

January 19, 2018
File: 2017-8011

Daniel Bings
Environmental Protection Division
Ministry of Environment

Re: ACTION PLAN FOR POLLUTION ABATEMENT ORDER (PE-4606)

Dear Mr. Bings:

1 BACKGROUND

On November 23, 2017, the Ministry of Environment (MOE) issued a Pollution Abatement Order to Anmore Green Estates Strata Corporation LMS 3080 (the AGE Strata) in response to septic leachate daylighting on neighbouring properties. This Action Plan has been prepared by Associated Environmental Consultants Inc. (Associated) on behalf of the AGE Strata to meet the conditions of the Order, and reflects direction provided by MOE during a progress update meeting with Associated that was held on January 12, 2018. This report includes background information on the history of the site, a summary of MOE's recent findings, a list of actions taken to date, and pending actions.

The information in this report was collected during a detailed review of AGE Strata records, through publicly available information and documents received under a Freedom of Information Act request by Coquitlam School District 43 (SD 43). A chronological record of events and applicable references are available in Appendix A, and referenced documents can be provided upon request.

Anmore Green Estates (AGE) is a 51-home community in Anmore, BC. AGE has a private community wastewater treatment system that consists of a treatment plant and two septic disposal fields (the AGE wastewater system; Figure 1) and is authorized under MOE Permit PE4606. Portions of AGE's property boundary form the jurisdictional boundary between the Village of Anmore (Anmore) and the City of Port Moody (Port Moody).

AGE's development (including the AGE wastewater system) was built in 1995-1999. At that time, the downslope areas were forested parkland a natural grade of approximately 10% slope.

In 2001, the Port Moody lands adjacent to AGE were sold to SD 43. The Contract of Purchase and Sale Agreement for those lands acknowledges that both the seller (City of Port Moody) and the purchaser (SD 43) were aware that septic breakout was a potential risk. The Port Moody lands were developed into a school (Heritage Woods Secondary School) and a community park (North Shore Community Park). In 2003, SD 43 purchased the land in Anmore adjacent to AGE, and constructed Eagle Mountain Middle School.



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— Property Boundary
▨ AGE Property

PROJECT NO.: 2017-8011.000.000
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FIGURE 1: PROPERTY OVERVIEW
Anmore Green Estates Ltd
Anmore Green Estates

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The redevelopment of the SD 43 lands required significant cutting of the slopes between the AGE wastewater system and the SD 43 facilities (Photographs 1-11). Vertical retaining walls and banks with approximately 37% slope were developed on the western side, and vertical retaining walls and banks with approximately 52% slope on the southern side. According to a recent engineering assessment, cutting the banks likely compromised the pre-existing septic field used by AGE.

Reports of potential septic breakout followed in 2008, 2011, 2013, and 2017. To address the issue, the AGE Strata made several attempts to connect to a nearby municipal connection in Port Moody (2007-2008, 2011). However, they were unsuccessful because Port Moody's effluent is treated by the Greater Vancouver Sewerage and Drainage District (GVS&DD), and Anmore is not a member of the GVS&DD.

2 POLLUTION ABATEMENT ORDER

In December 2016, MOE completed an onsite inspection of the AGE septic system. As a result of that inspection, MOE released a Warning Letter on March 7, 2017 stating that the AGE Strata was not compliant with their permit conditions. The Warning Letter requested that the AGE Strata complete specific tasks including "work with qualified professionals to determine if there is breakthrough of septic discharge and if pollution is occurring" and "work with all stakeholders to connect to sewer."

In September 2017, as part of an effort to address MOE's Warning Letter, Associated conducted soil sampling in locations where seepage had previously been observed. Laboratory results indicated E. coli and fecal coliform levels of 160,000 MPN/g in soil collected from the exposed slope on the SD 43 property southwest of the AGE wastewater system.

MOE reviewed the data, and completed another site inspection. An inspection report issued by MOE in November 2017 concluded that

"E. coli and fecal coliforms levels [are] dangerously high in the media of the exposed slope on School District 43 property" and that "the impacted media poses a risk to human health as it is accessible to the public including children attending school on the property."

On November 23, 2017, MOE issued a Pollution Abatement Order to the AGE Strata that required the following actions:

Timeline	Action
Immediately	Take action to engage with SD 43 and Port Moody to implement impacted zone management actions to mitigate risk to human health by installing temporary fencing to prevent public access to the cut banks, and post warning signage.

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Timeline	Action
December 31, 2017*	Retain suitably qualified professionals to develop and submit for MOE Director's approval, an Action Plan detailing measures to be taken to implement pollution abatement activities.
March 1, 2017	Prepare and submit a formal written report by March 1, 2018

* An extension to January 19, 2018 was requested and granted by MOE.

3 SUMMARY OF ACTIONS TAKEN TO DATE

3.1 ENGAGEMENT OF QUALIFIED PROFESSIONALS

In response to the initial 2016 MOE site visit, AGE hired qualified environmental and engineering professionals to assess the conditions of the AGE septic system and possible resolutions. The assessments considered past studies, existing infrastructure and site conditions, and the sensitivity of the receiving environments. The engineering reports concluded that a new onsite treatment and disposal system cannot not be designed to meet current regulatory standards as detailed in Municipal Wastewater Regulation, and that the only way to prevent future contamination of school properties is to connect AGE to a municipal sewer system (See Section 3.62).

3.2 IMMEDIATE NOTIFICATION TO AFFECTED PARTIES

The MOE Warning Letter (March 7, 2017) was distributed directly from MOE to representatives of AGE Strata, SD 43, Anmore, Port Moody, and GVS&DD. Therefore, all parties were immediately notified of the risk of contamination, and the provincial request for further investigations and actions.

The Pollution Abatement Order and Detailed Inspection Report (November 23, 2017), which stated that pollution is likely occurring and represents a health risk, was distributed directly from MOE to representatives of AGE Strata, SD 43, Anmore, Port Moody, and GVS&DD . Therefore, all parties were notified immediately of the contamination, the health risk, and the provincially ordered actions.

3.3 IMPACTED ZONE MANAGEMENT

Because the pollution is occurring on SD 43 lands, AGE required their permission to erect fencing and signage (as requested by MOE). AGE requested access to install the fence and signage on December 1, 2017 and was informed that SD43 had already installed them (Photographs 15-17). Documentation of the SD 43 fencing and signage was reviewed with MOE, and was determined by MOE to be insufficient.

Permission to install the MOE required fencing and signage was granted by SD 43 on December 22, 2017 and the new fencing and signage was installed that day (Photographs 18-20).

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The area where the highest concentrations of *E. coli* and fecal coliforms were detected is directly adjacent to the walkway between Eagle Mountain Middle School and Northshore Community Park (Figure 1). During wet seasons seepage flows from the cut bank, along the pathway, and into a nearby storm drain catchment (Photographs 12-14). The outfall for the storm drain is directly into Wilkes Creek.

Application of hydrated lime (or calcium hydroxide) was considered as a short-term method for of reducing the health risk caused by the pollution; however, there are potential human health and environmental risks associated with its use. It is a skin and lung irritant to humans, and works by increasing pH of water solutions; therefore, it is considered a deleterious substance under the *Fisheries Act* and could not be directed into the storm drain. For these reasons, lime was not applied, and public access to the walkway was instead blocked.

3.4 AVAILABILITY OF CONNECTION

There are viable municipal wastewater connections close to AGE, as multiple connections to Port Moody infrastructure are located less than 100 m from the AGE septic field; however, approval for that connection is complicated. AGE is within the jurisdiction of Village of Anmore, the sewage pipes are owned by the City of Port Moody, and the effluent is treated by GVS&DD. Connecting AGE to the Port Moody/GVS&DD infrastructure requires permission and coordination among all three jurisdictions.

Previous attempts to connect to the Port Moody infrastructure has been denied by the municipalities (2007-2008, 2011), as Anmore is not a member of the GVS&DD. However, in 2014, Anmore requested and was granted a connection for Eagle Mountain Middle School via an agreement where SD 43 pays a 20% premium over the service rate charged to residents of member municipalities. Because onsite treatment cannot be accomplished in a manner that prevents pollution, AGE is attempting to connect to the Port Moody infrastructure under a similar agreement as Eagle Mountain Middle School.

3.5 COMMUNICATIONS WITH, AND POSITIONS OF, AFFECTED PARTIES

A series of communications occurred between the AGE Strata and the named parties following the circulation of the MOE Warning Letter, and again since the Pollution Abatement Order and Detailed Inspection Report were released. This is a chronological summary of AGE communications and publicly available information. A detailed summary and applicable references are available in Appendix A.

Throughout spring 2017, the AGE strata requested that Anmore support the connection and advocate on their behalf with Port Moody and the GVS&DD. On June 1, 2017, Anmore declined the AGE Strata's request because the Anmore Council was concerned that their support may have been interpreted as a willingness to join the GVS&DD, which Anmore is not prepared to do. Anmore stated that if AGE could gain GVS&DD's approval on their own, Anmore may reconsider their position.

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As GVS&DD is a federation of municipalities, the AGE Strata anticipated that GVS&DD would not be able to grant the request of individual homeowners from a non-member municipality. In July 2017, AGE took the legal actions required to form a "Local Service Area" under the *Local Government Act* in hopes that it would provide a framework to better approach the GVS&DD.

On September 20, 2017, the new AGE Local Service Area submitted a proposal to Port Moody, GVS&DD, and SD 43 for AGE to negotiate a service agreement without the Village of Anmore, and offered to pay all costs associated with the AGE connection. The actions that each of the municipalities took in response to the proposal include the following:

- November 2, 2017, GVS&DD sent a letter to Anmore stating they would not consider the AGE request unless Anmore joined GVS&DD, and the request came directly from Anmore;
- November 3, 2017, Port Moody sent a letter to Anmore stating that they support the connection, if it were not at the cost of Port Moody residents. Port Moody offered two options to provide connection:
 - (1) Anmore could join the GVS&DD and connect via a servicing agreement with Port Moody; or
 - (2) Anmore could not join the GVS&DD and the boundary line between Port Moody and Anmore could be adjusted so that AGE was part of Port Moody.
- On December 5, 2017, Anmore Council voted to respond that they "had no interest in joining GVS&DD or changing the municipal boundary."

The 2017 GVS&DD's Implementation Guideline states that services are not provided to areas outside of the GVS&DD boundary except under certain named conditions. One of these conditions is the "that the connection to regional sewerage services is the only reasonable means of preventing or alleviating a public health or environmental contamination risk."

Given that the GVS&DD response above predated the Pollution Abatement Order, and that Anmore's position has not changed, AGE recently requested that GVS&DD confirm whether the Pollution Abatement Order was sufficient cause for the above exception to be implemented. The AGE request was sent on January 10, 2018. GVS&DD responded on January 12, 2018, that the question would be sent to the GVS&DD policy group for review. No further response has been received as of January 19, 2017.

SD 43 has stated that they support a long-term solution, but collaboration and communication with SD 43 representatives have not been forthcoming. Information pertaining to site conditions and presence of contaminants has been obtained by the AGE Strata only through FOI requests, access to the SD 43 property to implement requirements under the Pollution Abatement Order was delayed and heavily restricted, and assessments of the affected areas are not permitted by SD 43 without prior written permission.

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In summary, each of the affected parties have been asked if they support the AGE connection, or if they can facilitate it. The table below provides a summary of responses made by the affected parties. Any written responses that indicate otherwise will be submitted to MOE as an amendment to this report.

Affected Party	Response
AGE	The AGE Strata supports the connection. They have offered to facilitate it by paying for the connection, and the 20% premium for services as is paid by Eagle Mountain Middle School.
Port Moody	<p>Port Moody is in support of the connection, and has offered two options to facilitate the AGE connection:</p> <ul style="list-style-type: none"> • Anmore joins GVS&DD, and AGE connects to Port Moody via a serving agreement; or • Anmore does not join GVS&DD, and the boundary line between Port Moody and Anmore is adjusted so that AGE is part of Port Moody.
GVS&DD	GVS&DD stated they would support the connection if Anmore became a member of GVS&DD, and if the request for the AGE connection came directly from Anmore. The GVS&DD policy group is currently reviewing whether the Pollution Abatement Order qualifies as an exception under the GVS&DD's Implementation Guideline.
Anmore	Anmore has expressed no interest in joining the GVS&DD or adjusting the municipal boundary between Anmore and Port Moody, and will not support or facilitate the AGE connection.
SD43	SD 43 has indicated that they support a long-term solution to the problem; however, they are prohibited from allowing a direct connection. SD 43 actions to date have not demonstrated a willingness to facilitate a solution.

3.6 FURTHER TESTING

3.6.2 Environmental Testing

In response to the Warning Letter, Associated designed a sampling program to demonstrate that breakout is occurring, and if so, the health risk it posed. The methodology included an option for virus testing to assist in determining if samples with *E. coli* also contain human-sourced viruses (rather an animal source of *E.coli*).

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Upon reviewing the results of soil testing (September 27, 2017), MOE determined that the detected *E. coli* concentrations posed a risk to human health. Following this conclusion, Associated spoke with MOE and requested direction from MOE on whether any further testing (including virus analysis) should be done. The MOE responded that the concentrations were too high to be from an incidental animal source, and that no further testing was required for MOE to proceed. The monitoring program will be implemented and/or further testing will be completed if requested by MOE.

3.6.2 Engineering Assessment

During the project update meeting with MOE and Associated (January 12, 2017), the question of whether AGE septic system could be redesigned either under an amendment to the existing permit, or under a new application was discussed.

In response to that discussion, S. Graham Engineering and Geology Inc. completed a detailed engineering assessment. That assessment concluded that onsite treatment is not possible under either an amendment or under the current standards applied to new applications. A full version of that report is available in Appendix C. Further engineering assessments will be completed if requested by MOE.

4 PENDING ACTIONS

Below is a summary of actions AGE will implement prior to March 1, 2018:

Timeline	Action
Immediate	<ul style="list-style-type: none">• Provide this summary, and recent engineering reports to all parties.• Formally request meetings and offer presentations of technical information to Anmore, Port Moody, GVS&DD, and SD 43.
Continuing Efforts	<ul style="list-style-type: none">• Maintain the fencing and signage until resolution is found, or if removal is ordered by SD 43 (this is a condition under the SD 43 Licence to Occupy).• Keep in regular communication with MOE, and respond to any further requests.

The AGE strata is working to bring the parties together to negotiate a solution; however, engaging further political agencies, including Ministers, may be necessary.

We trust that this information will fulfill the requirements of the first deliverable required by Pollution Abatement Order. Any of the referenced documents can be provided upon request. The next formal deliverable will be provided to MOE on or before March 1, 2018.



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Please feel free to contact the undersigned if you have any questions.

Yours truly,

Fawn Ross, R.P.Bio
Environmental Scientist

Attachments:

Appendix A: Referenced Chronological History
Appendix B: Site Photographs
Appendix C: Engineering Assessment 2018, S. Graham Engineering and Geology Inc.

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-Appendix A: Referenced Chronological History-

APPENDIX A: REFERENCED CHRONOLOGICAL HISTORY

Year	Event	
1978	Permit to Discharge Issued Original MOE Permit PE-4606 to discharge treated effluent was issued to original mobile home park development.	(MWLAP, 2002)
1995-1999	Anmore Green Estates redeveloped and plans for connection AGE property was redeveloped with AGE infrastructure between 1995 and 1999, including the 1997 installation of septic system. AGE infrastructure was designed for future connection to municipal sewer connection; Anmore council was party to and supported this through the design, review, and approval processes (Ashford Engineering, 1997; Province of BC, 1997; Village of Anmore, 1999). Intent to connect was also in the MOE Permit (PE-4606), which states “the discharge authorized by this permit shall be connected to a municipal sewerage system when such facilities become available.”	(Olsen and Associates, 1997; Olsen and Associates, 1999; Anmore, 1999; Ashford Engineering Ltd., 1997; MWLAP, 2002; Province of BC, 1997; Anmore, 1999)
2001	Port Moody rezones and sells lands to SD 43 Lands directly south of AGE and in Port Moody were rezoned and sold to SD 43.	(Port Moody, 2001)
2001	Septic Reference Potential for septic leachate from AGE development was referenced in SD 43/Port Moody Sale Agreement Section 3.3 (e) “The Purchaser and the Vendor also acknowledge and agree that there may be some septic effluent leachate from the adjacent lands within the Village of Anmore onto the Property and the parties shall act reasonably and cooperate with each other to minimize and control any such problems.”	(Port Moody, 2001)
2002	Permit to Discharge Amended Original MOE Permit to Discharge was amended for existing AGE development.	(MWLAP, 2002)
2002-2004	SD 43 develops school and park Heritage Woods Secondary School and Northshore Community Park were built. Construction included cutting the banks south of the AGE wastewater system. Prior to development, the are was forested areas with natural grade.	(Binnie, 2002; Keystone, 2011)
2003	Anmore properties purchased by SD 43 Lands southwest of the AGE wastewater system (in Anmore) sold to SD 43	(Land Title Office, 2003)
2004	School Opens Heritage Woods Secondary School opened	(SD 43, 2004)
2007-2008	Connection Request In 2007, the sitting Anmore Council unanimously supported a formal resolution to support the connection of the AGE wastewater system to the Port Moody/GVS&DD infrastructure, and requested information regarding the cost for all of Anmore to join the GVS&DD. Letters reflecting their support were sent to GVS&DD and Port Moody. Both parties responded that Anmore would be required to join GVS&DD, which the Anmore Council was open to. In 2008, the GVS&DD conditionally granted Anmore’s membership and AGE’s connection. One of the conditions was that a pipe agreement be reached with Port Moody. Port Moody’s response was that they will consider (but not guarantee) the AGE connection if all of Anmore joins the GVS&DD, and Anmore pays Port Moody \$40,000 to “explore the feasibility of connecting to the regional sewer system through Port Moody.” Neither the Village of Anmore nor the AGE Strata were willing to pay Port Moody the \$40,000 without certainty that the AGE connection would be approved, and the AGE connection was denied.	(Arden, 2008; MetroVan, 2008; Anmore, 2011b)

Year	Event	
2008	AGE septic redesign After the municipal connection was denied, the AGE Strata engaged Arden Consulting Engineers Ltd. (Arden) to evaluate the AGE wastewater system and recommend options for replacing it. The functionality of the redesign was subject to an MOE requirement that any new treatment plant must fit in the footprint of the existing building.	(Arden; 2008; Orion, 2017)
2008	Septic Reference As part of the Arden (2008) system assessment, Arden collected a water sample from a ponded area directly downslope of the septic field. The sample contained elevated levels of fecal coliforms. Arden speculated that the source was partially treated effluent surfacing due to construction of a berm on school property directly downslope of the septic field.	(Arden; 2008)
2010	AGE Sewage Treatment Plant Replaced The AGE Strata invested in a retrofitted treatment plant as recommended by Arden. The MOE design requirement to remain within the existing footprint limited treatment options, and affected the success of the retrofitted system that is still in place today.	(Orion, 2017; Pinnacle, 2010)
2010	Anmore Request for Sewerage Agreement for Eagle Mountain Middle School Anmore requested a connection for the Eagle Mountain Middle School “because site conditions prevented installation of a septic field.” The request was denied because Anmore is not a member of GVS&DD.	(MetroVan, 2014b; Anmore, 2010)
2011	Septic Reference PGL completed a site assessment and collected a water sample. <i>E. coli</i> was not detected in the sample, but PGL reported that “groundwater associated with the septic field is seeping from an embankment and ponding on school property” and that “there are a number of locations along the embankment where septic field water is seeping to the surface.”	(PGL, 2011)
2011	AGE Connection Request AGE Strata again requested that Anmore Council support the connection to the Port Moody/GVS&DD system, and offered to pay for the studies previously requested by Port Moody. The Anmore Council upheld their previous support, and the GVS&DD responded that Anmore will still have to join GVS&DD for AGE to connect. Anmore Council was no longer in support of joining, so the AGE Strata’s request to connect was denied.	(Anmore, 2011b)
2011	Anmore Public Information Session for School/Park Development During a public information session for the proposed development of Heritage Woods Secondary School and Northshore Community Park. The SD 43 acknowledges presence of septic field and potential for students trespassing on AGE lands discussed	(Anmore, 2011a)
April 2013 – July 2014	Eagle Mountain Middle School Construction Prior to school construction, the property to the west of AGE was forested area with natural grade.	(Extra HErlad, 2014; Keystone, 2011)
2013	Septic Reference by SD 43 Keystone completed water sampling over four months on behalf of SD 43. Results for <i>E. coli</i> and fecal coliforms exceeded recreational guidelines in multiple locations on SD 43 lands. Keystone concluded that: “It is recommended, based on bacteria values and future on-Site land use [as Eagle Mountain Middle School], that the Village of Anmore and Anmore Estates be made aware of the human health concerns, and implement measures to prevent the septic field discharge migrating on-Site prior to the Site school being operational and/or Site grounds accessible to the public. If this request does not receive an immediate response, it is recommended that the BC Ministry of Health be contacted to alert them of the potential public health threat.”	(Keystone, 2013)

Year	Event	
May 2014	GVS&DD grants Sewerage Agreement for Eagle Mountain Middle School Anmore Council and Port Moody Council requested that GVS&DD reconsider their original denial to connect Eagle Mountain Middle School to the municipal system because (1) a screening assessment determined that an onsite septic field was not possible due to poor soil conditions, steep slopes, and insufficient space for an effluent dispersion field, and (2) because the option of trucking sewage is expensive. The school was scheduled to open in June 2014. Precedence, options, and conditions were assessed and permission was granted. One of the conditions was that no other sewer connections from Anmore other than the Middle School connection would be permitted without Anmore joining the GVS&DD	(Port Moody, 2014; MetroVan, 2014a; MetroVan, 2014b)
September 2014	School Opens Eagle Mountain Middle School opened.	(BC Ministry of Education, 2015; Extra Herlad, 2014; SD 43, 2015)
2016	MOE Site Inspection MOE completed a site assessment of the AGE septic system in response to a report of effluent breaking out on SD 43 property, and determined AGE was not complaint with their Permit requirements.	(MOE, 2017c)
2016- 2017	AGE retains Qualified Professionals AGE retained Qualified Professionals to assess and address compliance issues. Associated completed a comprehensive review of available documents, conducted three site assessments, initiated a legal survey of current site conditions, and interviewed regulators and professional experts with knowledge specific to AGE’s wastewater system. Associated also designed a monitoring program, initiated testing, and responded to MOE’s questions. S. Graham Engineering and Geology Inc completed a comprehensive review of available documents, conducted two site assessments, and interviewed professional experts with knowledge specific to AGE’s wastewater system, and completes a detailed assessment on options for redesigning onsite treatment options. R.F. Binnie & Associates Ltd. (Binnie), completed a legal survey of current site conditions, a review of the construction drawings for the school constructions, and preliminary designs for how AGE wastewater infrastructure could be connected to the Port Moody Infrastructure.	(Associated, 2017a; Associated 2017b; Binnie, 2016; Binnie, 2016; Graham, 2017; Graham, 2018)
April 2017	GVS&DD implementation Guide GVS&DD adopted a the “Extension of Regional Sewerage Services Implementation Guideline”. This document states that, the areas outside of the GVS&DD’s Urban Containment Zone are not connected to GVS&DD Services, except during named exceptions including: "that the connection to regional sewerage services is the only reasonable means of preventing or alleviating a public health or environmental contamination risk".	(MetroVan, 2017a)
February 2017	Septic Sampling Associated collected four surface water samples in areas where ponding or seepage were visible. Septic indicators were present, but there were no exceedances of recreational guidelines for water. <i>E. coli</i> was detected in one sample.	(Associated, 2017c)

Year	Event	
March 2017	<p>MOE Warning Letter</p> <p>MOE issued a Warning Letter stating that the AGE Strata is not compliant with permit conditions. The Warning Letter requested that the AGE Strata complete four actions:</p> <ol style="list-style-type: none">1. Control biological oxygen demand (BOD) and total suspended solids (TSS) to within permitted levels;2. Obtain classification and certification by the Environmental Operators Certification Program (EOCP);3. Work with qualified professionals to determine if there is breakthrough of septic discharge and if pollution is occurring; and4. Work with all stakeholders to connect to sewer. <p>Warning Letter Recipients</p> <ul style="list-style-type: none">• Maria Ferreira (AGE, Property Manager);• Patricia Gartland (SD 43, Superintendent for SD 43, communications care of Barb Simonovic, Executive Assistant);• Juli Kolby (Anmore, Chief Administrative Officer);• Fred Nenninger (GVS&DD, Director of Policy and Planning); and <p>Robinson Puche (Port Moody, Infrastructure & Development Technician)</p>	(MetroVan, 2017a)
June 1, 2017	The AGE Strata's requests for Anmore Council to support the AGE connection were denied. The rationale provided was that the Anmore Council was concerned that their support may been seen as a willingness to join the GVS&DD. Anmore stated that if AGE was able to gain GVS&DD's approval on their own, they may reconsider their position.	(Murdy and McAllister, 2017)
July 5, 2017	At a special meeting called for Anmore Green Estates (LMS 3080) on July 5, 2017, there was a unanimous vote in favour of a petition for creating a Local Service Area. A "Local Service Area" is the same concept as "Specified Area" under the <i>Local Government Act</i> for regional districts. A Local Service Area request was authorized under the Community Charter (Section 212)	(AGE, 2017a; Province of BC, 2018a; Province of BC, 2018b)
Sept 20, 2017	The AGE Local Service Area submitted a proposal to Port Moody, GVS&DD for AGE be allowed to negotiate a service agreement without Anmore 's involvement. The proposal was shared with SD 43.	(AGE, 2017b)
September 27 2017	<p>Septic Testing</p> <p>Following the release of the MOE Warning Letter, Associated completed the first sampling event of what was to be a monthly monitoring program designed to meet the requirements of the Warning Letter (i.e., to determine if pollution is occurring). The planned program included optional testing for human-sourced viruses. (Associated, 2017a).</p>	(Associated, 2017a)
October 11, 2017	<p>Data submission to MOE</p> <p>Raw data from the soil samples collected by Associated were sent to MOE for interpretation.</p>	(Associated, 2017a)
November 2, 2017	<p>Metro Vancouver response to AGE connection request</p> <p>GVS&DD issued a letter to Anmore stating the AGE request will not be considered unless Anmore joins the GVS&DD, and Anmore requests the connection themselves. The letter detailed actions that Anmore must take to become a GVS&DD member.</p>	(MetroVan, 2017b)

Year	Event	
November 3, 2017	<p>Port Moody Letter to Anmore</p> <p>The Mayor of Port Moody sent a letter to Anmore stating that the AGE request had been considered, and that council was in support of allowing the AGE connection, if it were not at the cost of Port Moody.</p> <p>Port Moody offered two options for how the connection could be provided:</p> <ul style="list-style-type: none">• Anmore could join the GVS&DD and the connection could be done via a servicing agreement with Port Moody; or• Anmore could not join the GVS&DD and the boundary line between Port Moody and Anmore could be adjusted so that AGE was part of Port Moody.	(Port Moody, 2017)
November 23, 2017	<p>Pollution and Health Risk Confirmed</p> <p>MOE issues Inspection Details report that concludes “<i>E. coli</i> and fecal coliforms levels [are] dangerously high in the media of the exposed slope on School District 43 property” and that “the impacted media poses a risk to human health as it is accessible to the public including children attending school on the property”. The Pollution Abatement Order what actions AGE Strata is ordered to implement, and by when.</p> <p>Inspection Details report and Pollution Abatement Order recipients:</p> <ul style="list-style-type: none">• Maria Ferreira (AGE, Property Manager);• Patricia Gartland (SD 43, Superintendent for SD 43, communications care of Barb Simonovic, Executive Assistant);• Juli Kolby (Anmore, Chief Administrative Officer);• Fred Nenninger (GVS&DD, Director of Policy and Planning);• Simon So (GVS&DD, General Manager, Liquid Waste Services);• Robinson Puche (Port Moody, Infrastructure & Development Technician);• Tim Savoie (Port Moody, City Manager);• Dan Bings (MOE, Operations Manager Compliance - Reactive); and• Fawn Ross (Associated, Environmental Scientist).	(MOE, 2017a; MOE, 2017b)
December 1, 2017 – December 22, 2017	<p>SD 43 Contract for Permission to Install Fencing and Signage</p> <p>Access to SD 43 land are requested regularly by AGE. SD 43 for revisions to contracts, and requested payments, and administrative needs were met as requested. Three week delay for installation was caused by of administrative needs of SD 43 (CUPE permission for subcontractor to work on school grounds, confirmation of insurance requirements of AGE, four revisions to licence agreement, payment of \$11,0000 to SD 43, limited availability and holiday schedules of SD 43 staff). Permission for access was granted December 22, 2017, fencing and signage were installed that day.</p>	(SD 43, 2017)
December 5, 2007	<p>Anmore Council Position restated</p> <p>On November 23, 2017 Anmore staff recommended that the response to Port Moody’s November 2, 2017 letter be “that the Village of Anmore is not interested in joining the GVS&DD or changing the municipal boundary.” Anmore Council adopted this recommendation during the December 5, 2017 council meeting.</p>	(Anmore, 2017)
December 22, 2017	<p>SD 43 Licence to Occupy and Fencing installation</p> <p>Licence agreement required by SD 43 for the installation of MOE required fencing. Includes amount of licencing fee (\$11,0000 paid December 19, 2017), length fencing is permitted (5 months), hours and days property cannot be accessed (8:00am to 4:00pm Mon-Fri), insurance requirements (\$5,000,000), and conditions that contract can be terminated by SD 43. SD 43 restricted access until December 23,2017, but as fencing crews were unavailable during Christmas, installation was done the evening December 22, 2017.</p>	(SD 43, 2017)
January 10, 2017	<p>AGE request for confirmation to GVS&DD</p> <p>AGE letter to GVS&DD asking if an emergency sewer connection is available to AGE, or if that exception clause can only be enacted by GVS&DD member municipalities. GVS&DD responded on January 12, 2018 that the question would be sent to the GVS&DD policy group for review</p>	(AGE, 2018)

Year	Event	
January 15, 2017	Detailed Engineering Assessment of AGE Options In depth engineering of AGE’s infrastructure and site conditions determines that onsite wastewater treatment cannot be done under an amendment to the existing permit, or under current Municipal Wastewater Regulations.	(Graham, 2018)
January 18, 2016	Legal Letter SD 43 to AGE SD 43 legal team requests copies of scientific testing, reiterates that AGE cannot enter or sample on without express prior written permission. Letter demands that additional taxes must be paid on the \$11,000 licence fee, and if not complied with cancelling of licence is threatened.	(Koffman, 2018)



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APPENDIX B: SITE PHOTOGRAPHS

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Photograph 1: Cut banks between western disposal field and SD 43 infrastructure. Disposal field is at grade with fencing in top left corner. Cut banks are tiered (fencing to the right is top of second tier, see next photograph)



Photograph 2: Cut banks between western disposal field and SD 43 infrastructure. Fencing on the left is fencing on right in previous photograph)

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Photograph 3: Cut banks and retaining wall west of western disposal field (looking northeast)



Photograph 4: SD 43 infrastructure west of disposal field.

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Photograph 5: cut banks below eastern field, and between caretaker's cottage and Northshore Park (looking north). Trees behind border chain-link fence are AGE disposal field.



Photograph 6: Cut banks and retaining wall below eastern disposal field. Tree line is border of AGE septic field; and AGE homes seen in background. (looking northeast).

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Photograph 7: Photograph demonstrating slope of cut banks between western disposal field and SD 43 infrastructure. Building is Eagle Mountain Middle School.



Photograph 8: View from on AGE septic field. Roof of Eagle Mountain Middle School is seen in background (looking south west).

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Photograph 9: View from on AGE septic field. Building in background is Heritage Woods Secondary School (looking west).



Photograph 10: Picture from southern edge of western disposal field. Building is Heritage Woods Secondary, Photo taken from height of natural grade

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Photograph 11: Area directly west of AGE septic field.



Photograph 12: Seepage where high *E.coli* and fecal coliforms were detected. Picture taken from Pathway between Eagle Mountain Middle School and Northshore Community Park.

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Photograph 13: Seepage where high *E.coli* and fecal coliforms were detected. Building in background is Eagle Mountain Middle School.



Photograph 14: Seepage where high *E.coli* and fecal coliforms were detected with pooling near pathway and flowing into the storm drain.

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Photograph 15: SD 43 fencing and sign installed December 1, 2017



Photograph 16: SD 43 signs installed December 1, 2017

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Photograph 17: SD 43 fencing and signs installed December 1, 2017



Photograph 18: AGE fencing and signage installed December 22, 2017

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Photograph 19: AGE fencing and signage installed December 22, 2017



Photograph 20: AGE fencing installed December 22, 2017