

# **Aberdeen Groundwater Area Information Summary City of Kamloops**

**Current to: 2008 December 31**



Canada's Tournament Capital

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# INTRODUCTION

## Purpose

Since 1995, the City of Kamloops (the "City") has received a large volume of documentary materials, of a variety of descriptions and from a variety of sources, pertaining to, broadly speaking, the issue of groundwater stability in the Aberdeen area of the City. From time to time, requests are made upon the City for documentary information pertaining to the subject of "Aberdeen groundwater stability". Given the large volume of materials held by the City, it is not considered practical for the City to respond to such requests by providing a copy of its entire collection of documents relating to this subject.

The purpose of this Information Summary, therefore, is twofold:

1. To provide a historical summary of Aberdeen groundwater issues commencing in approximately 1995 and continuing to the date shown on the front (title) page of this document; and
2. To advise of the contents of the City's collection of such documents - a collection that is current to the date shown on the front (title) page of this document.

This document is to be updated by staff on an annual basis, primarily to add recently completed reports to the listing in APPENDIX A, and to highlight significant events that may have occurred in the previous year. The date of the most recent update will be identified on the front cover of the report.

## Disclaimer

This information summary provides an overview of the history of Aberdeen groundwater and slope stability issues. It should not be relied upon to answer specific questions about a given property or properties. By compiling this collection of documents the City hopes to assist persons, and the professionals they hire, to investigate ground stability issues in the Aberdeen area.

These documents were compiled over a number of years and any party reading them should be aware that:

1. Ground stability issues can vary over time;
2. Ground stability can be affected in a wide variety of ways, some of which may not have been considered in the enclosed summary report; and
3. The City of Kamloops, in providing these documents, is making no representations, providing no advice, assurances, warranties or guarantees of any kind with respect to current or future groundwater, slope stability, geotechnical or hydrological conditions respecting lands in the Aberdeen area of Kamloops.

Should you wish to have specific information about a specific property or properties regarding any of the matters mentioned above, you should consult a qualified, licensed professional experienced in geotechnical issues. You should not rely upon the enclosed information summary or consider it as advice from the City of Kamloops as to the suitability of any specific property located in the Aberdeen area. Specifically, without limiting the generality of what has been stated above, the City of Kamloops does not intend for the enclosed to be relied upon in any fashion or constitute any sort of representation as to the suitability of any property for:

- A. Purchase, sale, lease or any other transfer of an interest in property;
- B. Construction, renovation, subdivision or development of any kind.

If you require advice related to items "A" or "B" above, you should contact a qualified professional.

### **Additional Document Requests**

As noted above, the City maintains a collection of additional documents pertaining to Aberdeen groundwater stability. Part of the purpose of this Information Summary is to assist interested parties in accessing additional documents. These additional documents are listed in the Appendices to this Information Summary. Requests for additional documents must be made in writing to the City. Production of requested documents will be made at a cost of 25 cents per page to interested parties; or at the rate charged for Minutes of Council Proceedings as revised by City Bylaw.

# HISTORY\*

\*This entire History section very strongly references the most recent report on this subject prepared by Golder (2006 Stability Review, Aberdeen Development Area, Kamloops, BC, Golder Associates Ltd., September 21, 2007) and in many cases text and figures for this report were taken directly from that document.

## ***The 1995 Van Horne Slide***

Development of the Aberdeen area of the City of Kamloops began in or about the late 1970s, mostly starting in the lower central area and spreading outward from there. The development was supported by extensive geotechnical work provided by Klohn Leonoff (now Klohn Crippen Consultants Ltd.) on behalf of Dominion Construction Properties Ltd. (later Bentall Properties Ltd. and now Bentall Real Estate Services).

*"On 29 March 1995, Golder Associates Ltd was asked to inspect and comment on pavement distress noted by City of Kamloops personnel on both Howe Road and Van Horne Drive, located just east of the intersection of those two roads with the Aberdeen District of Kamloops, BC" (Letter Report to City of Kamloops RE: Preliminary Geotechnical Summary Investigation of Ground Movement Van Horne Drive Kamloops, BC, Golder Associates Ltd., August 9, 1995).*

In 1995, ground movement affected a cluster of homes over a limited area south of Howe Road and just east of the Howe Road-Van Horne Drive intersection, this movement being subsequently referred to as the Van Horne Slide. The approximate boundaries of the Van Horne Slide are identified on Figure 1.

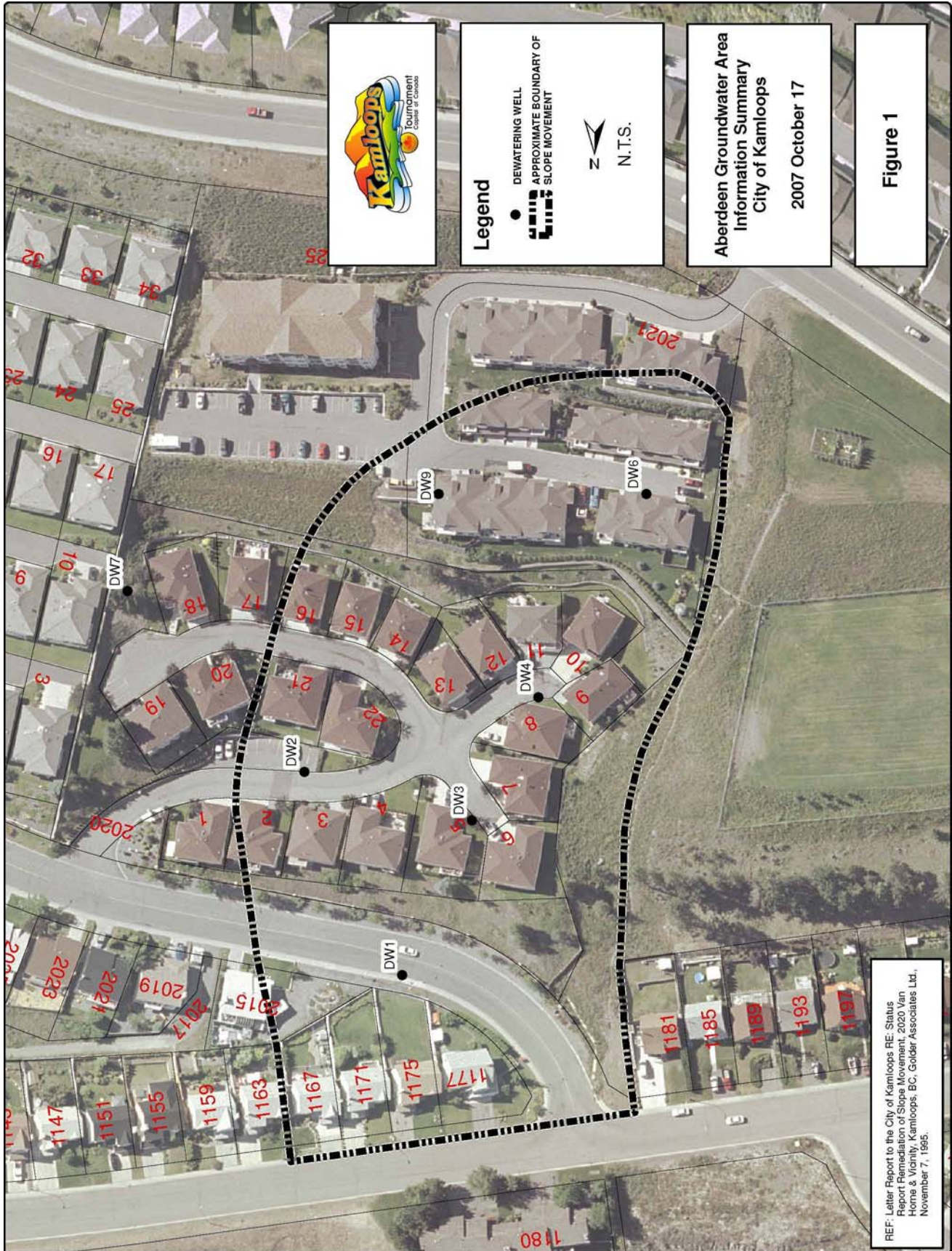
*"Based on available physical evidence, the houses located either within the area affected by ground movement or at highest risk of being affected by ground movement now include the following units:*

<i>Howe Road: 1167, 1171, 1175, 1177</i>
<i>2015 Van Horne</i>
<i>2020 Van Horne: Units 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22</i>
<i>2021 Pacific Way: Units 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</i>

*Houses which should be added to the area of observation due to their proximity to the identified zone of ground movement include:*

<i>Howe Road: 1163 and 1181</i>
<i>2020 Van Horne: Units 1, 17, and 20</i>
<i>2021 Pacific Way: Units 13, 14, 15"</i>

(Letter Report to City of Kamloops RE: Updated Listings of Homes Affected by Slope Movement 2020 Van Horne and Vicinity Kamloops, BC, Golder Associates Ltd., September 29, 1995)



Emergency remedial treatment of the Van Horne Slide by Golder Associates Ltd. (Golder), acting for the City of Kamloops (the "City"), involved installation of 13 pumped wells. By early 1996 the Van Horne Slide had been effectively stopped.

### **1996 to 2006**

In the post-1995 period, new developments in Aberdeen have largely consisted of in-fill construction within the existing developed areas, and new subdivisions to the south and upslope of the older existing developments.

The unexpected occurrence of the Van Horne Slide caused the City to seek detailed reassessment and confirmation of large scale ground stability in all parts of Aberdeen. From 1996 to 2004, Klohn Crippen Consultants Ltd. (Klohn), working on behalf of Bentall Real Estate Services, and in cooperation with the City, conducted a staged series of investigations and stability assessments starting with core areas and later expanding to the margins of the Aberdeen Development Area. The objective of the assessments was to evaluate the stability condition of each area (for large scale stability issues only), and to implement remedial treatment where required based on adopted stability objectives. In October 2003, Klohn issued Stage 2 of the Perimeter Study (Klohn, 2003) and in December 2004, Klohn issued the 2002/2003 Stability Study (Klohn, 2004). Together these documents concluded that, for the evaluation period selected for each stability section (mostly either March to June 2002, or October 2002), the stability objectives had been achieved in the assessed areas. This finding demonstrated that it was possible, with diligent use of pumped wells for dewatering treatment of some areas, to achieve the stability targets in all the assessed areas. The assessed areas did not include Van Horne, which had been studied by Golder.

While the Klohn stability studies were in progress, Golder retained Geotex Consultants Ltd. (Dr. Peter Read) on behalf of the City to prepare geological mapping of the Aberdeen Development Area (Geotex, 1996). Golder also developed a regional hydrogeological model (numerical model) for the Aberdeen area (Golder, 2003). The geological mapping effectively defined the limits of the study area as only areas underlain by Tertiary (Eocene-age) Kamloops Group Bedrock that are considered susceptible to large scale instability under adverse conditions of slope, groundwater pressure and geology. As groundwater pressure is the key variable which may alter stability over time, the Golder groundwater model is a tool that can be used on a regional scale to assess the impact of past or future development and to investigate treatment options.

A large portion of Aberdeen is dependent on continuous effective treatment for maintaining stability. Should treatment stop, it is anticipated within several days of the termination of treatment that the calculated driving and resisting forces will become about equal and the slope will be at incipient failure. Although proven effective at maintaining stability, the existing treatment system is complex, has limited redundancies and essentially no automated back-up systems. The treatment system requires continuing careful monitoring and constant maintenance.

Starting with 13 wells installed to stabilize the Van Horne Slide, the number of pumped wells used for stability treatment in Aberdeen has increased over time to 30, currently with 14 located in the Van Horne Slide area. The other wells are installed and operating at selected locations in Aberdeen within Area B with most of them completed in or around Area A. In addition to the dewatering wells, as of 2006 there are about 88 piezometers distributed through the Aberdeen Area, with about 25 additional piezometers in Van Horne. The piezometers and boreholes have provided detailed information on the local geology and hydrogeology and continue to provide information regarding piezometric (groundwater) pressures in the Aberdeen Area. Three slope indicator casings, used to monitor and measure movement of the slope, are installed and monitored within boreholes adjacent to the Van Horne Slide. The approximate boundaries of Areas A and B, and the approximate locations of most of the pumped wells, the piezometers and the slope indicators are shown in Figure 2.

*While Area A is interpreted to be an ancient slide feature not known to have moved in recent times, Area B is simply a topographic expression which contains most of the areas of stability interest. Areas of stability interest and review which are located outside of Area B are commonly referred to as "Perimeter" areas. (2006 Stability Review Aberdeen development Area - Draft, Golder Associates, August 14, 2007)*

### **2006 Golder Stability Review**

Golder Associates Ltd. (Golder) has conducted a geotechnical review of ground stability in Aberdeen based on groundwater pressures recorded during the assessment period ending November 2006. The most recent previous stability review, conducted by Klohn Crippen Consultants Ltd. (Klohn) in 2004, was based mainly on groundwater pressures during the three month assessment period of March 2002 to June 2002. The requirement to update the stability assessment for Aberdeen was based on the observation that, since 2002, groundwater pressures had increased in some parts of Aberdeen.

Golder's 2006 stability review replicated the Klohn stability calculations. Except where new data was available, the Golder stability review used the same stability assessment regions, stratigraphy, strength values, potential sliding surfaces, and calculation method, but included the 2006 groundwater pressure data. New analysis of the Van Horne stability assessment area was added. Review of the groundwater data showed that groundwater levels increased by 6 m to 19 m in several stability assessment regions over the period of 2002 to 2006. As predicted by the hydrogeological model, Area A, which has 14 dewatering wells, exhibited almost no change in groundwater pressure.



Calculated factors of safety from the 2006 stability analysis meet or exceed the stability targets for all assessed areas, except for Van Horne. Although Van Horne has been stabilized since 1996, the results of analysis indicate that Van Horne has never met the standard stability targets for Aberdeen since the 1995 slide, despite treatment by about half of the pumped wells in Aberdeen. Instead, an alternative stability target value, based on *achievable objectives which maintain ground stability*, is proposed for Van Horne. Some increases in groundwater pressure have been noted recently in Van Horne, attributed to "silting up", clogging of the wells, or formation around the wells. Two new pumped wells were installed in late 2006 and brought into production in the spring of 2007 to help address this issue, bringing the total number of operating wells in Van Horne up to 14 from 13, as one well was retired. The stability of Van Horne is expected to be reviewed again in late 2007 or early 2008.

No new stability analysis was performed for the Gloaming Ridge stability assessment area because monitoring in Gloaming was previously suspended (apparently as a low-risk area) and there was no recent groundwater pressure data available for the area. Previous analysis by Klohn showed that Gloaming Ridge had a high factor of safety in 2002 and, subject to confirmation after further data is received; it is considered likely that the margin of stability remains within the acceptable range.

Although the finding was of generally acceptable stability in the Aberdeen Area, those areas under treatment are dependent on continuous treatment to maintain margins of stability. Should treatment stop for an estimated five to ten days, it is anticipated that ground movement could result in some parts of Aberdeen currently under intensive treatment. This very preliminary estimate of five to ten days is not site specific and is based on the observation that the average time to 80 percent recovery in piezometers when adjacent wells are turned off is about five days, and that the average time to full recovery is about 15 days.

The groundwater model indicates the recent rise in groundwater pressure within the downslope development area largely results from the expanding area of new upslope development. While the upslope development contributes to increased groundwater pressure and therefore to reduced stability in downslope areas, the upslope development is located on more stable strata and is not susceptible to the same type of stability concerns.

### ***August 2007 - Moving Forward - Council Policy EDS-16***

Council Policy EDS-16 Technical Criteria for Development Conditions in the Aberdeen Hills Neighbourhood, 1995 November 21 (as amended 2000 December 12) has been adopted in response to the conditions present in the Aberdeen area. This policy, included in Appendix D, provides development processes to be followed in the Aberdeen area. It has been the catalyst for many of the monitoring devices installed and used to evaluate the ongoing stability of the Aberdeen area, numerous technical studies, and departmental procedures applied when approving development.

Technical studies required by Policy EDS-16 commonly result in covenants being applied to properties at the time of development. These covenants are typically applied at the time of Subdivision and are commonly (re-)enforced at the time of Building Permit. Examples of restrictions that have been registered against properties in Aberdeen are covenants that:

- Ensure cut and fill balances (i.e. no net change in the volume of soil) to maintain stability.
- Prohibit the installation of swimming pools.
- Ensure roof drainage connects directly to the City's municipal storm drainage system, preventing water from getting into the ground.
- Covenants restricting the amount of water used for irrigation.

### ***Capital Projects***

When deemed necessary projects are included in the City of Kamloops Five Year Financial Plan to address ground stability in the Aberdeen area. For example, approximately \$0.5 million was expended on analyses and the installation of two new dewatering wells as a capital project completed in 2006. In the 2008 - 2012 Five Year Financial Plan the most significant item in the drainage program is *938438 Southwest Geotechnical Investigation* where approximately \$1.1 million is budgeted over five years for the installation of additional monitoring devices that are utilized to complete stability studies in the Aberdeen area.

### ***Risk Management Plan***

As part of the ongoing management and monitoring of groundwater and stability in the Aberdeen area, the City worked with Golder to develop a Risk Management Plan in 2008. The Risk Management Plan is simply a formalization of management practices and requirements that the City already undertakes, but compiles everything into a concise and prescriptive format. It allows City staff to track data and conditions and ensures any required management activities are completed within set time periods. These activities are things like weekly monitoring, biannual testing, and annual stability studies.

To supplement the Risk Management Plan, the City installed a Genset (backup electrical power) in the Van Horne area in 2008. The Genset serves a cluster of dewatering wells whose function is important to overall stability. If a large-scale power loss ever occurred in the Aberdeen area or in the City of Kamloops, this Genset will ensure these wells still have power to perform their duty.

### ***Public Works and Utilities Department`***

Operations and maintenance programs and procedures have been adopted by the City of Kamloops Public Works and Utilities Department to monitor, operate, and maintain infrastructure associated with the groundwater and stability of the Aberdeen Groundwater Area.

Leak detection is performed by the Utility Services Division of the Public Works and Utilities Department to identify leaks that may occur in the municipal domestic water supply system. A portion of the leak detection program includes checking the water distribution system in the Aberdeen area. The program is funded through Capital Project 911841.

A groundwater de-watering well pump maintenance program is a component of the Utility Services Division's annual operating budget. Technicians are on staff and contractors are available to facilitate the repair and/or replacement of de-watering pump systems as necessary.

A monitoring program which includes regular piezometer readings is also performed by the Public Works and Utilities Department. The monitoring is performed by the Environmental Services Division and funded through their annual operating budget. Information gathered by this monitoring program is uploaded to the eFacility program described in subsequent sections of this report.

## SUMMARY OF ADDITIONAL INFORMATION

Considerable maintenance, monitoring, and analysis effort has been expended to address the Aberdeen Groundwater Area, and along with it, a very large compilation of data and information has accumulated over the years. Information has been separated between digital and hardcopy data. Hardcopy data is the paper version of the information gathered and stored, digital is that data stored using an electronic media. As a general rule the digital data is related to ongoing monitoring and maintenance while the hardcopy data is more associated with historical reports. The following is a basic summary of the information that has been gathered.

### ***Digital Data***

There are three primarily digital systems used by the City to capture and store data on the monitoring and dewatering facilities related to the Aberdeen Groundwater Program; eFacility™, GIS, and SCADA. The focus of these systems is the collection and storage of data for ongoing monitoring, operations and maintenance purposes. Additional information on these systems can be obtained by contacting the City of Kamloops Development and Engineering Services Department.

### ***eFacility™***

Implemented by the City in May 2006, eFacility™ is an extranet application developed to undertake the management of different types of spatial data associated with one or more facilities. A facility is any location where spatial data, GIS maps and documents come together; a facility can be a manufacturing plant, transport depot, landfill, gold mine or even a process. Data examples include environmental monitoring data from boreholes, air monitoring equipment and river sampling, data collected during asbestos surveys through to compliance and audit data collected across an organization's facilities.

Some of the capabilities of eFacility™ are listed below:

- The user interface features fully functional interactive maps (zoom, pan, select etc.) and/or aerial photographs, both from country level down to sub-facility level.
- All data are stored in and retrieved from a database. This allows an administrator to easily add new facilities, remove old ones, add documents, import survey data, etc., without having to update the code.
- The maps and graphs are generated on the fly so any new data (site locations, sample locations, etc.) are automatically included and therefore viewable immediately after the database has been updated.
- The application features a searchable document management system to allow the user to locate and view electronic documents such as a facility's repair history or a survey report. The search can be by facility or across the whole dataset.

The City of Kamloops eFacility™ Management Centre is the primary web-based tool used by Golder Associates Ltd. and the City of Kamloops for recording and tracking information relating to the various boreholes, piezometers, monitoring wells, and dewatering wells used within the City of Kamloops. This website provides the following type of information:

- Basic facility details and primary contact information;
- Interactive maps of the facility;
- Aerial photographs;
- Borehole chemistry results;
- Other sampling results; and
- Survey reports

### ***City of Kamloops GIS Mapping***

Geographic Information System maintained by the City of Kamloops. With respect to the Aberdeen Groundwater Program is primarily a spatially referenced database of the various boreholes, piezometers, monitoring wells, and dewatering wells installed within the City of Kamloops.

### ***City of Kamloops SCADA***

SCADA is the acronym for Supervisory Control and Data Acquisition, however the SCADA system related to the Aberdeen Groundwater Program is primarily a data acquisition system and has little to no supervisory control capabilities. Data is collected through this system for a limited number of wells near Van Horne Drive. The data collected is primarily pump run times and well levels.

### ***Hardcopy Data***

Hardcopy Data has been summarized in three Appendices. The information was collated through a search of City of Kamloops records and includes some documents that may be available to the City from Golder Associates Ltd., the City's primary engineering consultants on the topic of the Aberdeen Groundwater Area. A reasonable effort has been made to ensure this list includes as many of the documents relevant to the Aberdeen Groundwater Area as possible, however it is probable that this list is not an absolute list of all the information the City may have. Some areas not searched when compiling the Appendices A, B, and C include: Public Works Department files, Engineering Records (Design Drawings) Division files, and filing systems at Development and Engineering Services such as Development Application Files, Subject Files and Address Files.

Appendix A is a summary of reports compiled by the City of Kamloops that have some relevance to the Aberdeen Groundwater Area. The list is a compilation of listings from the City of Kamloops Development Services Library, the City of Kamloops Engineering Library, and the City of Kamloops Legislative Services Library. Access to the documents in Appendix A may be obtained by contacting the City of Kamloops Development and Engineering Services Department.

Appendix B is a compendium of Aberdeen Hills Geotechnical Studies that was compiled in 2000. The reports listed in the compendium were prepared between 1971 and 1996. Copies of these reports are stored in the City of Kamloops Engineering Library and may be viewed by contacting the City of Kamloops Development and Engineering Services Department.

Appendix C is a summary of information on the Van Horne Landslide that the City may have access to from Golder Associates Ltd. A summary of the information considered the most relevant on this list has been compiled by the City and is stored in the City of Kamloops Engineering Library. This summary document is listed in Appendix A.

### ***Council Meetings***

On occasion there are items on the Council Agenda of regular meetings that may have relevance to Aberdeen and the Aberdeen Groundwater Area. The Council Agenda and Council Minutes can be accessed at [www.kamloops.ca](http://www.kamloops.ca), or by contacting the Legislative Services Division at 250-828-3483, or [legislate@kamloops.ca](mailto:legislate@kamloops.ca)).

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**APPENDIX A**  
List of Reports - Aberdeen Groundwater Area  
(Last Updated October 17, 2007)

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<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
B-1	Aberdeen Estates General Development Plan	Urban Systems Ltd.	1984 January
B-3	Aberdeen Hills Community, Development Guidelines	Don Vaughan and Associates	1979 October
B-4	Aberdeen Hills Community, General Development Plan	Urban Systems Ltd.	1982 April
B-5	Aberdeen Hills Community, Transportation and Access/Land Use Assumptions	Zoltan Kuun Associates	1979 October
B-2	Aberdeen Hills - Revised Outline Plan - Preliminary	Dominion Construction	1977 September
B-6	Aberdeen Hills Stage IV, Conceptual Plan and Proposed Zoning	Urban Systems Ltd.	1981
B-11	Comprehensive Development Plan	City of Kamloops - Development Services Department	1990 January
B-13	Crown Land Development Concept - Kamloops South - (Final)	Associated Engineering Services Ltd.	1974 September
B-16	Crown Land Kamloops South - Development Concept Third Stage	Dunhill Development Corporation Ltd.	1975 August
B-17	Crown Lands Kamloops South - Development Concept	Dunhill Development Corporation Ltd.	1975 April
B-83	Northwest Area Sector Plan, Proposal	Strong, Lamb & Nelson	1970 September
B-84	Northwest Kamloops Neighbourhood Plans	Stanley Associates Engineering Ltd.	1975 November
B-82	Northwest Kamloops Neighbourhood Plans (Second Edition)	Stanley Associates Engineering Ltd.	1976 April
B-85	Northwest Sector Plan	Strong, Lamb & Nelson	1972 August
B-90	Sahali Terraces Development, Proposal	Abacus Cities Ltd.	1975
B-77	Southwest Sector Kamloops Outline Plan	Stanley Associates Engineering Ltd.	1970 February
B-75	Southwest Sector Plan	City of Kamloops - Planning Department	1980 December
B-76	Southwest Sector Plan	Stanley Associates Engineering Ltd.	1974 September
B-72	Southwest Sector Plan Extension 1983	Associated Engineering Services Ltd.	1983 May
B-71	Southwest Sector Plan Extension 1983 - draft	City of Kamloops - Development Services Department	1984 March
C-98	Aberdeen Borehole Logs 1995 Investigatory and Remedial Drilling Program South of Howe Road and Van Horne Intersection	Golder Associates Ltd.	1996 March
C-83	Aberdeen Drive Area - Standpipe Installations for Monitoring Groundwater Elevations	Golder Associates Ltd.	1993 November
C-97	Aberdeen Groundwater Monitoring Record Investigatory and Remedial Drilling Program South of Howe Road and Van Horne Intersection	Golder Associates Ltd.	1996 March
C-1	Aberdeen Groundwater Study	City of Kamloops	1983 May
C-2	Aberdeen Groundwater Study - Evaluation of Data Collected in 1983, 1984 and 1985	Aquaterre Consultants Inc.	1985 December
C-3	Aberdeen Hills Piezometric Data	Aberdeen Hills Community	1983 November
C-4	Aberdeen Hills Subdivision, Guerin Creek Storm Drainage Investigation	Stanley Associates Engineering Ltd.	1979 April
C-71	Aberdeen Hills Surface Drainage System Study	Urban Systems Ltd.	1981 February
C-5	Aberdeen Subdivision Groundwater Seepage Investigation	Aquaterre Consultants Inc.	1983 August
C-6	Aberdeen Subdivision Groundwater Seepage Investigation	Aquaterre Consultants Inc.	1983 December

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
C-21	Groundwater and Soil Sampling Procedures, Recommended	Environment Canada	1976 June
C-22	Guerin Creek Basin Drainage Study	Watson Engineering Ltd.	1979 September
C-24	Guerin Creek Channel Infilling and Southgate Detention Pond Proposal for Engineering Services	Watson Engineering Ltd.	1983 June
C-25	Guerin Creek Composite Concrete, CSP Culvert below Mission Flats Road	Watson Engineering Ltd.	1981 October
C-26	Guerin Creek Infilling and Southgate Detention Pond (pictures)	Watson Engineering Ltd.	1984 November
C-27	Guerin Creek Inlet and Outfall Improvements - Summit Drive/Lombard Street - Predesign Report	Civic Engineering Services Ltd.	1984 November
C-28	Guerin Creek Main Drains - The Effects of Highway 5 and RCMP Access	Watson Engineering Ltd.	1987 December
C-29	Guerin Creek Master Drainage Plan	Dayton and Knight Ltd.	1983 February
C-31	Guerin Creek Proposed Geotechnical Detention Pond Design and Slope Stabilization	Golder Associates Ltd.	1983 October
C-32	Guerin Creek Storm Drainage - Notre Dame Drive to McGill Road outfall	Watson Engineering Ltd.	1980 November
C-96	Guerin Creek Storm Water Management Plan - Draft	Dayton and Knight Ltd.	1995 April
C-33	Highland Drive Storm Drainage - Preliminary, Draft	Urban Systems Ltd.	1983 June
C-66	Whiteshield Crescent North - Report of Storm Drainage	Stanley Associates Engineering Ltd.	1985 October
F-1	Aberdeen Drive at Van Horne Drive - Proposed Booster Station Soil Investigation	Golder Associates Ltd.	1982 December
F-2	Aberdeen Hills Development Flexible Pavement Evaluation - Soil Conditions	Klohn Leonoff Consultants Ltd.	1977 May
F-3	Aberdeen Hills Development, Recommendations for Phase 4, Stage 1, Review of Stability	Klohn Leonoff Consultants Ltd.	1980 April
F-4	Aberdeen Hills Development Review Reports and Geotechnical Data	Klohn Leonoff Consultants Ltd.	1977 May
F-5	Aberdeen Hills Development Site Stability	Klohn Leonoff Consultants Ltd.	1977 August
F-6	Aberdeen Hills Seepage and Runoff Control Measures	Klohn Leonoff Consultants Ltd.	1978 April
F-7	Aberdeen Hills Seepage Cut-off Trench, Additional Piezometer Installations and Test Pits	Klohn Leonoff Consultants Ltd.	1978 September
F-8	Aberdeen Hills Slope Depressurization Project Implementation of Piezometers and depressurization wells	Klohn Leonoff Consultants Ltd.	1992 October
F-11	Hector Drive and Hampshire Drive, Aberdeen Hills Community - Geotechnical Study	Golder Associates Ltd.	1984 July
F-15	Highway 5 Extension - Differential Movement - Soil Investigation	Golder Associates Ltd.	1983 June
F-16	Morris Place		1978 November
H-18	Aberdeen Hill Outline Plan	Dominion Construction	1974 May
H-142	Aberdeen Hills Community Road Study - Traffic Volumes	Urban Systems Ltd.	1986 June
H-1	Aberdeen Hills Revised Outline Plan, Preliminary	Dominion Construction	1977 September
H-143	Aberdeen Hills Transportation Planning Report to Urban Systems	Zoltan Kuun Associates	1981 September

Call No.	Title	Author	Publication Date
H-39	Arterial and Collector Roads - Road Management - Drainage and Structures		
H-88	Southwest Kamloops, Access Routes Review	Stanley Associates Engineering Ltd.	1970 October
I-129	Southwest Area Development - Sanitary Sewer Study	Stanley Associates Engineering Ltd.	1970, February
J-1	Aberdeen Estates Water Line (Versatile Line) - Corrosion Investigation Survey	Caproco Corrosion Prevention Ltd.	1983 September
J-3	Aberdeen Hills Properties Water Supply Report	Domco Engineering	1976 September
J-2	Aberdeen Hills - Report on Water Supply and Sanitary Sewerage	Stanley Associates Engineering Ltd.	1974 January
J-88	Aberdeen Hills - Water Supply System	Urban Systems Ltd.	
J-4	Aberdeen, Proposed 2480 Reservoir - Geotechnical Investigation	Golder Associates Ltd.	1982 December
J-141	Booster Station to Service 2965 Pressure Zone - Predesign Report	Urban Systems Ltd.	1992 February
J-65	South Sahali Water System - Pre-design Brief	Stanley Associates Engineering Ltd.	1976 February
J-71	Southwest Area Development Water Supply Study	Ingledow Stanley Associates Engineering Ltd.	1968 June
J-72	Southwest Area Water Study	Stanley Associates Engineering Ltd.	1974 September
J-154	Southwest Sector 2770 Pressure Zone Water Distribution (draft)	Stanley Associates Engineering Ltd.	1994 May
J-158	Southwest Sector Hydraulic Model	Stanley Associates Engineering Ltd.	1995
J-73	Southwest Sector Servicing Study	Stanley Associates Engineering Ltd.	1981 October
J-74	Southwest Sector Water Line - Cathodic Protection Installation and Adjustive Survey Report	Commonwealth Seager Group	1978 July
J-75	Southwest Sector Water Supply System	City of Kamloops - Engineering Department	1977 February
J-76	Southwest Sector Water Supply System - Booster Station 4 - Post-design Report and Operation Logic	Stanley Associates Engineering Ltd.	1979
J-77	Southwest Sector Water Supply System - West Trans Canada Highway - Pre-design Brief	Stanley Associates Engineering Ltd.	1977 March
J-78	Southwest Sector Water System - 2480 Zone Expansion - Preliminary (draft)	Stanley Associates Engineering Ltd.	1982 January
J-79	Southwest Sector Water System - Booster Station 3 Surge Analysis	Stanley Associates Engineering Ltd.	1980 March
J-80	Southwest Sector Water System - Booster Stations 1, 2 and 3 Post-design Report and Operation Logic	Stanley Associates Engineering Ltd.	1977
J-83	Southwest Sector Water System Extension - Predesign Brief (2965 Reservoir)	Watson Engineering Ltd.	1981 August
J-81	Southwest Sector Water System - Phase II, Aberdeen Hills Component - Pre-design Brief	Stanley Associates Engineering Ltd.	1977
J-82	Southwest Sector Water System - Phase III Construction - Application to CMHC	Stanley Associates Engineering Ltd.	1978
J-84	Southwest Water Update - 2120 Pressure Zone Water Study	Stanley Associates Engineering Ltd.	1971 April

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
C-103	Aberdeen Subdivision Guerin Creek Storm Drainage Investigation	Domco Engineering	Apr-79
F-28	Bedrock and Surficial Geology - Aberdeen Hills District Kamloops, BC	Geotech Consultants Ltd. - Peter B. Read	Dec-96
I-243	Sewer System Infrastructure Update	Urban Systems Ltd.	Feb-90
C-106	Greystone Crescent Drainage Study and Recommendations	R. D. Lewis and Associates	Dec-97
C-105	Hugh Allan Drive Drainage Study and Recommendations	R. D. Lewis and Associates	Dec-97
C-109	Investigation of Groundwater Chemistry Region of Ground Movement South of Intersection of Howe Road and Van Horne Drive Kamloops, BC	Golder Associates Ltd.	Aug-98
F-29	Aberdeen Hills 1997 - Stability Study	Klohn-Crippen	Feb-98
S223	Geotechnical Exploration Aberdeen Glen Strata Mobile Home Subdivision Kamloops: 962-1280	Terra	97/1/9
S224	Report On Slope Stability of 1775 Versatile Drive: 942-1070	Terra	95/05/05
S001 v.1	Geotechnical Assessment Lot 18 and 19 Gladstone Place Kamloops B C: 802-3093	Golder Associates Ltd.	80/10/23
S001	Geotechnical Consultation - Lot 22, Robson Drive: 812-3009	Golder Associates Ltd.	81/01/30
S006	Soil Investigation for Versatile Developments Light Industrial Park, Kamloops, BC: K77564	Golder Associates Ltd.	77/ 7/21
S016	Preliminary Site Investigation Lot 2, Plan 20497 Lasage Road, Kamloops, BC: K78523	Golder Associates Ltd.	78/08/15
S017	Soil Investigation for Proposed Elevation 2770 Water Reservoir Kamloops, BC: K77512	Golder Associates Ltd.	77/02/17
S026	Foundation Conditions - Springhill Drive Overpass:	Highways Department	66/06/28
S045	Soil Investigation Monarch Court School: K78618	Golder Associates Ltd.	78/12/22
S049 v.2	Geotechnical Investigation Tailing Deposit Southkam Estates Kamloops, BC: 812-3004	Golder Associates Ltd.	81/02/27
S049 v.1	Southkam Estates Density Tests: 80291	Terra	80/11/28
S061	Soil Investigation Proposed Aberdeen Park School Kamloops, BC: 792-3092	Golder Associates Ltd.	79/11/20
S069	Subsoil/Foundation Investigation and Recommendations to Towne Projects Ltd Kamloops, BC: 81382	Terra	81/06/26
S074	Geotechnical Investigation Proposed Townhouse Development Summit Drive and Gleneagles Kamloops, BC: 812-3069	Golder Associates Ltd.	81/06/10
S078	Proposed Apartment Complex Lot C - Van Horne Drive Kamloops, BC Subsoil/Foundation Investigation and Recommendations: 81414	Terra	81/09/16
S082	Proposed Racquets Court and Spa Springhill Drive Kamloops, BC - Subsoil/Foundation Investigation and Recommendations: 81344	Terra	81/06/17

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
S084	Soils Investigation Proposed Ramada Inn TransCanada Highway West Kamloops, BC: 802-3105	Golder Associates Ltd.	80/10/29
S093	Proposed Office Building/Warehouse Lot 5 - Pearson Place Aberdeen Hills Community Kamloops, BC Subsoil/Foundation Investigation and Recommendations: 81465	Terra	81/12/01
S101	Soils Investigation Proposed Co-op Housing Development Summit Drive At Hollyburn Drive Kamloops, BC: 822-3011	Golder Associates Ltd.	82/03/11
S105	Soil Investigation Three Apartment Complexes Hugh Allan Drive, Aberdeen Development Kamloops, BC: 802-3011	Golder Associates Ltd.	80/02/12
S107	Soils Investigation Road Settlement By Aberdeen Mall Kamloops, BC: 812-3155	Golder Associates Ltd.	82/03/03
S110	Soil Investigation Proposed Reservoir Southkam Estates: 802 3104	Golder Associates Ltd.	80/11/12
S115	Geotechnical Investigation Van Horne Drive and Greystone Crescent Kamloops, BC: 822-3068	Golder Associates Ltd.	82/09/02
S116	Soil Investigation Proposed Church Summit Drive: 822-3078	Golder Associates Ltd.	82/11/10
S119	Soil Investigation Sentinel Court Kamloops, BC: 832-3025	Golder Associates Ltd.	83/04/25
S120	Soil Investigation Proposed Water Main - Versatile Drive Kamloops, BC: 832-3003	Golder Associates Ltd.	83/03/18
S122	Proposed MAC'S Convenience Store Hugh Allan Drive At Harrison Way, Kamloops, BC: 832-3009	Golder Associates Ltd.	83/03/04
S126	Groundwater Seepage Investigation Aberdeen Subdivision Kamloops, British Columbia: K3020	Aquaterre Consultants Inc.	83/12/01
S127	Soils Investigation 405 Garibaldi Drive, 547 Garibaldi Drive 1936 Gladstone Drive, Kamloops, BC: 812-3159	Golder Associates Ltd.	81/12/23
S128	Foundations for Church near Aberdeen Mall - Kamloops, BC	Paul M. Cook, P.Eng.	83/09/30
S129	Small Lot Subdivision Intersection of Van Horne Drive and Howe Road, Soils Inspection, Testing Services and Report: 84609	Terra	84/04/13
S131	Iron Mask Trailer Court Well Test: 8170-01	R. D. Lewis and Associates	81/12/24
S140	Aberdeen Slide Area (Stage 1, Phase 4)		
S209 v.1	Requirements for Residential Foundation Construction Lots 12-14, 17-19, 25-33, 50, 51, Juniper West Subdivision - stage 1, Phase 1 Kamloops: KX10424	Hardy Associates (1978) Ltd.	91/05/10
S145	Gloaming Ridge Subdivision Subsoil/Foundation Investigation and Recommendations: 89905	Terra	89/11/20
S146	Geotechnical Investigation Tinniswood Court Subdivision Kamloops, BC: KX10096	Hardy BBT Limited	88/05/25
S146 v.1	Coach Hills Subdivision - Sahali Heights, Kamloops, BC - Phases II - III [IV, V, VI ] Geotechnical Investigation: KX10165	Hardy BBT Limited	89/03/07

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
S146 v.2	Geotechnical Investigation Coach Hills Subdivision - Phase VII Kamloops BC: KX10573	Hardy BBT Limited	91/08/16
S146 v.3	Geotechnical Investigation Phases VIII, IX and 10 - Coach Hills Subdivision Kamloops, BC: KX10308	Hardy BBT Limited	90/03/06
S226 v.1	Aberdeen Hills - 1997 Stability Study: PW 7223 03	Klohn-Crippen	98/02/05
S152 v.1	Site Preparation - Residential Lots 37 - 39 Gleneagles Drive: 912-103	Terra	92/01/07
S153 v.2	The Links - Aberdeen Policy Area (Council Policy No. EDS-23): PW 7223 0301	Klohn-Crippen	97/12/02, 97/12/22, 98/01/12
S154 v.1	Geotechnical Investigation Proposed Subdivision - Summit Drive: KX10289	Hardy BBT Limited	90/01/15
S162	Geotechnical Investigation Proposed Subdivision Summit Drive Below Castle Towers Drive: 912-3042	Golder Associates Ltd.	91/07/29
S166	Crestview Heights Residential Subdivision: 922-922	Terra	93/01/18
S166 v.2	Geotechnical Review Phase II Strata Residential Development: 962-922.201	Terra	96/03/28
S167	Planned 13 Lot Subdivision Greystone Crescent and Pacific Way Aberdeen Hills: PB 5689-0301	Klohn Leonoff Consultants Ltd.	93/01/22
S173 v.1	Drainage Systems - Highlands Subdivision: 922-122.001	Terra	92/10/28
S173	The Highlands - 80 Lot Subdivision - Kamloops, BC: 922-122	Terra	92/07/23
S173 v.2	Review of Proposed Groundwater Control Measures Highlands 80 Lot Subdivision: 922-3001A	Golder Associates Ltd.	93/01/04
S177	Pacific Way Apartment Site - Kamloops, BC: 932-957	Terra	93/04/27
S180	Geotechnical Investigation For Proposed Townhouse Development At 1580 Summit Drive Kamloops, BC: KX10576	Hardy BBT Limited	91/07/16
S181	Geotechnical Investigation For Proposed Subdivision Adjoining Monarch Court: KX10581	Hardy BBT Limited	91/07/01
S188	Sunhills Development Subdivision Project: 932-971 and 942-971. R01	Terra	93/05/27
S188 v.1	Geotechnical Exploration Sunhill Development Phase 3 Kamloops, BC: 972-971	Terra	97/04/18

Call No.	Title	Author	Publication Date
H-167.2	Trans Canada Highway Corridor Management Plan (Kamloops to Alberta Border) Community Impact and Development Study - Appendix A - Community Profiles - Final Report	Urban Systems Ltd.	May-98
H-167.3	Trans Canada Highway Corridor Management Plan (Kamloops to The Alberta Border) Community Impact and Development Study Appendix B - Traffic Forecasts Final Report	Urban Systems Ltd.	May-98
S191 v.2	Corrosion Control Services Soil Corrosiveness Analysis Aberdeen Hills Highlands Subdivision, Phase 5, Kamloops, BC: K-97/1111	Petroleum Enviro Services	97/04/04
S191 v.7	Highlands Subdivision Phase 5 Drainage Plan: 155-11-508	Civic	98/09/11
S191 v.4	Preliminary Geotechnical Review, Requirement for Installation of Deep Services Highlands Phase 5 - Subdivision 97-37	Klohn-Crippen	97/09/30
S193	Dunraven Terrace Project: 88810	Terra	88/06/22
S200	Springhill Developments Residential Complex: 912-074	Terra	91/06/13
S201	Sierra Vista Pacific Links - 2080 Pacific Way Project: 932-972	Terra	94/03/22
S202	Gleneagles Dr Lots 1-27-45: 932-103	Terra	
S146 v.4	Geotechnical Investigation Coach Hills Subdivision - Phase XIA/12: KX10833	HBT Agra Ltd.	93/03/02
S146 v.5	Geotechnical Study Coach Hills Subdivision - Phase XI Kamloops, BC: KX10711	HBT Agra Ltd.	92/04/09
S223 v.1	Corrosion Control Service Soil Corrosiveness Analysis: K-97/1102	Petroleum Enviro Services	97/02/14
S225	Greystone Dr 986 (Retaining Wall): 2987	M. Milligan & Associates Ltd.	95/10/05
S227	Bedrock and Surficial Geology, Aberdeen Hills District, Kamloops:	Geotex Consulting & Golder	96/12/10
S228	Report On Soil Movement 1212 Harrison Place Kamloops: 972-3001	Golder Associates Ltd.	97/01/10
S235	Aberdeen Glen Estates Phase I, Stages I and 2 Geotechnical Investigation: KX10277	Hardy BBT Limited	89/12/12
S234 v.6	Sulphate Analysis of Samples - K08 - Pineview Valley: 952-1007.3	Terra	95/06/21
S234 v.7	Geotechnical Exploration Pineview Townhouses: 972-1007K11	Terra	97/07/15
S191 v.3	Preliminary Geotechnical Review Requirement for Installation of Deep Services Highlands Phase 5 - Subdivision 97-37:	Klohn-Crippen	97/06/11
S235 v.1	Geotechnical Exploration Glenmohr Subdivision Westerdale Drive: 972-1356	Terra	97/10/20

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
S235 v.2	Corrosion Control Services Soil Corrosivity Analysis Glenmohr Subdivision: K-97/1151	Petroleum Enviro Services	97/11/13
S238	Eagle Heights - Phase I Subsoil Investigation For 22 Lot Subdivision: 89867	Terra	87/06/12
S154	Requirement for Perimeter Drainage Monteith Drive Extension: (KX10289)	Hardy BBT Limited	91/09/04
S153	The Links Proposed Residential Subdivision Geotechnical Site Investigation: 922-113	Terra	92/04
S153 v.1	The Links Subdivision - Aberdeen Hills: 932-959	Terra	93/04/30
S152	Lots Nos. 37 - 45 Gleneagles Drive Kamloops, BC: 912-103	Terra	91/11/18
S166 v.1	Independent Geotechnical Inspections Crestview Heights Subdivision: 932-922R.001	Terra	94/02/10
S162 v.1	Geotechnical Status Report Coppertree Subdivision, Phase 2 Kamloops, BC: 912-3042	Golder Associates Ltd.	93/02/08
S254	Subsoil Information - Eagle Heights - Phase II: 89867	Terra	90/03/27
S256	Foundation Inspection Lots 60, 61, 63 and 64 Robson Drive: 872-3033	Golder Associates Ltd.	87/11/03
'	Robson Dr: 872-3033 (Lots 101 - 161)	Hardy BBT Limited	89/07/16
S191 v.6	Construction Completion Report Highlands, Phase 5A Kamloops, BC: KX12038	AGRA Earth & Environmental	98/08/21
C-113	Letter Report on Russet Wynd Drainage, Kamloops, BC	Watson Engineering Ltd.	29-Apr-96
S200 v.2	Site Inspection Lot Nos. 24 To 28, Plan KAP 53006 Sedona Drive: 942-1034.R02	Terra	94/11/29
S200 v.1	Corrosion Control Service Soil Corrosiveness Analysis file #942-103-4; Springhill Developments: 942-103-4	ASM Corrosion Control Ltd.	94/06/17
S258	Drain Tiles, 101 - 161 Robson Drive:	Hardy BBT Limited	89/07/11
S223 v.2	Country Villa Mobile Homes Aberdeen Glen Mobile Home Park: 7167801.3	Urban Systems Ltd.	97/07/07
S227 v.1	Bedrock and Surficial Geology, Southwest Development Sector Kamloops, BC:	Geotex Consulting & Golder	98/12/15
C-115	City of Kamloops Orchard Drive Gully Drainage	Watson Engineering Ltd.	7-May-99
S191	The Highlands Subdivision Phases 2, 3, 4, and 5: 932-974.R	Terra	93/09/08
S001 v.3	South Sahali Stage V - Soil Stability Gladstone Place - Plan 30894 Lots 18, 19, 22, 23 and 24: 737-33-1-1	Stanley Associates Engineering Ltd.	80/10/28
S001 v.2	Soil Instability South Sahali Stage V: 03-91-04-77-64	J.A.C. Painter	80/07/29

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
S017 v.1	Soil Investigation For Proposed Booster Station and 2770 Water Reservoir Aberdeen Hills Kamloops, BC	Golder Associates Ltd.	77/11/29
S027 v.1	Aberdeen Shopping Centre Kamloops, BC: 5470-K	Cook Pickering & Doyle Ltd.	79/10/29
S049	Southkam Estates Site Grading: 80291	Terra	80/11/13
J-215	1429 Zone Water System Review of Pressure Variation City of Kamloops	Stantec	Mar-00
S119 v.1	Soil Investigation - Sentinel Court: 737-35-1-2	Stanley Associates Engineering Ltd.	83/04/29
S119 v.2	Placement of Structural Grade Fills Lots 84 to 86, Sentinel Court Kamloops, BC: 832-3025	Golder Associates Ltd.	83/05/24
S128 v.1	Foundations for Church near Aberdeen Mall - Kamloops, BC	Paul M. Cook, P. Eng.	84/02/13
S145 v.1	Gloaming Ridge - Phase II - Laurel Court Subdivision	Terra Engineering Ltd.	92/02/13
S159	Site Investigation For Pacific Links Subdivision Aberdeen Hills: 932-972.001 and 002	Terra	93/06/16, 93/09/27
S154 v.2	Analytical Results: 1032	Eco-tech laboratories Ltd.	89/12/12
S146 v.6	Tremerton Drive Extension and Proposed New Subdivision Coach Hills Subdivision Kamloops, BC: KX11446	AGRA Earth & Environmental	95/12/21
S173 v.3	Groundwater Control Measures and Effects New Subdivision Development In Aberdeen District Kamloops, BC: 922-3001A	Golder Associates Ltd.	93/03/09
S188 v.2	Corrosion Control Services Soil Corrosivity Analysis Sunhill Development Phase 3, Kamloops, BC: K-97/1119	Petroleum Enviro Services	97/04/15
S191v.1	Seacor Environmental Engineering Proposal Additional Investigation of Groundwater Conditions Highlands Subdivisions Phase 2 Through 5: 922-3001C	Golder Associates Ltd.	94/01/04
S191 v.5	Preliminary Geotechnical Review, Requirement for Installation of Deep Services Highlands Phase 5 - Subdivision 97-37	Klohn-Crippen	98/03/27
S192	Stage 1-3B and Stage 4-1 Geotechnical Map of Expansiveness: VA 2800	Klohn Leonoff Consultants Ltd.	81/07/17
S200 v.4	Seepage Collection - Sedona Pines Phase II:	Terra	96/06/26
S260	Proposed Industrial Building 1840 - Kryczka Place Kamloops: 002-2256	Terra	00/08/16
S226	Aberdeen Hills Landslide Study: PW 7223 0201	Klohn-Crippen	96/06/20
S234	Geotechnical Investigation and Site Reconnaissance Proposed Fraserview Python Lake Subdivision: 932-1007.003	Terra	94/01/26
S234 v.1	Site Investigation For Road Construction - Phase I Pine Valley/Python Lake Subdivision: 932-1007.004	Terra	94/06/20

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
S234 v.2	Geotechnical Parameters For Thrust Blocks Pineview Valley Subdivision Copperhead Drive and Hugh Allan Drive: 932-1007.G01	Terra	94/07/25
S234 v.3	Retaining Wall Construction - Pineview Valley Subdivision Phase I - Copperhead Drive and Hugh Allan Drive: 932-1007.G02	Terra	94/08/02
S234 v.4	Pineview Valley Subdivision General Overview and Phase I Development: 932-1007.007	Terra	94/08/04
S234 v.5	Typical Foundation Design For Manufactured Homes:	S.R.I. Homes Inc.	95/05/12
S234 v.8	Fraserview Development Corp - Roof Drain Connection To Storm Services: 7141904.1	Urban Systems Ltd.	97/09/04
S235 v.3	Glenmohr Subdivision Site Grading and Overland Flood Route: 7142404.2	Urban Systems Ltd.	98/09/29
S254 v.1	Attached Residential Housing Complex Eagle Heights - Phase III: 922-867	Terra	92/02/04
S265	Geotechnical Reports and Correspondence, 2022 Pacific Way	Golder Associates Ltd.  Terra  Civic Engineering Services Ltd.	94/08/22 - 97/08/26
C-120	Aberdeen Hills Groundwater Data Collection Manual	Klohn-Crippen	January 3,1994
S269	Mobile Home Park - West of Guerin creek Aberdeen Hills Development: VA2903	Klohn Leonoff Consultants Ltd.	82/01/06
S269 v.1	Road Crossing of Guerin Creek At Slide Area Approximately 1300 Ft Upstream of Pacific Way Crossing Aberdeen Hills Development: VA2903	Klohn Leonoff Consultants Ltd.	82/01/07
S270	Aberdeen Hills Stage 2 Slope Stability Along Guerin Creek: VA2149	Klohn Leonoff Consultants Ltd.	78/06/22
S270 v.1	Aberdeen Hills Stage 2 Slope stability Along Guerin Creek: VA2149	Klohn Leonoff Consultants Ltd.	78/07/17
S273	South Sahalli Stage III Phase 3 Lots 1, 2, 3, 4, 19, 20, 21C, D: 737-29-1-3	Stanley Associates Engineering Ltd.	79/11/22
S279	Castle Towers Drive Building Lots 24, 25, 26 Compaction of Fill Areas: 737-34-1-1	Stanley Associates Engineering Ltd.	80/10/09
F-36	Aberdeen Hills Perimeter Study	Geotex Consultants Limited	16-Dec-00
F-35	Drainage and Stability of Old Slide Area Aberdeen Hills Community Kamloops, BC	Klohn Leonoff Consultants Ltd.	5-Mar-91
F-34	Aberdeen Hills Development Geotechnical Report	Klohn Leonoff Consultants Ltd.	18-Aug-81
F-33	Seismic Refraction Study of Aberdeen Hills Development Kamloops, BC	Klohn Leonoff Consultants Ltd.	11-Jul-77
F-32	Aberdeen Hills Development Appendix I	Klohn Leonoff Consultants Ltd.	Jul-77
F-31	Brief on the Aberdeen Heights Development Kamloops, BC	Klohn Leonoff Consultants Ltd.	20-May-77
S191 v.8	Construction Completion Report Highlands, Phase 5B Kamloops, BC: KX12559	AMEC Earth & Environmental Limited	1/7/2027

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
S191 v.9	Construction Completion Report Highlands, Phase 5B Kamloops, BC: KX12559	AMEC Earth & Environmental Limited	1/8/2003
S285	Geotechnical Assessment: Proposed 51 Lot Residential Subdivision Westerdale Drive Extension - Phase 1 Kamloops, BC: 022-04217	Trow Consulting Engineers Ltd.	2/6/2013
S286	Report to Canadian General Electric re Soil Investigation for Proposed Shops Building Versatile Industrial Park, Kamloops, BC: 822-3008	Golder Associates Ltd.	82/03/9
S234 v.9	Kam Con Building Group Pineview subdivision - K11 area: 972-1007-K11	Trow Consulting Engineers Ltd.	2/8/1930
S191 v.10	Geotechnical Assessment Proposed subdivision Highlands, Phase 5C Kamloops, BC: KX12720	AMEC Earth & Environmental Limited	2/7/2003
J-233	An Evaluation of Residential Irrigation	David S. Chanasyk, Ph.D., P.Eng.	3-Mar-00
J-234	An Assessment of The Irrigation Regime Used At The Aberdeen Golf Course, Kamloops, BC	David S. Chanasyk, Ph.D., P.Eng.	Feb-00
S290	GEOTECHNICAL INVESTIGATION DALGLEISH DRIVE DEVELOPMENT KAMLOOPS BS: CP03016	Cullinane & Powell Consulting Inc.	13/03/2003
I-287	City of Kamloops South West Sector Sewer Model Final Report	Urban Systems Ltd.	Apr-03
C-128	City of Kamloops Guerin Creek Storm Drainage Notre Dame Drive to McGill Road Outfall	Watson Engineering Ltd.	1980
J-247	City of Kamloops Water System Review Pressure Zone 1429 Summary Report	Urban Systems Ltd.	May-04
C-130	Bestwick Drive Report On Drainage	R.D. Lewis & Associates Ltd.	31-Jul-00
C-132	Makao Lake/Guerin Creek Drainage Analysis	Dayton and Knight Ltd.	23-Aug-00
J-250	City of Kamloops 2005 City-Wide Water System Master Plan Report	Stantec & Urban	Jan-06
F-38	Addendum 11 Evaluation of Impacts of Additional Recharge In The New Development Area On Area B and Perimeter Areas of Aberdeen Kamloops, BC	Golder Associates Ltd.	25-Feb-05
F-39	Aberdeen Hills Depressurization Program 2002/2003 Stability Study Final Report	Klohn-Crippen	17-Dec-04
F-40	Aberdeen Hills Depressurization Program Task 6 Perimeter Study Stage 1 Final Report	Klohn-Crippen	30-Nov-01
F-41	Aberdeen Hills Depressurization Program Perimeter Study Stage 2 Final Report	Klohn-Crippen	31-Oct-03
F-42	Spring 2006 Aberdeen Perimeter Inspection Report	Golder Associates Ltd.	18-Aug-06
J-256	Report City of Kamloops 2005 City-Wide Water System Master Plan	Stantec & Urban	Jan-06
F-43	Aberdeen Hills Depressurization Program 2001 Stability Study	Klohn-Crippen	13-Dec-01
F-44	Aberdeen Hills 2002 Well Installation Areas A and B	Klohn-Crippen	17-Oct-02
F-45	Aberdeen Hills 2003 Well Installation	Klohn-Crippen	28-Aug-03
F-46	Aberdeen Hills Depressurization Program Well Installation and Testing	Klohn-Crippen	9-Aug-01

<b>Call No.</b>	<b>Title</b>	<b>Author</b>	<b>Publication Date</b>
F-47	Geochemical Modelling of H2S Gas Potential Pineview Valley Subdivision Kamloops, BC	Golder Associates Ltd.	29-Jan-01
F-48	Aberdeen Hills Soil Corrosivity Assessment	Golder Associates Ltd.	31-Jan-01
F-49	Slope Depressurization Project Implementation of Piezometers and Depressurization Wells	Klohn-Crippen	Oct-92
F-50	Assessment of Howe Road Corridor Stability West of Pacific Way Kamloops, BC	Golder Associates Ltd.	13-Sep-05
H-195	Visual Inspection of Hillside Court - The Access Road down to Aberdeen Mall Staff Parking, Chamber of Commerce Building, RCMP Station and to Maverick Motel	Watson Engineering Ltd.	Feb. 09, 2006
J-264	City of Kamloops Southwest Sector Pumping Upgrades	Urban Systems Ltd.	18-May-07
	Abandoning Piezometer P96-2, Aberdeen Development Area, Kamloops BC	Golder Associates Ltd.	17 Oct 07
F-55	Summary of Geotechnical Reports, Investigation of Ground Movement, Van Horne Drive, Kamloops, BC - (City of Kamloops Compilation)	Golder Associates Ltd.	17-Nov-06
F-51	Installation and Testing of Additional Dewatering Wells, 2020 Van Horne Area, Kamloops BC	Golder Associates Ltd.	14-Jun-07
F-53	2006 Stability Review, Aberdeen Development Area, Kamloops, BC	Golder Associates Ltd.	21-Sep-07
F-54	Efficacy of Sand Fracturing DW06-01 and DW06-2 Wells in Van Horne, Kamloops, BC	Golder Associates Ltd.	02-Oct-07
F-56	Assessment of Piezometers and Drainage Well Conditions at Aberdeen Hills Community Development, Kamloops, BC	Klohn-Leonoff	31-Aug-90
F-61	Risk Management Plan, Aberdeen Ground Stability, Kamloops, BC	Golder Associates Ltd.	13-May-08
F-60	Geotechnical Assessment, Lot 1, Plan 31827, Van Horne Drive, Kamloops, BC	AMEC Earth & Environment Limited	5-Jul-01
F-57	Aberdeen Perimeter Inspection Compendium	Golder Associates Ltd.	2-Jan-08

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**APPENDIX B**  
Aberdeen Hills Geotechnical Studies Compendium (1971-1996)

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*Aberdeen Hills Geotechnical Studies Compendium*

**(Hardcopies in two large blue binders in the Engineering Library)**

<b>Date</b>	<b>Title</b>	<b>Author</b>
Oct. 8/71	Kamloops Subdivision Water Study	JD Mollard and Assoc.
Apr. 13/73	Aberdeen Heights Project, Kamloops, BC	Ripley, Klohn and Leonoff
Jan. 18/77	Proposed Aberdeen Heights Development, Kamloops, BC	Golder Associates Ltd.
Mar. 8/77	Mineralogical Analyses Aberdeen Hills Reservoir Site	R.M. Quigley
Mar. 30/77	Aberdeen Heights Development, Kamloops, BC	Golder Associates Ltd.
May 4/77	Aberdeen Heights Development	Klohn Leonoff Consultants
May 13/77	Flexible Pavement Structures For Roadways In Aberdeen Hills Development	Klohn Leonoff Consultants
May 20/77	Brief On The Aberdeen Heights Development, Kamloops, BC	Klohn Leonoff Consultants
Jul./77	Appendix I Field Investigation	Klohn Leonoff Consultants
Jul. 11/77	Appendix VI Seismic Refraction Study of Aberdeen Hills	Klohn Leonoff Consultants
Aug. 3/77	Aberdeen Hills Development, Site Stability	Klohn Leonoff Consultants
Apr. 11/78	Aberdeen Hills Seepage and Runoff Control Measures	Klohn Leonoff Consultants
Jun. 22/78	Aberdeen Hills Stage 2 Slope Stability Along Guerin Creek	Klohn Leonoff Consultants
Sept. 12/78	Aberdeen Hills Development Additional Piezometer Installations and Test Pits For The Seepage Cut-Off Trench	Klohn Leonoff Consultants
Nov. 20/79	Soil Investigation Proposed Aberdeen Park School	Golder Associates Ltd.
Feb. 12/80	Soil Investigation Three Apartment Complexes Hugh Allan Drive	Golder Associates Ltd.
Apr. 3/80	Recommendations For Phase 4, Stage 1 Development and Review of Stability	Klohn Leonoff Consultants
Jan. 29/81	Building Drains For Aberdeen Hills Stage 1 Phase 4 Information Bulletin No. 1	Urban Systems Ltd.
Feb. 9/81	Aberdeen Hills Stage 1 Phase 3a and Stage 4 Phase 1 Recommendations For Special Drainage Requirements	Klohn Leonoff Consultants
Apr. 13/81	Aberdeen Hills Development Stage 3, Phases 2 and 3 Site Visit	Klohn Leonoff Consultants
May 12/81	Aberdeen Hills Development Stages 3-3, 1-3b, 4-1, Site Visit	Klohn Leonoff Consultants

<b>Date</b>	<b>Title</b>	<b>Author</b>
May 12/81	Aberdeen 3b - Lot Fill Program	Terra Eng. Lab. Ltd.
May 21/81	Aberdeen 3b - Lot Filling Program	Terra Eng. Lab. Ltd.
Jun. 5/81	Aberdeen - Stage III - Lot Fill	Terra Eng. Lab. Ltd.
Jun. 8/81	Aberdeen - Stage III - Lot Fill	Terra Eng. Lab. Ltd.
Jun. 10/81	Aberdeen - Stage III - Lot Fill	Terra Eng. Lab. Ltd.
Jun. 10/81	Aberdeen - Stage 1, Phase 3a 20 Lot Residential Development Lots 9 - 16 Filling Program	Terra Eng. Lab. Ltd.
Jun. 17/81	Aberdeen Hills Development Potentially Expansive Soils Lot 115, Stage 1, Phase 3b	Klohn Leonoff Consultants
Jun. 30/81	Aberdeen Hills Development Stages 3-3, 1-3b, 4-1. Construction On Potentially Expansive Soils Draft	Klohn Leonoff Consultants
Jul. 17/81	Aberdeen Hills Development Stages 3-3, 1-3b, 4-1. Construction On Potentially Expansive Soils	Klohn Leonoff Consultants
Aug. 16/81	Proposed Apartment Complex Lot C Van Horne Drive	Terra Eng. Lab. Ltd.
Aug. 18/81	Aberdeen Hills Development	Klohn Leonoff Consultants
Aug. 28/81	Aberdeen Stage Iii, Lot Filling Programmed	Terra Eng. Lab. Ltd.
Oct. 7/81	Pre-Wetting of Foundation Soils Aberdeen Hills Development	Klohn Leonoff Consultants
Sept. 2/82	Van Horne Drive and Greystone Crescent - Macs Store	Golder Associates Ltd.
Dec. 8/82	Soil Investigation Booster Station Van Horne at Aberdeen Drive	Golder Associates Ltd.
Mar. 23/83	Howe Road Residential Lots	Terra Eng. Lab. Ltd.
May 1/83	Aberdeen Groundwater Study.	City of Kamloops
Aug. 29/83	Aberdeen Subdivision Groundwater Seepage Investigation Draft	Aquaterre Consultants Inc.
Nov. 8/83	Aberdeen Hills Piezometric Data	Aberdeen Hills Community
Dec./83	Aberdeen Subdivision Groundwater Seepage Investigation	Aquaterre Consultants Inc
Apr./84	Small Lot Subdivision Towne Projects	Terra Eng. Lab. Ltd.
Jul. 20/84	Geotechnical Study Hector and Hampshire Drives	Golder Associates Ltd.
Dec./85	Aberdeen Groundwater Study - Evaluation of Data Collected In 1983, 1984 and 1985	Aquaterre Consultants Inc.

<b>Date</b>	<b>Title</b>	<b>Author</b>
Dec./85	Aberdeen Groundwater Study Evaluation of Data Collected 1983, 1984, 1985	Aquaterre Consultants Inc.
Feb. 20/86	Braemar Area Groundwater Monitoring Well	Aquaterre Consultants Inc
Jun. 13/86	Aberdeen Hills Golf Club - Irrigation Water Reservoir - Groundwater and Geotechnical Investigation	Aquaterre Consultants Inc.
Nov. 17/87	Aberdeen Hills Development Proposed Garymede Subdivision Stage 1, Phase	Hardy BBT Limited
Jun. 22/88	Dunraven Terrace Project	Terra Eng. Lab. Ltd.
Nov. 20/89	Gloaming Ridge Subdivision	Terra Eng. Lab. Ltd.
Mar. 27/90	Gloaming Ridge Subdivision - Phase 1	Terra Eng. Lab. Ltd.
Mar. 5/91	Drainage and Stability of the Old Slide Area	Klohn Leonoff Consultants
Jul. 27/91	Gloaming Ridge Subdivision - Phase 2	Terra Eng. Lab. Ltd.
Dec. 12/91	The Links Subdivision	Terra Eng. Lab. Ltd.
Jan. 13/92	Lot 20 Sunhaven	Terra Eng. Lab. Ltd.
Apr./92	The Links Subdivision	Terra Eng. Lab. Ltd.
Jun. 22/92	Garage Preparation - Lot 7 - Sunhaven Development	Terra Eng. Lab. Ltd.
Oct. 23/92	The Links Subdivision	Terra Eng. Lab. Ltd.
Nov. 20/92	Aberdeen Hills Development Slope Depressurization Project	Klohn Leonoff Consultants
Nov. 30/92	Perimeter and Eavestrough Drainage Recommendations - Sunhaven Developments	Terra Eng. Lab. Ltd.
Jan. 4/93	Lot 16 Sunhaven	Terra Eng. Lab. Ltd.
Jan. 8/93	Lot 17 Sunhaven	Terra Eng. Lab. Ltd.
Jan. 22/93	Planned 13 Lot Subdivision Greystone and Pacific Way	Klohn Leonoff Consultants
Apr. 30/93	Re: The Links Subdivision	Eng. Lab. Ltd.
Jun. 23/93	Eavestrough Drain and Yard Drainage 2020 Van Horne	Eng. Lab. Ltd.
Jul. 19/93	Lot 15 Sunhaven	Eng. Lab. Ltd.
Aug. 9/93	Sunhaven Bareland Strata	Terra Eng. Lab. Ltd.
Sept. 8/93	The Highlands Subdivision Phases 2, 3, 4, 5	Terra Eng. Lab. Ltd.

<b>Date</b>	<b>Title</b>	<b>Author</b>
Oct. 27/93	Highlands Subdivision Phases 2 - 5 Groundwater Investigation	Seacor Env. Eng. Ltd
Nov. 17/93	Aberdeen Drive Area - Standpipe Installations For Monitoring Groundwater - Elevations	Golder Associates Ltd.
Nov. 17/93	Standpipe Installations For Monitoring Groundwater Elevations Aberdeen - Drive Area	Golder Associates Ltd.
Nov. 30/93	Assessment of Potential For Detrimental Effects From Proposed Highlands Subdivision - Phases 1 Through 5 On Existing Downgradient Dwelling	Golder Associates Ltd.
Jan. 3/94	Aberdeen Hills Groundwater Data Collection Manual	Klohn-Crippen.
Jan. 3/94	Aberdeen Hills Groundwater Data Collection Manual	Klohn-Crippen.
Mar. 22/94	Sierra Vista Pacific Links - 2080 Pacific Way	Terra Eng. Lab. Ltd.
May 18/94	Preliminary Geotechnical and Terrain Evaluation 13 - 2020 Van Horne Drive	Geoterrain Consultants
Oct. 12/94	Installation of Standpipe Piezometers For Groundwater Monitoring Phases 2 to 5 - Highlands Subdivision	Golder Associates Ltd.
Dec. 7/94	Lot 18 -2020 Van Horne Drive	Terra Eng. Lab. Ltd.
Apr. 12/95	Installation of Drainage Trench Jacksiblinn/Armstrong Residences Units - 14, 15, 16 2020 Van - Horne Drive	Terra Eng. Lab. Ltd.
Apr.25/95	2020 Van Horne Drive Subdivision	Terra Eng. Lab. Ltd.
May 16/95	Lot 18 2020 Van Horne Drive	Terra Eng. Lab. Ltd.
May 24/95	Installation of Perimeter and Roof Drains Jacksiblinn/Armstrong Residences Units 14, 15, 16 - 2020 Van Horne Drive	Terra Eng. Lab. Ltd.
Mar. 12/96	Aberdeen Borehole Logs 1995 Investigatory and Remedial Drilling Program South of Howe Road and Van Horne Drive Intersection	Golder Associates Ltd.
Mar. 12/96	Aberdeen Groundwater Monitoring Record Investigatory and Remedial Drilling Program South of Howe Road and Van Horne Intersection	Golder Associates Ltd.
Mar. 12 1996	Borehole Logs 1995 Investigatory and Remedial Drilling Program South of Howe Road and Van Horne Drive Intersection	Golder Associates Ltd.
Mar. 12/96	Groundwater Monitoring Record Investigatory and Remedial Drilling Program South of Howe Road and Van Horne Drive Intersection	Golder Associates Ltd.

These are **not** in the Large Blue Binders in the Engineering Library, but are bound separately

Jun. 2/98	Aberdeen Hills, 1997 Stability Assessment	Klohn Crippen
Aug. 9/01	Aberdeen Hills Depressurization Program Well Installation and Testing Report	Klohn Crippen
Nov. 30/01	Aberdeen Hills Depressurization Program Task 6 Perimeter Study Stage 1	Klohn Crippen
Aug. 28/03	Aberdeen Hills - 2003 Well Installation	Klohn Crippen
Oct. 31/03	Aberdeen Hills Depressurization Program Perimeter Study Stage 2	Klohn Crippen

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**APPENDIX C**

Van Horne Drive Documents - Golder Associates  
(Compiled July 6, 2007)

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*Golder Associates Kamloops Information on the Van Horne Landslide*

<b>Author</b>	<b>Date</b>	<b>Sent to</b>	<b>Title</b>
Province of BC	16-Mar/94	Don Barkowski	Proposed Subdivision, Part of Rem. Lot 1
Geoterrain	18-May/94	N/A	Report: Preliminary Geotechnical and Terrain Evaluation
Golder	28-Mar/95	City of Kamloops	Preliminary Assessment of Pavement Distress
Cecil and Linda Blinn	29-Mar/95	New Home Warranty	Structural Damage at Strata K828 unit 15
Golder	29-Mar/95	City of Kamloops	Preliminary Budget Est. Investigation of Apparent Soil Movement
City of Kamloops	06-Apr-95	Golder	Van Horne Ground Water Study
Terra Eng	12-Apr-95	City of Kamloops	Installation of Drainage Trench
Terra Eng	25-Apr-95	New Home Warranty	2020 Van Horne Drive, Subdivision, Kamloops
Golder	05-May-95	Strata Corp.	Water Usage During Drill Program
S.R. Leggett Associates	15-May-95	Golder	Control Survey Chock Kamloops
Golder	17-May-95	Fulton & Co.	Preliminary Geotechnical Assessment of Ground Water
Golder	19-May-95	Fulton & Co.	Report: Preliminary Groundwater Investigation
Golder	05-Jun-95	Fulton & Co.	Factual Results of Geotechnical Investigation
Golder	06-Jun-95	Fulton & Co.	Factual Results of Groundwater Monitoring Near Intersection
Golder	26-Jun-95	Fulton & Co.	Preliminary Geotechnical Assessment of Ground Water
Golder	26-Jun-95	Fulton & Co.	Factual Results of Slope Indicator Monitoring
Golder	25-Jul-95	Lidstone, Young, Ander	Our Discussion of July 24, 1995
City of Kamloops	26-Jul-95	Golder	Aberdeen Groundwater Investigation. Copy of Letter
City of Kamloops	26-Jul-95	Viva Developments	Installation of Groundwater Monitoring Wells
Golder	26-Jul-95	Fulton & Co.	Factual Results of Slope Indicator Monitoring
ASL	27-Jul-95	Golder	Chemical Analysis Report
Strata Corp. K828	27-Jul-95	City of Kamloops	Subterranean Water Flow from Vicinity 2025 Pacific Way
Agra Earth & Enviro.	28-Jul-95	Golder	Monitoring of Movement Unit 2 - 2020 Van Horne
Beapre Drilling	31-Jul-95	Golder	Monitoring of Movement Unit 2 - 2020 Van

Author	Date	Sent to	Title
			Horne
Golder	01-Aug-95	Sulinst	Bundle Piezos
Golder	03-Aug-95	City of Kamloops	Monitoring Well Installation
Golder	04-Aug-95	Charles R. Fritls	TWODAN
Golder	04-Aug-95	KVA Analytical	KVA Sampler
Lidstone, Young & And.	04-Aug-95	Golder	2020 Van Horne Drive, our file 65-119
Golder	08-Aug-95	City of Kamloops	Draft Document
<b>Golder</b>	<b>09-Aug-95</b>	<b>City of Kamloops</b>	<b>Transmittal, Preliminary Geotechnical Summary</b>
ASL	10-Aug-95	Golder	Chemical Analysis Report
Klohn Crippen	11-Aug-95	City of Kamloops	Aberdeen Hills Groundwater Monitoring Program
Klohn Crippen	11-Aug-95	Civic Eng.	Aberdeen Hills, Site Grading Lot 1, Plan 30078 re
Watson	14-Aug-95	Golder	Water Main Testing Within Private Properties
City of Kamloops	17-Aug-95	Golder	Aberdeen Groundwater Investigation
Golder	21-Aug-95	Fulton & Co.	Status Report Slope Evaluation
<b>Golder</b>	<b>22-Aug-95</b>	<b>City of Kamloops</b>	<b>Status Report Area Affected by Slope Movement</b>
Golder	22-Aug-95	City of Kamloops	Recommendation or Remedial Treatment
Golder	22-Aug-95	City of Kamloops	Availability of Horizontal Drilling Contractor
Golder	23-Aug-95	City of Kamloops	Slope Indicator Monitoring to August 23, 1995
Golder	25-Aug-95	City of Kamloops	Setup Requirements For Horizontal Drilling, Van Horne
Golder	25-Aug-95	City of Kamloops	Request for Underground Services Locate
Golder	25-Aug-95	Mobile Aardvark	Horizontal Drain Program - Kamloops
City of Kamloops	28-Aug-95	Mr. Fred Gilliland	Freedom of Information Request
City of Kamloops	31-Aug-95	Strata Corp.	Groundwater Investigation
Geoterrain Consultants	01-Sep-95	Eleanor Norgaard	Golder Report Received at 13:26 Sept 1, 1995

Author	Date	Sent to	Title
Golder	06-Sep-95	City of Kamloops	Indemnification Agreement Remedial Works
Golder	06-Sep-95	City of Kamloops	Report on Incidence of Basement Flooding Units 7 and 8
Golder	01-Sep-95	City of Kamloops	Report: Review Remedial Options, Ground Movement
Fulton & Co.	08-Sep-95	Golder	Indemnification Agreement from the City of Kamloops
Golder	11-Sep-95	City of Kamloops	Short Term Risks of Ground Movement
Ried Crowther	12-Sep-95	City of Kamloops	Leak Detection Program
Golder	13-Sep-95	City of Kamloops	Water Main Leak Testing Results
Golder	17-Sep-95	City of Kamloops	Status Report on Slope Movement
Terra Eng	19-Sep-95	NAHANI Holdings	Site Grading and Eavestrough Drainage
Golder	20-Sep-95	City of Kamloops	Apparent Pump Problems at 2020 Van Horne
<b>Golder</b>	<b>20-Sep-95</b>	<b>City of Kamloops</b>	<b>Status Report Region Affected by Slope Movement</b>
Golder	21-Sep-95	City of Kamloops	Recommendation for Irrigation Restrictions
Drillwell	21-Sep-95	Golder	6 Inch Diameter Relief Wells in Aberdeen
Golder	22-Sep-95	Geoterrain Consultants	Slope Indicator Data
City of Kamloops	27-Sep-95	Golder	Latest Readings on Piezos Levels
<b>Golder</b>	<b>29-Sep-95</b>	<b>City of Kamloops</b>	<b>Update Listing of Homes Affected by Slope Movement</b>
Golder	29-Sep-95	City of Kamloops	Status report Area Affected by Slope Movement
Watson	30-Sep-95	Golder	Bill
Golder	02-Oct-95	City of Kamloops	Status Report Ground Movement Recommendations
Golder	03-Oct-95	City of Kamloops	Aberdeen Infill Development
City of Kamloops	03-Oct-95	Golder	Water Use Records
Fulton & Co.	03-Oct-95	City of Kamloops	Van Horne Drive and Pacific Way Ground Water Problems
Terra Eng	05-Oct-95	<i>Golder</i>	Proposed F1 Placement Aberdeen
City of Kamloops	05-Oct-95	Golder	Open Request

Author	Date	Sent to	Title
PG. McKee	06-Oct-95	City of Kamloops	Groundwater Problem in Van Horne Terrace Development
Golder	10-Nov-95	City of Kamloops	Depressurization 2020 Van Horne
Drillwell	11-Oct-95	Golder	Aberdeen Hills Job Summary
Golder	10-Oct-95	City of Kamloops	Depressurization 2020 Van Horne -
Watson	10-Oct-95	City of Kamloops	2020 Van Horne Unit # 9
Golder	10-Oct-95	City of Kamloops	Recommendation for Payment
Golder	17-Oct-95	City of Kamloops	Repair to Water Damaged Homes
Golder	18-Oct-95	City of Kamloops	Invoice Summary
Golder	*18-Oct-95	City of Kamloops	Frequency of Slope Monitoring
Golder	9-Oct-95	City of Kamloops	Geotechnical Requirements For New Development in Aberdeen
Golder	19-Oct-95	City of Kamloops	Revised Invoice Summary
Golder	20-Oct-9	City of Kamloops	Report on Altercation between Bill Scott and Contractor
Golder	23-Oct-9	City of Kamloops	Aberdeen Development
City of Kamloops	23-Oct-95	Golder	Please Confirm Development Conditions listed on Attached Pages
Golder	26-Oct-9	City of Kamloops	Questions on Aberdeen Groundwater
Golder	30-Oct-95	City of Kamloops	Review of Groundwater Monitoring Results
Golder	01-Nov-95	City of Kamloops	Summary
Golder	03-Nov-95	City of Kamloops	Aberdeen Fill Development
Golder	07-Nov-95	City of Kamloops	Recommendation for Payment
<b>Golder</b>	<b>07-Nov-95</b>	<b>City of Kamloops</b>	<b>Status Report. Remediation of Slope Movement</b>
Golder	10-Nov-95	City of Kamloops	Objectives for Drilling Program Slide A Region Aberdeen
Golder	23-Nov-95	City of Kamloops	Groundwater Modeling
Golder	24-Nov-95	City of Kamloops	Additional Pump Wells

<b>Author</b>	<b>Date</b>	<b>Sent to</b>	<b>Title</b>
Golder	27-Nov-95	City of Kamloops	Recommendation for Payment
Golder	29-Nov-95	Golder	Parts Breakdown
Golder	15-Dec-95	City of Kamloops	Recommendation for Payment
<b>Golder</b>	<b>15-Dec-95</b>	<b>City of Kamloops</b>	<b>Status Report on Slope Movement</b>
Golder	19-Dec-95	Lingo Pump Service	Pump Installation
Golder	20-Dec-95	Lingo Pump Service	Pump Electrodes
Golder	20-Dec-95	City of Kamloops	Power Usage
Golder	20-Dec-95	City of Kamloops	Cost Projection to Year End
Golder	21-Dec-95	Trevor Owens	Approximate Limits of Identified Ancient and Modern Slide Zones
Golder	02-Jan-96	City of Kamloops	Summary of Completed Works and Ground Movement 1995-year end
City of Kamloops	08-Jan-96	Golder	Piezometer Daily Readings to Date -
City of Kamloops	09-Jan-96	Golder	Piezometer Daily Readings to Date
City of Kamloops	10-Jan-96	Golder	Piezometer Daily Readings to Date -
Watson	11-Jan-96	Golder	2575 Reservoir Investigation
City of Kamloops	12-Jan-96	Golder	Piezometer Daily Readings to Date
Golder	29-Jan-96	Watson	No Title
City of Kamloops	30-Jan-96	Golder	Piezometer Daily Readings to Date
Watson	31-Jan-96	Golder	Aberdeen Well, and Power
<b>Golder</b>	<b>31-Jan-96</b>	<b>City of Kamloops</b>	<b>Status Report on Slope Movement to Jan. 1996</b>
Golder	02-Feb-96	City of Kamloops	Approximate limits of Ancient Slide Areas
Golder	12-Feb-96	City of Kamloops	Report: Investigation in Preparation for Possible Litigation
Golder	19-Feb-	City of Kamloops	Update, Week of Feb 12 - 19, 1996
Golder	23-Feb-	City of Kamloops	Investigation of Groundwater Chemistry
Golder	26-Feb-	City of Kamloops	Update, Week of Feb 19 - 23, 1996

<b>Author</b>	<b>Date</b>	<b>Sent to</b>	<b>Title</b>
Golder	01-Mar-96	City of Kamloops	Draft Report: Groundwater Monitoring Record
Golder	08-Mar-96	City of Kamloops	Recommendation for Payment
Golder	08-Mar-96	City of Kamloops	Update, Week of March 1 - 8, 1996
Golder	11-Mar-96	City of Kamloops	Update on 2020 Van Horne Slide
<b>Golder</b>	<b>12-Mar-96</b>	<b>City of Kamloops</b>	<b>Investigation of Possible leakage from the 2575 Reservoir</b>
<b>Golder</b>	<b>12-Mar-96</b>	<b>City of Kamloops</b>	<b>Groundwater Monitoring Record - Investigatory and Remedial</b>
<b>Golder</b>	<b>12-Mar-96</b>	<b>City of Kamloops</b>	<b>Borehole Logs - 1995 Investigatory and Drilling Program</b>
Golder	14-Mar-96	City of Kamloops	Public Meeting for Howe Road
Golder	18-Mar-96	City of Kamloops	Update for Week of March 9 -16, 1996
Golder	18-Mar-96	City of Kamloops	Third Phase Drilling
Golder	01 -Apr-96	Greg Buick	Recommendation for Payment
Golder	04-Apr-96	City of Kamloops	Investigation of Condition of Monitoring Wells
City of Kamloops	23-Apr-96	Klohn - Crippen	Daily Readings as Requested
Golder	26-Apr-96	City of Kamloops	2 Faxes: Recommendation for Payment
Golder	07-May-96	City of Kamloops	2 Faxes: Recommendation for Payment
Golder	07-May-96	City of Kamloops	Recommendations Regarding Groundwater Monitoring
Golder	21 -May-96	City of Kamloops	Rationale for Additional Pumped Wells Howe and Van Horne
Golder	30-May-96	City of Kamloops	Recommendation for Payment
Golder	07-Jun-96	Watson	Deficiency List and Action Plan for 2020 Van Horne
City of Kamloops	13-Jun-96	Dunraven Developments	Interim Occupancy for Various Units
Golder	20-Jun-96	City of Kamloops	Rational for Additional Pumped Wells at Howe Road and Van Horne Drive
Golder (Van)	02-Jul-96	Golder (Kam)	Provincial Emergency Program

Author	Date	Sent to	Title
Golder	06-Jul-96	Mclvor & Co	Geotechnical Consultation, Slope Erosion
Golder	09-Jul-96	City of Kamloops	Recommendation for Payment
Golder	18-Jul-96	City of Kamloops	Third Phase Drilling
Golder	16-Jul-96	Drillwell	De-Watering Well Drilling
Golder	24-Jul-96	City of Kamloops	Irrigation 2020 Van Horne
Golder	13-Aug-96	City of Kamloops	Recommendation for Payment
Golder	13-Aug-96	City of Kamloops	Recommendation for Payment
City of Kamloops	22-Aug-96	Viva Developments	2021 Pacific Way
Golder	29-Aug-96	City of Kamloops	Recommendation for Payment
<b>Golder</b>	<b>03-Oct-96</b>	<b>City of Kamloops</b>	<b>Status Report on Slope Movement</b>
Golder	16-Oct-96	City of Kamloops	Provincial Emergency Program
Golder	18-Oct-96	City of Kamloops	Review of Geological Model Aberdeen Study Area *
Watson	21-Oct-96	Mountain View Contract.	Serves for Wells in and Around 2020 Van Horne
Klohn Crippen	24-Oct-96	Bengali Properties	Groundwater Level Monitoring
Golder	26-Nov-96	Klohn - Crippen	Observed Piezometric Surface Fluctuations
Golder	06-Nov-96	City of Kamloops	Recommendation for Payment
Golder	26-Nov-96	City of Kamloops	Recommendation for Payment
Golder	16-Dec-96	City of Kamloops	Comments Regarding the Van Horne Landslide
Golder	16-Dec-96	City of Kamloops	Klohn Crippen Endorsement of Golf Course
Golder	20-Dec-96	City of Kamloops	Recommendation for Payment
Golder	02-Jan-97	City of Kamloops	Recommendation for Payment
Geotex Lim.	13-Jan-97	City of Kamloops	1:5000 Scale Geological Investigation
Golder	17-Jan-97	City of Kamloops	Aberdeen Hills Geological Mapping
Golder	12-Feb-97	City of Kamloops	Status Report on Slope Movement
<b>Golder</b>	<b>17-Feb-97</b>	<b>City of Kamloops</b>	<b>Status Report on Slope Movement</b>
Golder	06-Mar-97	Bill Scott	Response to Questions Regarding Ground

Author	Date	Sent to	Title
			Movement
Golder	17-Apr-97	City of Kamloops	Request for Permission to use Isotope Date in Published Paper
Golder	21-Apr-97	Watson	Pump Electrode Settings DW-1 to DW-4
Golder	07-May-97	Klohn - Crippen	Slope Indicator Monitoring of Ancient Slide
Golder	06-Jun-97	Max Schibl Drilling	Work Over of DW-7 2020 Van Horne
Watson	03-Jul-97	Golder	Service for Wells in and Around 2020 Van Horne
Golder	25-Sep-97	City of Kamloops	Status Report on Ground Stabilization Summer 1997
<b>Golder</b>	<b>28-Oct-97</b>	<b>City of Kamloops</b>	<b>Status Report on Ground Stabilization Summer 1997</b>
Golder	22-Dec-97	City of Kamloops	Maximum Acceptable Downtime for Dewatering Wells
Golder	29-May-98	Scott Green	Van Horne Field Work May 29, 1998
Klohn Crippen	17-Jun-98	Bentall Properties	Golder Letter Regarding Proposed
<b>Golder</b>	<b>02-Sep-98</b>	<b>City of Kamloops</b>	<b>Hydrogeological Study Building Repairs, Van Horne Drive, Slide Area</b>
Golder	Sep-98	City of Kamloops	Investigation of Groundwater Chemistry
Golder	01-Oct-98	City of Kamloops	Review of Report An Assessment of the Irrigation Regime Forwarding
Golder	20-Oct-98	City of Kamloops	Invoice #232727 for Payment
Golder	22-Mar-99	Guild Yule	Correspondence Van Horne Landslide
Golder	19-Jan-00	City of Kamloops	Slope Monitoring 2020 Van Horne Drive
<b>Golder</b>	<b>26-Jan-00</b>	<b>City of Kamloops</b>	<b>Report: Slope Indicator Monitoring Report</b>
Golder	22-Dec-00	City of Kamloops	Repair of Well DW92-3
<b>Golder</b>	<b>18-May-06</b>	<b>City of Kamloops</b>	<b>Slope Indicator Monitoring Status Report Van Horne Landslide remedial Program</b>

**Bold** Items are included in "Summary of Geotechnical Reports, Investigation of Ground Movement, Van Horne Drive, Kamloops, BC", (City of Kamloops Compilation), **Last update November 17, 2006.**

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**APPENDIX D**  
Council Policy EDS-16

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<b>SUBJECT:</b>	TECHNICAL CRITERIA FOR DEVELOPMENT CONDITIONS IN THE ABERDEEN HILLS NEIGHBOURHOOD	<b>NO. EDS-16</b>
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<b>FUNCTION:</b>	ENVIRONMENTAL DEVELOPMENT SERVICES
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<b>DATE:</b>	1995 November 21 (as amended)
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### Policy

1. The Chief Building Inspector/Manager shall require a covenant to be registered against the title of the property which details the conditions of Council's Policy EDS-16 and shall ensure that the conditions of this policy are fulfilled prior to the issuance of a building permit for each new home or building (except minor additions or accessory buildings) on vacant land as shown on Appendix "A"; and
2. Major rezoning applications for vacant land south of Hugh Allan Drive and west of the Merritt Highway will require professional reports which conclude that the resulting development will not negatively impact the ground stability and ground water conditions on other properties.
3. A professional assessment that, in consideration of hydrogeological and water balance conditions, the proposed development as designed will not result in a negative impact on downslope ground water conditions, must be provided prior to development.
4. A professional assessment that the site is currently stable and will continue to be stable following construction must be provided prior to development. The assessment should include factual information regarding soil and bedrock stratigraphy at the site, identification and detailed descriptions of Tertiary Age Kamloops Group bedrock deposits (where present), installation of multiple piezometers and monitoring for a sufficient period of time to assess natural variations in ground water pressures in the overburden and bedrock, and stability analysis.

### Amended:

1996 October 29  
2000 December 12



**CITY OF KAMLOOPS**



**SUBJECT: TECHNICAL CRITERIA FOR DEVELOPMENT  
CONDITIONS IN THE ABERDEEN HILLS  
NEIGHBOURHOOD**

**UNDEVELOPED LOTS AFFECTED BY POLICY**



DEVELOPMENT SERVICES DEPARTMENT  
SCALE 1:1000 DATE May 15, 2008