviewing all of the other experts' opinions, it was still his opinion that Morguard's applications for certificates of compliance met the relevant standard.

[400] The Panel finds that Morguard's consultants did determine the depth and extent of the contamination and that, based on the results presented, has

remediated the Morguard Site to numerical standards. Further, the Panel finds that the Management Area has been remediated to risk-based standards, considering the depth of investigations on that site.

[401] The matter is sent back to the Director to issue a numeric or risk-based certificate of compliance for each of the Morguard Site and the Management Area. The Director may impose such conditions as she considers necessary for the protection of human health and the environment when issuing each certificate.

DECISION

[402] In making this decision, the Panel of the Environmental Appeal Board has carefully considered all of the evidence before it, whether or not specifically reiterated here.

[403] For the reasons provided above, the appeal is allowed.

"Alan Andison"

Alan Andison, Panel Chair

"Dr. Robert Cameron"

Dr. Robert Cameron, Member

"Monica Danon-Schaffer"

Monica Danon-Schaffer, Ph.D., P.Eng., Member

July 17, 2013