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City of Vancouver
BC Professional Firefighters Burn Fund
3869 Main Street, Vancouver, BC

MOE Identification No.: 9653

Performance Verification Plan

July 2015
SLR Project No.: 201.88493.00001

PERFORMANCE VERIFICATION PLAN

BC PROFESSIONAL FIREFIGHTER BURN FUND

869 MAIN STREET, VANCOUVER, BC

MOE Identification No.: 9653

SLR Project No.: 201.88493.00001

Prepared by
SLR Consulting (Canada) Ltd.
200 - 1620 West 8th Avenue
Vancouver, BC V6J 1V4

for

City of Vancouver
Real Estate and Facilities Management
453 West 12th Avenue
Vancouver, BC V5Y 1V4

July 2015

Prepared by:

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Senior Risk Assessor

CONFIDENTIAL

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2 hard copies - CSAP Approved Professionals
1 hard copy – SLR Consulting (Canada) Ltd.

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1.0 INTRODUCTION

SLR Consulting (Canada) Ltd. (SLR), on behalf of City of Vancouver (CoV), prepared this Performance Verification Plan (PVP) for residual contamination related to former drycleaning operations at 3869 Main Street (the "Property") and the adjacent portion of Main Street ("City Land") in Vancouver, BC.

This PVP was prepared to address residual contamination in excess of Contaminated Sites Regulation (CSR) numerical standards in support of an application for a risk-based Certificate of Compliance (CoC) for the entire "Site" (inclusive of both the Property and City Lands). The PVP presents risk management measures to be implemented for the Property and City Land to ensure that the CoC remains valid. This report was prepared in accordance with BC Ministry of Environment (MOE) Procedure 12: *Procedures for Preparing and Issuing Contaminated Sites Legal Instruments* (BC MOE, 2012).

2.0 BACKGROUND

The Property was formerly occupied by a building with businesses on the main floor that included an electrical retail store, a laundromat, a drycleaner and a car wash. Dry cleaner operations ceased in 1964 and car wash facilities ceased in 2002. The Property was decommissioned in 2005 and a three-story, slab-on-grade building has been constructed which houses commercial businesses at a grade and the BC Professional Fire Fighters' Burn Fund Centre in the upper units.

The City Land is comprised of the portion of Main Street and sidewalk adjacent to the eastern boundary of the Property (see Drawing 1).

The Human Health and Ecological Risk Assessment (HHERA) for the Property and the City Land was completed by SLR in July 2015 to estimate potential risk to human and ecological health from potential exposure to the residual chlorinated VOCs contamination (SLR, 2015a). Human receptors of concern and associated exposure pathways quantified included:

BURN FUND PROPERTY

- Burn Fund Centre Patients (all age groups)
    - Hypothetical drinking water use scenario: Ingestion of groundwater, dermal contact with groundwater and inhalation of VOCs during showering/bathing assuming groundwater is used as a potable water source in the future
    - Failure of vapour system scenario: inhalation of VOCs in indoor air assuming the vapour mitigation system is damaged and/or does not operate as designed.
- Staff of the Centre or Commercial Units on the Property (adults)
    - Hypothetical drinking water use scenario: Ingestion of groundwater, dermal contact with groundwater and inhalation of VOCs during showering/bathing assuming groundwater is used as a potable water source in the future
    - Failure of vapour system scenario: inhalation of VOCs in indoor air assuming the vapour mitigation system is damaged and/or does not operate as designed.

CITY LANDS

- Off-Site Future Drinking Water Users (all age groups)
    - Hypothetical drinking water use scenario: Ingestion of groundwater, dermal contact with groundwater and inhalation of VOCs during showering/bathing assuming groundwater is used as a potable water source in the future
- Utility Workers (adults)
    - Subsurface excavation scenario: Inhalation of trench air and, for cumulative risk purposes, inadvertent ingestion of soil, dermal contact with soil and inhalation of fugitive dust.

The HHERA results indicated potentially unacceptable health risk from: 1) exposure to groundwater used as a future source of potable water on the both the Property and City Land; 2) exposure to TCE and PERC in indoor air if the vapour mitigation system is damaged and/or does not operate as design in the future; and, 3) exposure to trench air by utility workers in the City Land. The HHERA also assumes that under normal circumstances, the building on the Property will remain commercial at grade.

The vapour mitigation system installed on the Property includes an impermeable vapour barrier installed beneath the building slab and a sub-slab venting system consisting of a piping network connected to header lines leading out of the building walls and connected to blowers. The sub-slab venting system is designed to operate as a passive system with the flexibility to convert to a depressurization system if passive venting does not adequately remove subsurface vapours. The SLR report (2015b) describing the sub-slab depressurization system design and installation is presented in Appendix A.

3.0 REQUIRED RISK CONTROLS

The required risk controls to manage risk identified in the HHERA included the following:

Property

- The land use at grade at 3869 Main Street must remain commercial.
- Groundwater on the Property must not be used as a source of potable water and drinking water wells must not be installed on the surrounding properties without first confirming groundwater quality of the aquifer proposed for use.
- No subsurface work will be conducted on 3869 Main Street without a workplan approved by the responsible party, the City of Vancouver, and qualified professional engineer to assure that the integrity of the vapour mitigation system is maintained.
- The vapour mitigation system installed beneath the Burn Fund Centre must be maintained and vapour quality must be monitored according to the following criteria:

    1. Subsurface vapour target concentrations:
        a. Tetrachloroethylene (PERC): 2,000,000 (2E+6) µg/m^3
        b. Trichloroethylene (TCE): 6,000 µg/m^3
        c. Vapour target concentrations based on upper cap concentrations (current and proposed) with a vapour attenuation factor of 100, which is very conservative based on a vapour barrier system.

2. Vapour samples must be collected from venting pipes under passive system operation on an annual basis, preferably during summer, for three years to assess vapour VOC quality.
    a. If after 3 years the vapour concentrations are stable or decreasing, vapour sampling can be discontinued, operations and maintenance of the system continues.
    b. If vapour concentrations are not stable or decreasing, continue annual monitoring until vapour concentrations are stable or decreasing.
    c. If vapour samples results collected during any of the monitoring events under passive system operation indicate vapour concentrations greater than the vapour target concentrations THEN, the active system must be initiated.

3. If the active system is initiated, vapour samples must be collected from venting pipes under active system operation on an annual basis, preferably during summer, for three years to assess vapour VOC quality.
    a. Continue annual monitoring until the vapour concentrations are less than the target concentrations.
    b. If vapour concentration are less than the target concentrations the vapour system can return to passive system operation (go to #2).

4. In the event of a total failure of the vapour mitigation system (failure of both the subslab vapour barrier and the vapour venting system) ambient air samples must be collected from the commercial and residential levels to insure that contaminant concentrations are less than applicable CSR RL/CL standards.

5. If after three consecutive years of vapour monitoring under passive system operation, vapour concentrations collected from the venting pipes are less than the CSR CL standards, the operation and maintenance of the system (as described in Section 7.0) may be discontinued.

City Land

- The City Lands must remain sidewalk and roadway
- Groundwater on the City Land must not be used as a source of potable water and drinking water wells must not be installed on the surrounding properties without first confirming groundwater quality of the aquifer proposed for use.
- It is recommended that no trench work (i.e., work in excavations that are deeper than they are wide and intended for human entry) be conducted at depths greater than 1.5 mbg (i.e., less than height of breathing zone of an adult) within the metes and bounds (City Land) area of the Site. In the event that trenches are advanced to depths greater than 1.5 m bgs and intended for human entry, it is recommended that a worker health and safety plan with provisions to prevent inhalation exposures be developed.

4.0 REQUIRED ACTIONS TO IMPLEMENT THE REQUIRED RISK CONTROLS

Based on consideration of current and future land use at the Property and City Land and the results of the HHERA (SLR, 2015a), the following performance verification actions are recommended for the Site and will be the responsibility of the CoV:

1. Inclusion of an advisory (as item (a) in clause 2 of Schedule B of any Certificate of Compliance issued for the site) that "The groundwater at the Site must not be used as a

source of potable water and the drinking water wells must not be installed on the surrounding properties without first confirming groundwater quality of the aquifer proposed for use".

Notification to the Director is required if the subject of this advisory is breached. The listing of the risk management measure in Schedule B of the CoC meets this requirement.

2. Inclusion of an advisory (as item (b) in clause 2 of Schedule B of any Certificate of Compliance issued for the site) that "Vapour mitigation system installed at the site must be monitored and maintained as per the system monitoring and maintenance plan outlined in in the HHERA (SLR, 2015a) and PVP include the following: 1) Vapour samples must be collected from venting pipes under passive system operation, on an annual basis (during summer months) for three years to assess vapour quality for VOCs; 2) If vapour samples results collected during the monitoring events under passive system operation indicate vapour concentrations greater than target vapour concentrations the active system operation must be turn on; 3) If after 3 years under passive system the vapour concentrations are less than the target vapour concentrations, stable or decreasing, sampling can be discontinued. However, operations and maintenance of the system continues; 4) If vapour concentrations are not stable or decreasing, continue annual monitoring until vapour concentrations are stable or decreasing; 5) If after 3 years under active system the vapour concentrations are less than the target vapour concentrations, the system can return to passive system sampling protocol; 6) In the event of a total failure of the vapour mitigation system (failure of both the subslab vapour barrier and the vapour venting system) ambient air samples must be collected from the commercial and residential levels to insure that contaminant concentrations are less than applicable CSR RL/CL standards; 7) if after three consecutive years of vapour monitoring under passive system operation, vapour concentrations collected from the venting pipes are less than the CSR CL standards, the operation and maintenance of the system may be discontinued.

   Notification to the Director is required if the subject of this advisory is breached. The listing of the risk management measures in Schedule B of the CoC meets this requirement.

3. Inclusion of an advisory (as item (c) in clause 2 of Schedule B of any Certificate of Compliance issued for the site) that "No subsurface work will be conducted on the Property without a workplan approved by the responsible party, the City of Vancouver, and qualified professional engineer to assure that the integrity of the vapour mitigation system is maintained.

   Notification to the Director is required if the subject of this advisory is breached. The listing of the risk management measure in Schedule B of the CoC meets this requirement.

4. Inclusion of an advisory (as item (d) in clause 2 of Schedule B of any Certificate of Compliance issued for the site) that "A worker health and safety plan must be developed by a certified industrial hygienist and implemented to mitigate exposure to vapours in the event that subsurface work will be conducted at depths greater than 1.5 metres below ground in a trench that is deeper than it is wide within the metes and bounds (City Land) area of the Site."

   Notification to the Director is required if the subject of this advisory is breached. The listing of the risk management measure in Schedule B of the CoC meets this requirement.

In summary, it is our opinion that the advisories listed in Schedule B of the CoC are sufficient to ensure performance verification of the risk management measures required for the Site.

5.0 SUMMARY RATIONALE FOR SELECTING REQUIRED PVP ELEMENTS

The Site is classified as a Risk-Based Remediation Type 2 Site on the basis that risk management measures are required but failure of risk management measures will not result in the imminent exposure of site contaminants to humans, or discharge of contaminant to the aquatic receiving environment at concentrations above BC water quality guidelines, or imminent exposure of contaminants to terrestrial ecological receptors at levels above site-specific risk-based concentrations, or contaminant spreading at concentrations above upper cap concentrations.

The rationale for selecting required PVP elements are briefly discussed for the Property and the City Land.

Property

For the hypothetical groundwater drinking water scenario, the non-cancer risk estimates (hazard quotients) derived for patients and staff from potential exposure to the three contaminants of potential concern (COPCs), cis-1,2-dichloroetylene (DCE), trichloroethylene (TCE) and tetrachloroethylene (PERC), exceeded the CSR risk-based standard of 1.0. In addition, cancer risks (incremental lifetime cancer risk /Excess Cancer Risk) derived for patients (infants, toddlers and children) to TCE and staff to PERC and TCE through groundwater pathway(s) exceeded the CSR risk-based standard of 1E-05. Based on the risk estimates to groundwater COPCs exceeding risk based standards for the patients and staff, protection of patients and staff by restricting the installation of potable water well on the Property without first confirming groundwater quality of the aquifer proposed for use was included as a risk management measure in Schedule B of the CoC.

Non-cancer risks exceeding the CSR risk-based standard of 1E+00 associated with the inhalation of TCE and/or PERC in indoor air also contributed to the elevated risks for the patients and staff. As such, a vapour monitoring plan was developed and included in Schedule B of the CoC.

As discussed previously, vapour mitigation system measures comprised of an impermeable membrane and sub-slab depressurization (SSD) system were installed during building construction to prevent subsurface vapour intrusion into indoor air. To assure that the system eliminates the exposure pathway between contaminated soil vapour and occupants of the Burn Fund Facility, the condition of the mitigation system needs to verified through vapour sampling from venting pipes under passive venting system; air sampling at discharge points if the passive venting system is converted to an active venting system, and ambient air sampling to confirm mitigation system operation if concentrations are elevated under active operation of the system were included as risk management measures in Schedule B of the CoC.

The design of the mitigation system is only valid for the current building conditions. Any unauthorised subsurface work may potentially damage the integrity of the mitigation system. To prevent any damage to the mitigation system, all future subsurface work performed must be approved by a qualified professional engineer with demonstrated experience related to subslab vapour mitigation systems. To assure that unauthorized subsurface work will not be performed at the Property, the condition that all subsurface work must be approved a qualified professional engineer was included as a risk management measure in Schedule B of the CoC.

City Land

For the hypothetical groundwater drinking water scenario, the excess cancer risk derived for the total lifetime exposure of the future City Land groundwater users through combined exposure to TCE via ingestion of groundwater, dermal contact with groundwater and inhalation of vapours during bathing/showering exceeded the CSR risk based standard of 1E-05. Based on TCE risk estimates in excess of the standard, protection of the future City Land groundwater users was addressed by restricting the installation of a potable water well within the City Land or the surrounding properties without prior verification of groundwater quality was included as a risk management measure in Schedule B of the CoC.

The risk assessment was conducted assuming that trenches (i.e. excavations which are deeper than they are wide) will be advanced within the City Land. The non-cancer risk estimate derived for the utility workers potential exposure to TCE in trench air exceeded the CSR risk-based standard of 1.0. Based on the TCE result for a utility workers exposure to trench air, protection of future trench workers was addressed through the recommendations that no trench work (i.e., work in excavations that are deeper than they are wide and intended for human entry) be conducted at depths greater than 1.5 mbg (i.e., less than height of breathing zone of an adult). The condition that in the event that trenches are advanced to depths greater than 1.5 m bgs and intended for human entry, it is recommended that a worker health and safety plan with provisions to prevent inhalation exposures be developed within the metes and bounds (City Land) area of the Site was included as a risk management measure in Schedule B of the CoC.

6.0 RECORD KEEPING

Up-to-date records of the above performance verification monitoring actions and results should be maintained by CoV and must be provided to the BC MoE if requested by a Director designated under the *Environmental Management Act*.

Examples of the records to be kept on file include:

- Record/report documenting an event subject to PVP requirement such as conducting system monitoring and air sampling or subsurface activities. At a minimum, the start and end dates of event and the type of activities performed should be recorded and analytical results and/or measurements should be retained on the record.
- Notification on file when a condition of the PVP has been breached.
- Notification on file and records related to when a breached condition has been rectified.
- Records, including copies of, communication with the site owner/operator related to performance verification actions undertaken for the site.
- Records of any notifications provided to the Director and any subsequent communication received from the Director related to a breach of a performance verification action.

7.0 OPERATION AND MAINTENANCE

The system can operate in a passive or active mode depending on the vapour concentrations in the subslab.

1. When the system is in the passive mode, the blowers are not operating and subslab vapours are allowed to passively vent through the subslab piping system to the outside of the building. When operating in this mode the blowers should be inspected and turned on every six months to confirm that the blowers are still operational.

2. If vapour concentrations in the subslab increase above the subsurface vapour target concentrations, the blowers will be turned on and the system will operate in the active mode.
    a. When the system is turned on proper operation should be verified by either measuring the vacuum in the subslab monitoring points or collecting air samples inside the building to confirm that the concentrations are below standards. The minimum vacuum in the vapour monitoring points is 2 mm of water when the system is operating.
    b. When operating in the active mode with the blowers running, the system should be inspected monthly to ensure that the blowers are running.
    c. In addition, the vacuum in the subslab monitoring points should be measured quarterly to confirm that the system is maintaining appropriate vacuum.
    d. These inspections and measurements should be documented in an operating and maintenance log sheet.

3. The blowers do not require any periodic maintenance. The only maintenance procedure would be blower replacement should a unit fail. If monthly inspections indicate that a blower is making more noise or vibration than usual, then the unit should be replaced before it fails.

4. It is recommended that a work plan be submitted to property management for review and approval in advance of any proposed renovation and construction works that may damage the soil vapour collection piping, sub slab liner or equipment. In turn, a property management representative should submit the work plan to SLR for further review, comment, and approval by the engineer of record for the system.

    Work that may impact the effectiveness or operation of the system may include, but is not limited to the following:

    - Saw cutting, coring, drilling, jack hammering or any other means of penetrating or potentially penetrating the building foundation slabs.
    - Removal, relocation, or damage to any of the PVC vapour collection piping located beneath the building slabs.
    - The removal of, relocation, or damage to any utilities that penetrate the slabs.
    - The removal, relocation, or damage of the solid PVC soil vapour collection headers located throughout the building.

    3 Year Review

    a. Vapour samples shall be collected from venting pipes and/or monitoring points under passive system operation on an annual basis, preferably during summer, for three years to assess vapour quality.
    b. After periods of 3 consecutive years, based on the sample results it is recommended that the site condition information be re-evaluated and a thorough evaluation of the system performance be completed.

c. Once sufficient sampling has been performed to demonstrate that vapour concentrations are less than CSR CL vapour standards, operation and maintenance activities may be discontinued. Vapour samples must be measured from the venting pipes when passive system is operational AND with the SSD system capped or off, as appropriate.

8.0 REFERENCES

BC MOE. 2013. British Columbia Ministry of the Environment. Procedure 12: Procedures for Preparing and Issuing Contaminated Sites Legal Instruments. April, 2013. Version 1.0.

SLR, 2015a. SLR Consulting (Canada) Ltd. Human Health and Ecological Risk Assessment. BC Professional Fire Fighters' Burn Fund. 3869 Main Street, Vancouver, BC. July, 2015.

SLR, 2015b. Sub-Slab Depressurization System Design and Installation. July 27, 2015.

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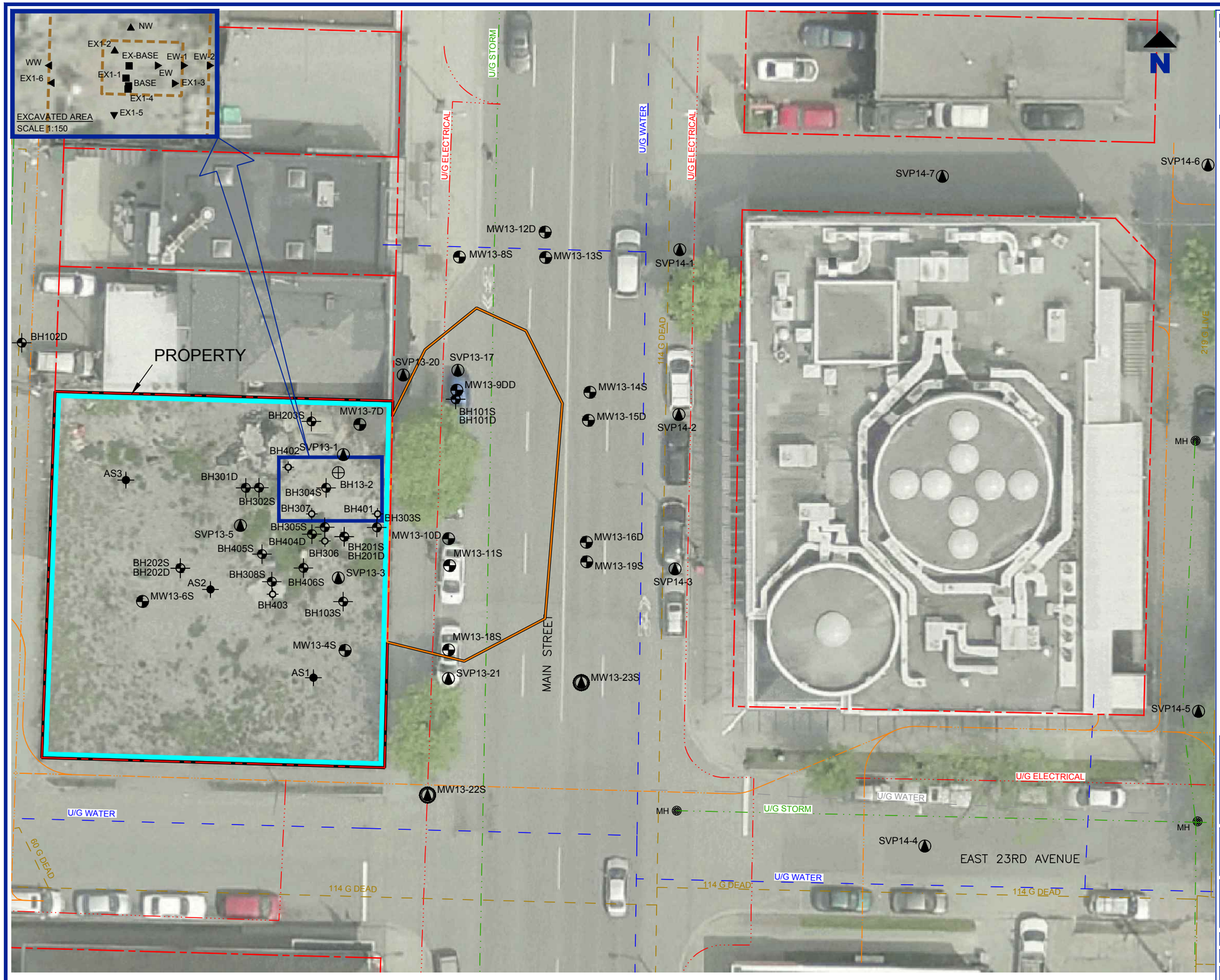
DRAWING

Performance Verification Plan
BC Professional Fire Fighter's Burn Fund
3869 Main Street, Vancouver, BC
SLR Project No.: 201.88493.00001



NOTES

DRAWING COMPILED FROM CITY OF VANCOUVER OPEN DATA CATALOGUE AND VANMAP ONLINE RESOURCE

LEGEND

- LOT BOUNDARY
- SITE BOUNDARY
- PROPERTY BOUNDARY
- CITY LAND (METES AND BOUNDS)
- LIMITS OF EXCAVATION
- BOREHOLE LOCATION
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL
- MONITORING WELL LOCATION (NEXT ENVIRONMENTAL)
- SOIL VAPOUR PROBE LOCATION
- SOIL VAPOUR PROBE LOCATION (NEXT ENVIRONMENTAL)
- HAND AUGER SAMPLE LOCATION
- BOREHOLE LOCATION COMPLETED AS A MONITORING WELL WITH SOIL VAPOUR PROBE
- EXCAVATION WALL SAMPLE
- EXCAVATION BASE SAMPLE

UTILITIES AND SYMBOLS

- MH — MANHOLE
- U/G ELECTRICAL
- U/G STORM SEWER
- U/G WATER LINE

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE 1:300
WHEN PLOTTED AT 11 x 17 PAGE SIZE
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CITY OF VANCOUVER
3869 MAIN STREET
VANCOUVER, BC

Report
PERFORMANCE VERIFICATION PLAN

Drawing
SITE AND ASSESSMENT AREAS

Date July 29, 2015	Scale AS SHOWN	Drawing No. 1
File Name S_201-88493-00001-M1	Project No. 201.88493.00001	

SLR

APPENDIX A
Sub-Slab Depressurization System Design and Installation

Performance Verification Plan
BC Professional Fire Fighter's Burn Fund
3869 Main Street, Vancouver, BC
SLR Project No.: 201.88493.00001

27 July 2015

Jeff Duncan, Assistant Project Manager
Concert Properties Ltd.
9th Floor, 1190 Hornby Street
Vancouver, BC V6Z 2K5

Project No.: 201.88535.00001

Dear Mr. Duncan,

RE: SUB-SLAB DEPRESSURIZATION SYSTEM DESIGN AND INSTALLATION

SLR Consulting (Canada) Ltd. (SLR) completed a detailed design and subsequent inspection of a sub-slab depressurization system to mitigate soil vapour intrusion into mixed use building being constructed at 3869 Main Street in Vancouver, BC (the site). The design was completed on behalf of Concert Properties Ltd.

The objective of the system was to eliminate the exposure pathway between contaminated vapour in the site subsurface and future visitors and occupants of building. The sub-slab depressurization system was designed as a passive system to vent vapours accumulating under the slab. The design also allowed for active venting if necessary.

SYSTEM DESIGN

The sub-slab depressurization (SSD) system was made up of three collection piping networks constructed of 4 inch perforated (slot size: 0.020 inch/slot spacing: 3/16 inch) Schedule 40 PVC pipes. Each collection piping network was connected to 6 inch solid Schedule 40 PVC header lines leading out to the west building wall. The piping network was installed on a layer of permeable backfill (gravel) and was placed at approximately 12 inches below the foundation slab. The piping was installed by Bosa Construction and inspections of the piping were conducted by SLR to ensure they had been installed in accordance with this design. The vapour collection piping network design is provided on Drawing 1.

SUB-SLAB LINER

SLR specified 20 mil VaporBlock Plus manufactured by Raven Industries. The liner is durable, and is compatible with dry cleaning solvents at the concentrations encountered in vapour at the site. The liner exceeds all Class A, B and C standards for a vapour barrier set out in the ASTM E1745 standard.

The specified liner was installed by Bosa Construction and supervised and inspected by SLR. The construction details for the liner are presented on Drawings 2 to 3. During inspection any visible un-taped seams or edges were taped, rips or tears in the barrier were repaired per the

manufacturer's recommendations, and any taped seams or edges that did not appear to be well sealed were removed, cleaned, and re-taped. Items listed below were noted during the inspection.

- The liner was placed over a levelled permeable layer of clean coarse aggregate.
- The liner was installed running in the longest dimension.
- Joints along the foundation and support columns were sealed with double-sided butyl seal tape and taped over with aluminium seam tape.
- Overlapping joints had a minimum 12" overlap. Double-sided butyl seal tape was used in between the overlap, and then taped over with aluminium seam tape centered on the overlap seam.
- VaporBoot pipe boots were installed around all plumbing, conduit, or other penetrations that came through the liner.
- Double-sided butyl seal tape and aluminium seam tape were used to secure the boots to the pipes.
- The underside boot perimeter edges were sealed with double-sided butyl seal tape, and the boot edges were taped over with aluminium seam tape.

BLOWERS AND DISCHARGE POINTS

Three 6-inch headers were extended through to the west wall of the building and each was connected to a blower. The permanent blowers were installed 10 feet away from the property line and away from any air intake for the building.

MONITORING POINTS

Two independent monitoring points were installed within the permeable backfill for sub-slab vapour quality monitoring. The monitoring points were spaced approximately 3 metres apart and installed in the north east corner of the building footprint where the former tank was located. Inspections of the monitoring points were conducted by SLR to ensure they had been installed in accordance with design. The locations of the two monitoring points are presented on Drawing 1, and the construction details for these monitoring points are illustrated on Drawing 4.

SUB-SLAB VAPOUR SAMPLING

On May 19, 2015, SLR collected two vapour samples using thermal desorption (TD) tubes from the monitoring points. The TD tube samples were collected after the completion of the sub slab collection system, liner and floor concrete installation, but the blowers were not installed or running. The TD tube samples were collected at an average flow rate of 0.100 L/min for 30 minutes and were analyzed for the appropriate dry cleaner parameters.

The results indicated both vapour samples collected meets applicable attenuated CSR RLv and CLv vapour standards for indoor and outdoor air. Results are presented in Tables 1 to 4.

OPERATION AND MAINTENANCE

The system can operate in a passive or active mode depending on the vapour concentrations in the subslab. When the system is in the passive mode, the blowers are not operating and subslab vapours are allowed to passively vent through the subslab piping system to the outside of the building. When operating in this mode the blowers should be inspected and turned on every six months to confirm that the blowers are still operational.

If vapour concentrations in the subslab increase above the relevant standards, the blowers will be turned on and the system will operate in the active mode. When the system is turned on proper operation should be verified by either measuring the vacuum in the subslab monitoring points or collecting air samples inside the building to confirm that the concentrations are below standards. The minimum vacuum in the vapour monitoring points is 2 mm of water when the system is operating.

When operating in the active mode with the blowers running, the system should be inspected monthly to ensure that the blowers are running. In addition, the vacuum in the subslab monitoring points should be measured quarterly to confirm that the system is maintaining appropriate vacuum. These inspections and measurements should be documented in an operating and maintenance log sheet (an example log sheet is attached as Appendix B)

The blowers do not require any periodic maintenance. The only maintenance procedure would be blower replacement should a unit fail. If monthly inspections indicate that a blower is making more noise or vibration than usual, then the unit should be replaced before it fails.

It is recommended that a work plan be submitted to property management for review and approval in advance of any proposed renovation and construction works that may damage the soil vapour collection piping, sub slab liner or equipment. In turn, a property management representative should submit the work plan to SLR for further review, comment, and approval by the engineer of record for the system.

Work that may impact the effectiveness or operation of the system may include, but is not limited to the following:

- Saw cutting, coring, drilling, jack hammering or any other means of penetrating or potentially penetrating the building foundation slabs.
- Removal, relocation, or damage to any of the PVC vapour collection piping located beneath the building slabs.
- The removal of, relocation, or damage to any utilities that penetrate the slabs.
- The removal, relocation, or damage of the solid PVC soil vapour collection headers located throughout the building.

3 YEAR REVIEW

Vapour samples shall be collected from venting pipes and/or monitoring points under passive system operation on an annual basis, preferably during summer, for three years to assess vapour VOC quality. After a period of 3 years, based on the sample results it is recommended that the site condition information be re-evaluated and a thorough evaluation of the system performance be completed.

Once sufficient sampling has been performed to demonstrate that the risk to building occupants /users is below the site specific standards, the system will no longer be required to operate. This must be established with the SSD system capped or off, as appropriate.

RECOMMENDATION

Based on the most recent vapour results no further actions are required at this time and the SSD system does not need to be activated. The SSD system will remain passive and further sampling will not be required if satisfaction is established according to the risk assessor undertaking the assignment.

STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Concert Properties Ltd. hereafter referred to as the "Client". It is intended for the sole and exclusive use of Concert Properties Ltd. The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of SLR.

This report has been prepared in a manner generally accepted by professional consulting principles and practices for the same locality and under similar conditions. No other representations or warranties, expressed or implied, are made.

Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope or Work and agreement between SLR and the Client. The data reported, findings, observations and conclusions expressed are limited by the Scope of Work. SLR is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SLR does not warranty the accuracy of information provided by third party sources.

Yours sincerely,
SLR Consulting (Canada) Ltd.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA J. J. Y. TSAO # 37582 7/27/2015

Joey Tsao, B.Sc., P.Eng.
Environmental Engineer

Brent Brelje
Principal Engineer

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA S. R. HAMMER # 18269B 7/27/2015

Steven Hammer, P.E., P.Eng
Principal Engineer

Enc Tables 1 through 4
Drawings 1 through 4
Appendix A – Analytical Chemistry Reports – ALS
Appendix B – Operating and Maintenance Log Sheet

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TABLES

Burn Fund
3891 Main Street, Vancouver, BC
SLR Project No.: 201.88535.00001

TABLE 1: VAPOUR CHEMISTRY RESULTS - PREDICTED INDOOR AIR CONCENTRATIONS (ug/m^3)

Sample ID	SVP1 - 30MINS	SVP2 - 30MINS	
Date	**19-May-2015**	**19-May-2015**	**CSR RLv**
Depth of Bentonite Seal (m)	**0**	**0**	
Vapour Attenuation Factor	**2.0E-02**	**2.0E-02**	
1,1-Dichloroethane	< 1.9E-02	< 1.9E-02	500
1,1-Dichloroethene	< 2.2E-02	< 2.2E-02	1
1,1,1-Trichloroethane	< 1.9E-02	< 1.9E-02	2000
1,1,2-Trichloroethane	< 1.1E-02	< 1.1E-02	0.6
1,2-Dichloroethane	< 7.4E-03	< 7.4E-03	0.4
1,2-Dichloroethene, cis	< 3.8E-02	< 3.8E-02	20
1,2-Dichloroethene, trans	< 3.8E-02	< 3.8E-02	60
Carbon Tetrachloride	< 1.1E-02	< 1.1E-02	0.65
Chloroethane	< 3.8E-01	< 3.8E-01	10000
Chloroform	< 3.0E-02	< 1.9E-02	1
Methylene chloride	< 2.2E-01	< 2.2E-01	20
Tetrachloroethylene	< 2.2E-01	< 2.2E-01	600
Trichloroethylene	< 1.1E-02	< 1.1E-02	0.5
Vinyl chloride	< 2.2E-02	< 2.2E-02	1

Notes:
Results are in ug/m^3 unless otherwise indicated.
ug/m^3 - micrograms per cubic metre
< - less than analytical detection limit indicated
'---' - sample not analyzed for parameter indicated
ns - no standard listed
Exceeds CSR RLv: BC Contaminated Sites Regulation, Schedule 11 Generic Numerical Vapour Standards, Agricultural, Urban Park, Residential Use

TABLE 2: VAPOUR CHEMISTRY RESULTS - PREDICTED INDOOR AIR CONCENTRATIONS (ug/m^3)

Sample ID	SVP1 - 30MINS	SVP2 - 30MINS	
Date	**19-May-2015**	**19-May-2015**	**CSR RLv**
Depth of Bentonite Seal (m)	**0**	**0**	
Vapour Attenuation Factor	**1.0E-04**	**1.0E-04**	
1,1-Dichloroethane	< 9.3E-05	< 9.3E-05	500
1,1-Dichloroethene	< 1.1E-04	< 1.1E-04	1
1,1,1-Trichloroethane	< 9.3E-05	< 9.3E-05	2000
1,1,2-Trichloroethane	< 5.6E-05	< 5.6E-05	0.6
1,2-Dichloroethane	< 3.7E-05	< 3.7E-05	0.4
1,2-Dichloroethene, cis	< 1.9E-04	< 1.9E-04	20
1,2-Dichloroethene, trans	< 1.9E-04	< 1.9E-04	60
Carbon Tetrachloride	< 5.6E-05	< 5.6E-05	0.65
Chloroethane	< 1.9E-03	< 1.9E-03	10000
Chloroform	< 1.5E-04	< 9.3E-05	1
Methylene chloride	< 1.1E-03	< 1.1E-03	20
Tetrachloroethylene	< 1.1E-03	< 1.1E-03	600
Trichloroethylene	< 5.6E-05	< 5.6E-05	0.5
Vinyl chloride	< 1.1E-04	< 1.1E-04	1

Notes:
Results are in ug/m^3 unless otherwise indicated.
ug/m^3 - micrograms per cubic metre
< - less than analytical detection limit indicated
'---' - sample not analyzed for parameter indicated
ns - no standard listed
Exceeds CSR RLv: BC Contaminated Sites Regulation, Schedule 11 Generic Numerical Vapour Standards, Agricultural, Urban Park, Residential Use

TABLE 3: VAPOUR CHEMISTRY RESULTS - PREDICTED INDOOR AIR CONCENTRATIONS (ug/m^3)

Sample ID	SVP1 - 30MINS	SVP2 - 30MINS	
Date	**19-May-2015**	**19-May-2015**	**CSR CLv**
Depth of Bentonite Seal (m)	**0**	**0**	
Vapour Attenuation Factor	**2.0E-02**	**2.0E-02**	
1,1-Dichloroethane	< 1.9E-02	< 1.9E-02	1500
1,1-Dichloroethene	< 2.2E-02	< 2.2E-02	1
1,1,1-Trichloroethane	< 1.9E-02	< 1.9E-02	6500
1,1,2-Trichloroethane	< 1.1E-02	< 1.1E-02	2
1,2-Dichloroethane	< 7.4E-03	< 7.4E-03	1
1,2-Dichloroethene, cis	< 3.8E-02	< 3.8E-02	60
1,2-Dichloroethene, trans	< 3.8E-02	< 3.8E-02	200
Carbon Tetrachloride	< 1.1E-02	< 1.1E-02	2
Chloroethane	< 3.8E-01	< 3.8E-01	30000
Chloroform	< 3.0E-02	< 1.9E-02	1.5
Methylene chloride	< 2.2E-01	< 2.2E-01	65
Tetrachloroethylene	< 2.2E-01	< 2.2E-01	2000
Trichloroethylene	< 1.1E-02	< 1.1E-02	0.5
Vinyl chloride	< 2.2E-02	< 2.2E-02	3.5

Notes:
Results are in ug/m^3 unless otherwise indicated.
ug/m^3 - micrograms per cubic metre
< - less than analytical detection limit indicated
'---' - sample not analyzed for parameter indicated
ns - no standard listed
Exceeds CSR CLv: BC Contaminated Sites Regulation, Schedule 11 Generic Numerical Vapour Standards, Commercial Use

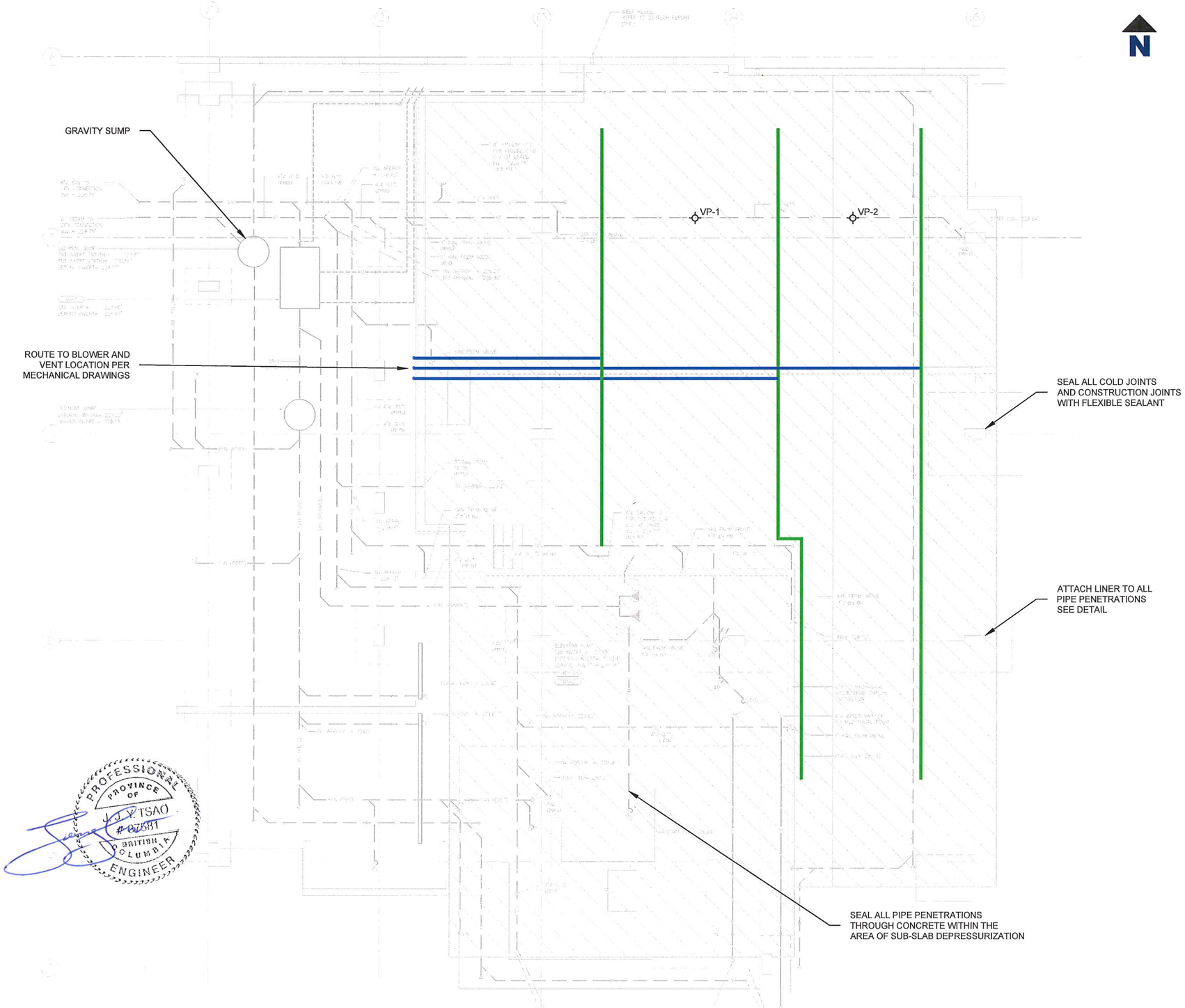
TABLE 4: VAPOUR CHEMISTRY RESULTS - PREDICTED INDOOR AIR CONCENTRATIONS (ug/m^3)

Sample ID	SVP1 - 30MINS	SVP2 - 30MINS	
Date	**19-May-2015**	**19-May-2015**	**CSR CLv**
Depth of Bentonite Seal (m)	**0**	**0**	
Vapour Attenuation Factor	**1.0E-04**	**1.0E-04**	
1,1-Dichloroethane	< 9.3E-05	< 9.3E-05	1500
1,1-Dichloroethene	< 1.1E-04	< 1.1E-04	1
1,1,1-Trichloroethane	< 9.3E-05	< 9.3E-05	6500
1,1,2-Trichloroethane	< 5.6E-05	< 5.6E-05	2
1,2-Dichloroethane	< 3.7E-05	< 3.7E-05	1
1,2-Dichloroethene, cis	< 1.9E-04	< 1.9E-04	60
1,2-Dichloroethene, trans	< 1.9E-04	< 1.9E-04	200
Carbon Tetrachloride	< 5.6E-05	< 5.6E-05	2
Chloroethane	< 1.9E-03	< 1.9E-03	30000
Chloroform	< 1.5E-04	< 9.3E-05	1.5
Methylene chloride	< 1.1E-03	< 1.1E-03	65
Tetrachloroethylene	< 1.1E-03	< 1.1E-03	2000
Trichloroethylene	< 5.6E-05	< 5.6E-05	0.5
Vinyl chloride	< 1.1E-04	< 1.1E-04	3.5

Notes:
Eesults are in ug/m^3 unless otherwise indicated.
ug/m^3 - micrograms per cubic metre
< - less than analytical detection limit indicated
'---' - sample not analyzed for parameter indicated
ns - no standard listed
Exceeds CSR CLv: BC Contaminated Sites Regulation, Schedule 11 Generic Numerical Vapour Standards, Commercial Use

DRAWINGS

Burn Fund
3891 Main Street, Vancouver, BC
SLR Project No.: 201.88535.00001



N

NOTES

1. LINES RUN MINIMUM 6 INCHES BELOW BOTTOM OF SLAB
2. COLLECTION PIPE TO BE PERFORATED PVC OR CORRUGATED HDPE
3. LINER TO BE RADONBLOCK – 20 MIL
4. COLLECTION PIPES TO BE ROUTED TO FANTECH FR225 BLOWERS (TOTAL OF THREE) PER MECHANICAL DRAWINGS

LEGEND

- 4–INCH PERFORATED COLLECTION PIPE
- 6–INCH NON–PERFORATED PIPE
- VAPOUR MONITORING POINTS – SEE DETAIL
- SUB–SLAB DEPRESSURIZATION UNDER OCCUPIED AREA

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. J. Y. TSAO
27581

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

CONCERT PROPERTIES
BURN FUND
3891 MAIN STREET
VANCOUVER, BC

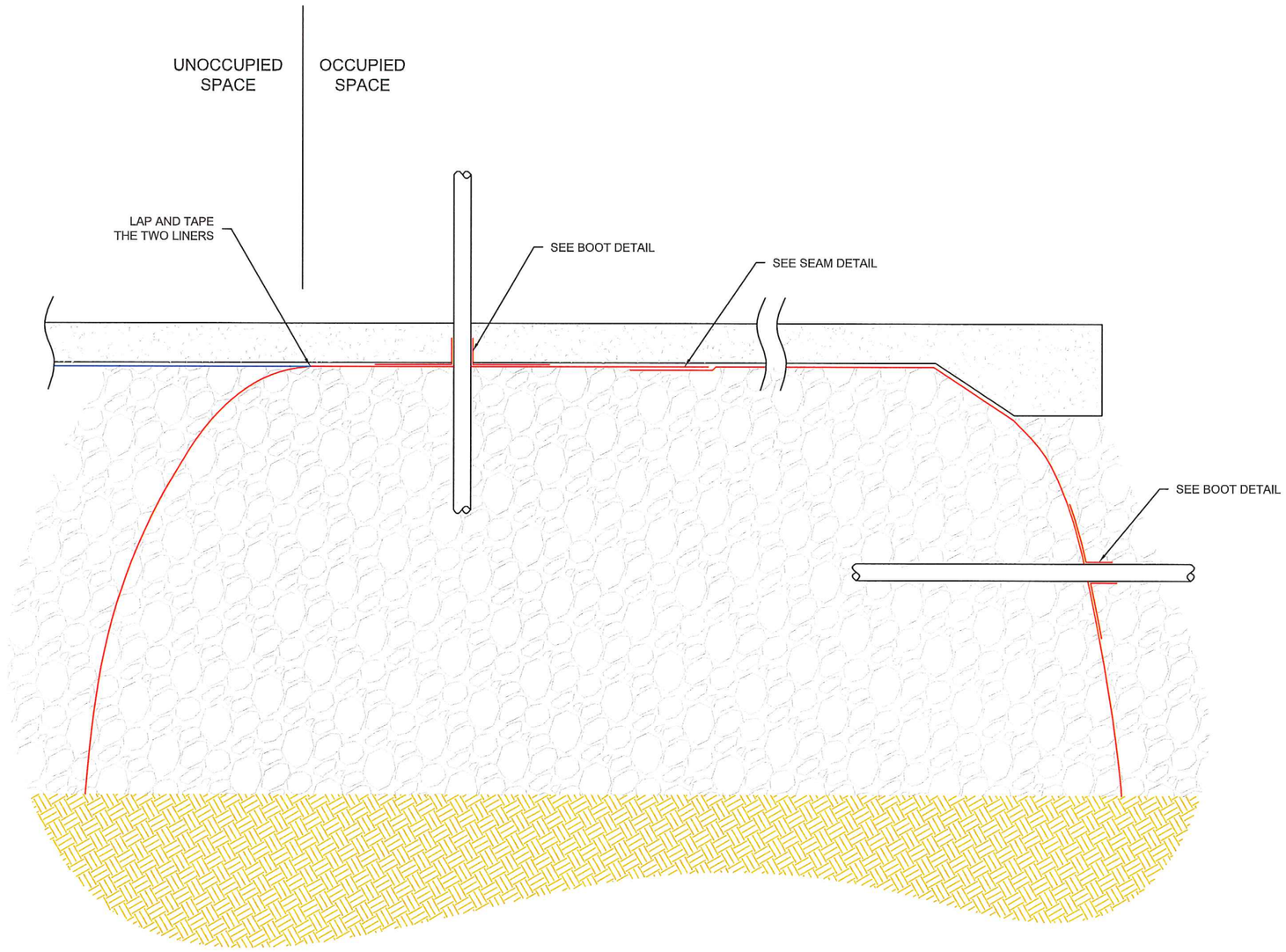
Report
SUB-SLAB DEPRESSURIZATION SYSTEM

Drawing
SUB-SLAB PIPING PLAN

REV	DATE	DESCRIPTION	DSGN	CHCK	APPRV
A	12SEP2014	ISSUED FOR CONSTRUCTION COORDINATION AND REVIEW	JSM	BWB	

Date June 24, 2015
Scale AS SHOWN
Drawing No. 1
File Name S_201-88535-00001-A2
Project No. 201.00000.00000

SLR

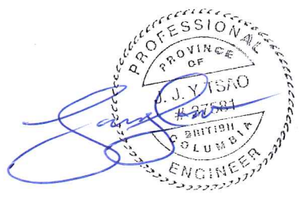


NOTES TO EXCAVATION CROSS SECTION A-A'

1. ALL SEAMS AND BOOTS TO BE SEALED.
2. LINER DEPTH TO EXTEND TO NATIVE SOILS

LEGEND

- RADONBLOCK LINER – 20 MIL
- 6 MIL VAPOUR BARRIER



THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

CONCERT PROPERTIES
BURN FUND
3891 MAIN STREET
VANCOUVER, BC

Report

SUB-SLAB DEPRESSURIZATION SYSTEM

Drawing

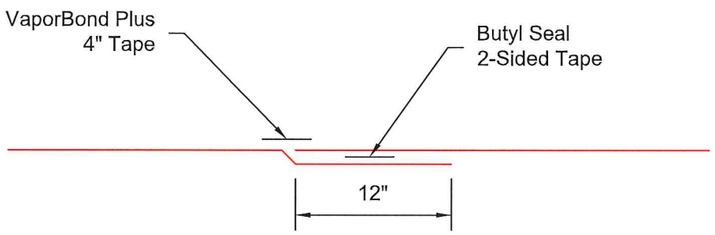
SUB-SLAB CROSS-SECTION

REV	DATE	DESCRIPTION	DSGN	CHCK	APPRV
A	12SEP2014	ISSUED FOR CONSTRUCTION COORDINATION AND REVIEW	JSM	BWB	

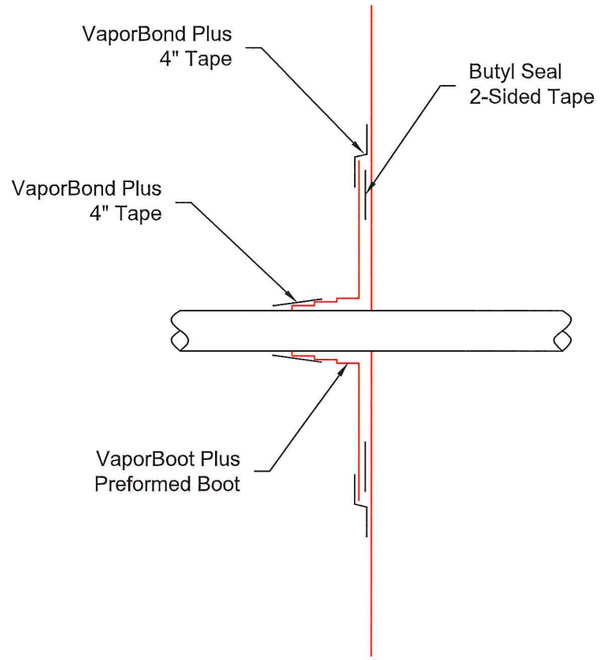
Date	September 11, 2014	Scale	AS SHOWN
File Name	SUBSLAB DEP DESIGN	Project No.	201.00000.00000

Drawing No. 2

SLR



LINER SEAM DETAIL



LINER PIPE PENETRATION BOOT DETAIL

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

NOTES TO EXCAVATION CROSS SECTION A-A'

1.

LEGEND

CONCERT PROPERTIES
BURN FUND
3891 MAIN STREET
VANCOUVER, BC

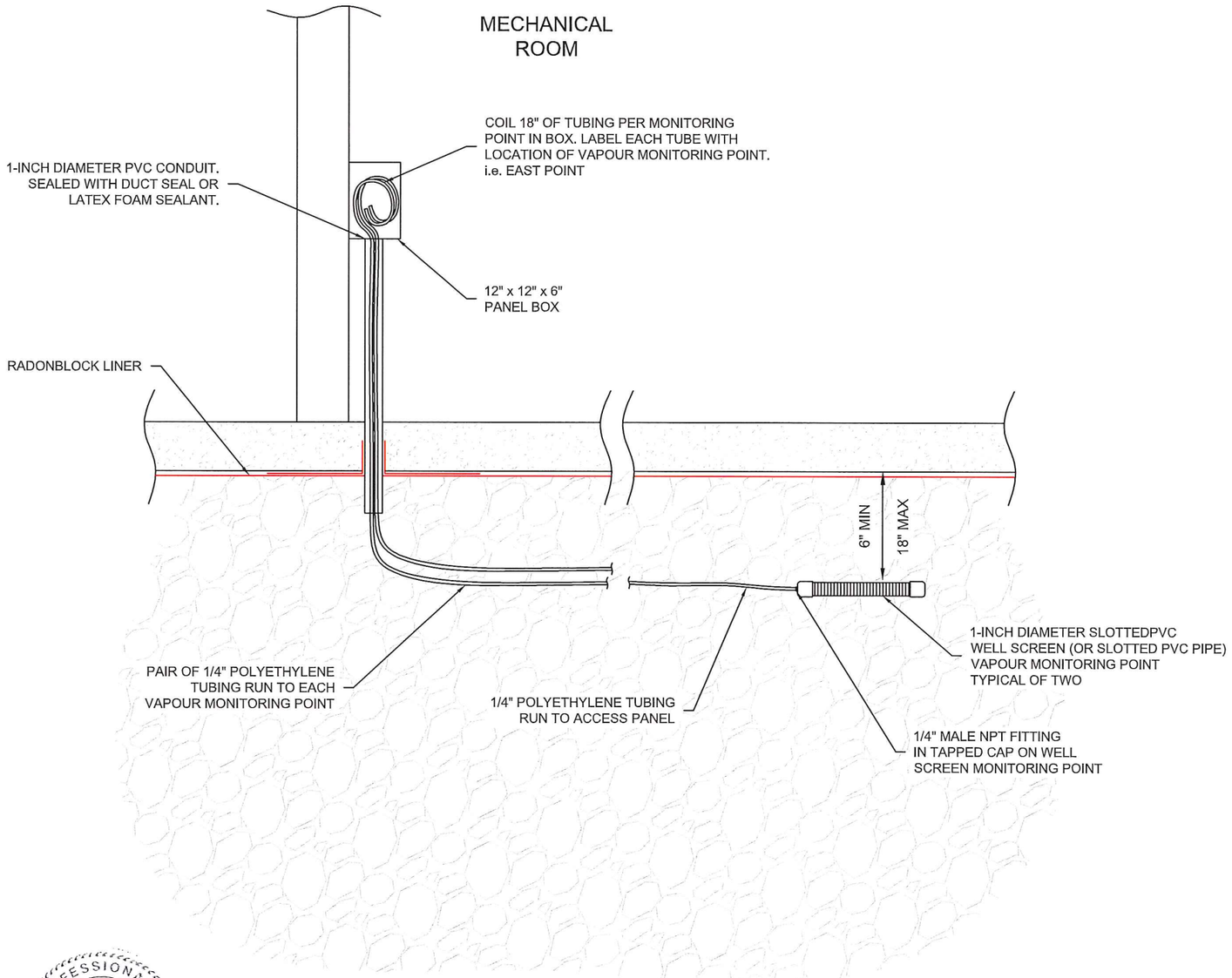
Report
SUB-SLAB DEPRESSURIZATION SYSTEM

Drawing
LINER SEAM & BOOT DETAIL

REV	DATE	DESCRIPTION	DSGN	CHCK	APPRV
A	12SEP2014	ISSUED FOR CONSTRUCTION COORDINATION AND REVIEW	JSM	BWB	

Date	September 11, 2014	Scale	AS SHOWN	Drawing No. 3
File Name	SUBSLAB DEP DESIGN	Project No.	201.00000.00000	

SLR



NOTES TO EXCAVATION CROSS SECTION A-A'

1. VAPOUR MONITORING POINT TO BE INSTALLED A MINIMUM OF 6 INCHES AND A MAXIMUM OF 18 INCHES BELOW BOTTOM OF SLAB.
2. POLYETHYLENE TUBING FROM ALL MONITORING POINTS ROUTED TO SHARED ACCESS POINT PER ENGINEER.
3. SLOTTED WELL SCREEN VAPOUR MONITORING POINT TO BE CAPPED ON BOTH ENDS.

LEGEND

RADONBLOCK LINER – 20 MIL

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. J. Y. TSAO

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CONCERT PROPERTIES
BURN FUND
3891 MAIN STREET
VANCOUVER, BC

Report
SUB-SLAB DEPRESSURIZATION SYSTEM

Drawing
VAPOUR MONITORING POINT DETAIL

REV	DATE	DESCRIPTION	DSGN	CHCK	APPRV
A	12SEP2014	ISSUED FOR CONSTRUCTION COORDINATION AND REVIEW	JSM	BWB	

Date September 11, 2014
Scale AS SHOWN
Drawing No. 4
File Name SUBSLAB DEP DESIGN
Project No. 201.00000.00000

SLR

APPENDIX A
Analytical Chemistry Report

Burn Fund
3891 Main Street, Vancouver, BC
SLR Project No.: 201.88535.00001

SLR CONSULTING (CANADA) LTD.
ATTN: Jackie Smith
200 - 1620 West 8th Avenue
Vancouver BC V6J 1V4

Date Received: 20-MAY-15
Report Date: 28-MAY-15 12:11 (MT)
Version: FINAL

Client Phone: 604-738-2500

Certificate of Analysis

Lab Work Order #: L1614359

Project P.O. #: NOT SUBMITTED
Job Reference: 201.88535.00001
C of C Numbers: 14-429134
Legal Site Desc:

Erin Bolster, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1614359-1	L1614359-4			
	Description	AIR	AIR			
	Sampled Date	19-MAY-15	19-MAY-15			
	Sampled Time					
	Client ID	SVP1 - 30MINS	SVP2 - 30MINS			
Grouping	**Analyte**					
CARBO-TUBE						
Volatile Organic Compounds	Carbon Tetrachloride (ug)	<0.0015	<0.0015			
	Carbon Tetrachloride (ug/m3)	<0.56	<0.56			
	Chloroethane (ug)	<0.050	<0.050			
	Chloroethane (ug/m3)	<19	<19			
	Chloroform (ug)	<0.0040 DLI	<0.0025			
	Chloroform (ug/m3)	<1.5 DLI	<0.93			
	1,1-Dichloroethane (ug)	<0.0025	<0.0025			
	1,1-Dichloroethane (ug/m3)	<0.93	<0.93			
	1,2-Dichloroethane (ug)	<0.0010	<0.0010			
	1,2-Dichloroethane (ug/m3)	<0.37	<0.37			
	1,1-Dichloroethylene (ug)	<0.0030	<0.0030			
	1,1-Dichloroethylene (ug/m3)	<1.1	<1.1			
	cis-1,2-Dichloroethylene (ug)	<0.0050	<0.0050			
	cis-1,2-Dichloroethylene (ug/m3)	<1.9	<1.9			
	trans-1,2-Dichloroethylene (ug)	<0.0050	<0.0050			
	trans-1,2-Dichloroethylene (ug/m3)	<1.9	<1.9			
	Dichloromethane (ug)	<0.030	<0.030			
	Dichloromethane (ug/m3)	<11	<11			
	Tetrachloroethylene (ug)	<0.030	<0.030			
	Tetrachloroethylene (ug/m3)	<11	<11			
	1,1,1-Trichloroethane (ug)	<0.0025	<0.0025			
	1,1,1-Trichloroethane (ug/m3)	<0.93	<0.93			
	1,1,2-Trichloroethane (ug)	<0.0015	<0.0015			
	1,1,2-Trichloroethane (ug/m3)	<0.56	<0.56			
	Trichloroethylene (ug)	<0.0015	<0.0015			
	Trichloroethylene (ug/m3)	<0.56	<0.56			
	Vinyl Chloride (ug)	<0.0030	<0.0030			
	Vinyl Chloride (ug/m3)	<1.1	<1.1			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1614359-1	L1614359-4			
	Description	AIR	AIR			
	Sampled Date	19-MAY-15	19-MAY-15			
	Sampled Time					
	Client ID	SVP1 - 30MINS	SVP2 - 30MINS			
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	2.7	2.7			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLI	Detection Limit Adjusted: Matrix interference with Internal Standard

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AIR VOLUME-VA	Misc.	Air volume (L)	HYGIENE METHOD
VOC-TDMS-VA	Carbo-Tube	VOCs by Thermal Desorption and GCMS	EPA TO-17, BCMOE CSR (DRAFT JAN 2009)

This analysis is carried out using procedures adapted from EPA TO-17 (January 1999) and BCMOE analytical method for contaminated sites "VOCs in air by thermal desorption tube / GCMS" (November 2009) . Air samples are collected onto a sorbent tube either passively or actively via air sampling pumps. The tube is thermally desorbed and the VOCs are determined using gas chromatography with mass spectrometry (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Air sampling media have maximum safe sampling volumes (SSV) for each compound. Exceeding the SSV (noted below in litres) may cause the compound to break through the media, leading to a negatively biased result. Lower boiling point compounds such as vinyl chloride (10), chloromethane (6), and dichloromethane (40) are particularly affected. SSVs for ALS Vancouver thermal desorption media are readily available from a Client Service Representative. Where SSVs have been exceeded, please contact ALS regarding data interpretation as results may still be fit for purpose.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

14-429134

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: SLR CONSULTING (CANADA) LTD.
200 - 1620 West 8th Avenue
Vancouver BC V6J 1V4
Contact: Jackie Smith

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-TDMS-VA	**Carbo-Tube**							
Batch R3196785								
WG2095818-2 LCS								
Carbon Tetrachloride			116.9		%		60-140	26-MAY-15
Chloroethane			110.1		%		60-140	26-MAY-15
Chloroform			115.8		%		60-140	26-MAY-15
1,1-Dichloroethane			105.8		%		60-140	26-MAY-15
1,2-Dichloroethane			114.7		%		60-140	26-MAY-15
1,1-Dichloroethylene			111.6		%		60-140	26-MAY-15
cis-1,2-Dichloroethylene			104.8		%		60-140	26-MAY-15
trans-1,2-Dichloroethylene			109.1		%		60-140	26-MAY-15
Dichloromethane			107.8		%		60-140	26-MAY-15
Tetrachloroethylene			104.7		%		60-140	26-MAY-15
1,1,1-Trichloroethane			114.5		%		60-140	26-MAY-15
1,1,2-Trichloroethane			102.9		%		60-140	26-MAY-15
Trichloroethylene			105.2		%		60-140	26-MAY-15
Vinyl Chloride			127.6		%		60-140	26-MAY-15
WG2095818-1 MB								
Carbon Tetrachloride			<0.0015		ug		0.0015	26-MAY-15
Chloroethane			<0.050		ug		0.05	26-MAY-15
Chloroform			<0.0025		ug		0.0025	26-MAY-15
1,1-Dichloroethane			<0.0025		ug		0.0025	26-MAY-15
1,2-Dichloroethane			<0.0010		ug		0.001	26-MAY-15
1,1-Dichloroethylene			<0.0030		ug		0.003	26-MAY-15
cis-1,2-Dichloroethylene			<0.0050		ug		0.005	26-MAY-15
trans-1,2-Dichloroethylene			<0.0050		ug		0.005	26-MAY-15
Dichloromethane			<0.030		ug		0.03	26-MAY-15
Tetrachloroethylene			<0.030		ug		0.03	26-MAY-15
1,1,1-Trichloroethane			<0.0025		ug		0.0025	26-MAY-15
1,1,2-Trichloroethane			<0.0015		ug		0.0015	26-MAY-15
Trichloroethylene			<0.0015		ug		0.0015	26-MAY-15
Vinyl Chloride			<0.0030		ug		0.003	26-MAY-15

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1614359-COFC

COC Number: 14 - 429134

Page 1 of 1

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SLR	Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3pm)
Contact:	Jackie Smith	Quality Control (QC) Report with Report	☑ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	200 – 1620 w. 8th Ave	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 business days if received by 3pm)
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
Phone:	604 738 -2500	Email 1 or Fax	# Jackie-Smith@slrconsulting.com	Specify Date Required for E2,E or P:
		Email 2	jtsao@slrconsulting.com	Analysis Request

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☐ Yes ☑ No	Email 1 or Fax	same as above.
Company:		Email 2	
Contact:			

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	206.88535.00001	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)	ALS Contact: EB	Sampler: JT.

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Dry cleaner #14	HAUL	Number of Containers
	SVP1 - 30 mins.	19-MAY-15		air	X		1
	SVP1 - 15 mins					X	
	SVP1 - 5 mins					X	
	SVP2 - 30 mins				X		
	SVP2 - 15 mins					X	
	SVP2 - 5 mins.					X	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	please provide Esdat file.
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)					
Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
16.8					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	May 20/15	1000				PAUL	MAY 20	16:32

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALSEM-0326e v06 Front/03 October 2013

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

THERMAL DESORP
SAMPLING INFORMA

L1614359-COFC

Date Returned:	
QC Check:	Sent

ALS File # _____ **BR140797** (To be filled out by ALS upon return of samples to ALS)

1. Sampling Supplies (To be filled out by ALS)

Company Name/Location:	SLR Vancouver	Project/Job No:	201.88535.00001
Pump Requested By:	Joey Tsao	Date of Request:	May 12, 2015
ALS Account Manager:	Erin Bolster	Pump(s) Prepared By:	Nick
# of Pumps (TD x 1@100mL/min):	1	Date Required @ Shipping:	May 15 @ 12pm
# of Pumps (TD x 2@100mL/min):		Flow Verification Tubes 1	Other
Other Supplies Provided:	Lithium-ion Battery Charger 1 Splitters & Tubing Alkaline Battery Adapter	Pelican Case (Single) 1 Pelican Case (Multiple) Additional Pumps:	
TD Tubes 6			

2. Flow Rates (Flow rates before and after - ALS; flow rates in situ - Client)

Pump ID	Pump flow before sampling (mL/min) - ALS	Pump flow after sampling (mL/min) - ALS	Pump Flow in situ (mL/min) - CLIENT[1]	Notes
1. 012450	A B 100	A B	A B 90	
2.	A B	A B	A B	
3.	A B	A B	A B	
4.	A B	A B	A B	

[1] If in-situ flow measurements have been provided, these will be used for all air concentrations calculations.

3. Sample Information (To be filled out by Client)

	TD Tube Serial #	Client Sample ID	Pump #	Sampling Time (min)	Date/Time	Elevated Levels Expected? Y	?	N	Recvd @ Lab ☑
1	G0154445	SVP1 - 15mins	012450	15	May 19 2015 945		✓		
2	G0154479	SVP1 - 5mins	↓	5	↓ 950		✓		
3	G0148479	SVP1 - 30mins		30	916		✓		
4	G0154153	SVP2 - 15mins		15	1055		✓		
5	G0154130	SVP2 - 5mins		5	1100		✓		
6	G0146096	SVP2 - 30mins	✓	30	↓ 1125		✓		
7									
8									
9	G0135967	FLOW VER							
10									
11									

APPENDIX B
Operating and Maintenance Log Sheet

Burn Fund
3891 Main Street, Vancouver, BC
SLR Project No.: 201.88535.00001

Operating and Maintenance Log Sheet
Burn Fund Subslab Depressurization System

Date	Initials	Blowers Running? (Y,N)	Vacuum Measurements (mm of water)		Weather (clear, rain, wind, etc.)	Comments/Maintenance Performed
			VP-1	VP-2		

SLR

global environmental solutions

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Calgary, AB T2W 4X9
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Fax: (403) 263-7906

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Edmonton, AB T6B 3H9
Canada
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Fax: (780) 490-7819

Grande Prairie, AB
10015 102 Street
Grande Prairie, AB T8V 2V5
Canada
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Fax: (780) 513-6821

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8 West St. Paul Street
Kamloops, BC V2C 1G1
Canada
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Fax: (250) 374-8656

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Kelowna, BC V1Y 2A3
Canada
Tel: (250) 762-7202
Fax: (250) 763-7303

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200 - 300 Town Centre Blvd
Markham, ON L3R 5Z6
Canada
Tel: (905) 415-7248
Fax: (905) 415-1019

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9-6421 Applecross Road
Nanaimo, BC V9V 1N1
Canada
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Canada
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Fax (306) 525-4691

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Fax: (306) 374-6077

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Fax: (204) 475-1649

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Canada

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