PHOENIX
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December 23, 2020
Updated June 27, 2024

Glenn Richardson
RBD Victoria Inc. and GRD Victoria Inc.
#41A 1145 Inlet Street
Coquitlam, BC
V3B 6E8

Dear Mr. Richardson:

Re: Environmental Impact Assessment – 1160 Victoria Drive, Port Coquitlam, B.C.

Phoenix Environmental Services Ltd. (Phoenix) is pleased to present this Environmental Impact Assessment report for the property located at 1160 Victoria Drive in Port Coquitlam (the Site). This report has been updated from an earlier edition of the report dated December 2020 which addressed the latest plans for the proposed residential subdivision at the Site. The latest plans reflect comments from the City of Port Coquitlam regarding preliminary development concepts as well as through stakeholder consultation (the Hyde Creek Watershed Society). This June 2024 edition of the EIA report provides an update with reference to senior government authorizations under the BC Water Sustainability Act (WSA Change Approval) and the Canada Fisheries Act (DFO Letter of Advice).

This Environmental Impact Assessment has been carried out to address the City of Port Coquitlam's requirements for a Watercourse Development Permit (Watercourse DP) as specified under Division 10 – Watercourse Protection DPs under the City of Port Coquitlam Development Procedures Bylaw 2001, No. 3296.

This Environmental Impact Assessment (EIA) provides a description of existing environmental conditions of the Site such as vegetation communities, stream and aquatic habitats, and wildlife habitats, including Provincially-listed Species at Risk. This EIA also identifies the applicable Watercourse Protection Areas (WPA) under the City's Official Community Plan (OCP) Bylaw No. 3838; Watercourse Protection. This report also describes the proposed single-family residential re-development concept for the Site, provides an assessment of potential environmental impacts and recommends associated mitigation measures.

1 INTRODUCTION

The City of Port Coquitlam Official Community Plan (OCP) designates lands within 50 m of watercourses as Development Permit Areas and requires an Environmental Assessment as part of the Watercourse Development Permit (Watercourse DP) process, for any activities that impact watercourses. The Site is intersected by a watercourse that conveys flows from a storm sewer extending south from Victoria Avenue and discharges into a ravine situated in a City road allowance (Newberry St.) to the west of the Site, then flows in an angle southeastward through a natural channel in the south part of the Site, and enters into a storm sewer system at Lynnwood Avenue to the south of the Site. The Site is currently occupied by a single-family dwelling and barn accessed by a driveway from Victoria Drive.

The City's OCP identifies a need for new residential lots and states that there is some opportunity to create new lots through consolidation and subdivision of existing lots. The unnamed stream on the Site has been observed by Phoenix to be a permanent non-fish bearing watercourse ("Class B nutrient stream"), which under the OCP, Section 9.8 Watercourse Protection, is subject to a streamside riparian setback extending 30 m from the watercourse top of bank. The unnamed stream is a tributary of Hyde Creek, connecting via the storm sewer network. The streams flow return from the storm sewer to an open channel in a vacant lot at 3940 Ambleside Close to the southeast of the Site. The subject unnamed stream provides flow and nutrient export to fish populations present in Hyde Creek, and as such functions as fish habitat.

In order to re-develop the Site for single-family residential lots, the Site owners, RBD Victoria Inc. and GRD Victoria Inc., propose to realign the unnamed stream at the Site so that it flows parallel to the western property boundary. In addition, connecting upstream fish migration from Watkins Creek into the unnamed stream is proposed via a new stream channel through the existing park land southwest of the Site extending from Watkins Creek and through a fish passable culvert that will include baffles to allow fish from Watkins Creek to access the unnamed stream at the Site.

Updated engineered civil drawings issued for tender and dated May 6, 2024 has been prepared by H.Y. Engineering showing the proposed single-family development and stream realignment details for the Site and is presented Appendix C. As per Section 9.8 of the OCP, if a stream is fish bearing, a 30-m streamside setback is required; except in agricultural, single residential or duplex zones, where a 15-m setback applies. By realigning the unnamed stream to drain through a fish passable culvert to Watkins Creek, the subject unnamed stream will become a fish-bearing stream; which will change the stream classification to Class A such that a 15-m streamside setback is applicable at the Site as a single-family residential site. The remainder of the Site outside of the 15-m setback from the realigned stream top of bank is proposed to be developed as per the Proposed Subdivision Plan (see Appendix C) and in accordance with the City's densification plan.

This report provides a biophysical inventory of the Site including a description of topographic and geologic features, vegetation communities, streams and aquatic habitat, wildlife and wildlife habitat, and potential occurrence of Species at Risk. This report also describes the measures incorporated into the proposed plan to provide aquatic and terrestrial habitat conservation, enhancement and restoration opportunities, protection of key environmental features, and the mitigation measures to be taken toward environmentally sound construction methods and development at the Site.

This EIA report is intended to support an application for a Watercourse Protection Development Permit. This EIA report is also intended to facilitate further review by the City of Port Coquitlam of the proposed residential subdivision planned for the Site such that City comments on the acceptability and any required modifications to the proposed development plan for the Site can be obtained.

2 PROJECT DESCRIPTION

The proposed development of the Site entails construction of 26 single-family residential lots accessed by new streets within the Site extending from Lynwood Avenue at the south edge of the Site. The proposed lot layout and streets are shown on the civil engineering drawings prepared by H.Y. Engineering and presented in Appendix C.

The Site will be re-graded to meet existing elevations at Victoria Drive to the north, the unopened Newberry St. road allowance at the northwest edge of the Site, and the existing rear yards of the adjacent single-family residential lots to the east along Wedgewood Street. The internal new roads will be sloped 4-5% eastward and 4% southward to Lynwood Street. Storm sewers will collect stormwater runoff from the proposed new lots and convey stormwater from the Site into a different storm sewer catchment that drains east along Lynwood Avenue to a storm outfall to Smiling Creek, another tributary of Hyde Creek, east of the intersection of Lynnwood Ave. and Alderwood Avenue.

The proposed development includes realigning the unnamed stream on the Site so that it flows predominantly south parallel to the western property boundary. The proposed stream realignment will enable fish migration from Watkins Creek to the southwest of the Site via a fish passable culvert into the unnamed stream at the Site that is presently non-fish bearing. The proposed realignment of the existing stream extends off of the existing stream a short distance downstream of the ravine containing the existing stream in the unopened Newberry St. road allowance and along mid-western edge of the Site. The existing stream within the ravine will be unaltered. The new stream alignment will avoid a grove of large cedar trees and will entail excavation of a new stream channel south through a partly forested area of the Site to a new fish-passable culvert to be constructed near the southwest corner of the Site. In addition, a new stream will be constructed to the east of the existing ravine and north of the existing stream. The new stream to the north of the existing stream will receive base flows from a flow-splitter manhole to be installed into the existing storm sewer beneath the unopened Newberry Street road allowance, which will divert a portion of existing stormwater flows to another manhole east within the Site and then south into the new stream channel to the north of the existing stream at the Site.

To provide fish migration into the new stream alignments within the Site, and the existing ravine stream, a culvert with baffles and embedded gravels in the bottom of the culvert between the baffles will be constructed across Lynwood Ave. and Alderwood Ave. as a fishway. The alignment of the proposed fishway is constrained by sanitary pump station infrastructure at the southwest corner of Lynwood and Alderwood Ave. and by existing underground utilities under both streets. The proposed alignment of the fishway culvert results in the shortest length of fish-passable culvert. A new stream channel will be constructed through the City park to the southwest of the Site along an alignment minimizing tree loss and following existing topography to Watkins Creek just upstream of existing log and boulder bank revetments at a bend in Watkins Creek. The grades of the new channel within the park will enable salmonids and other fish in Watkins Creek to migrate upstream and through the fishway (fish-passable culvert) into the new stream network at the Site.

Refer to the Phoenix drawing, Channel Realignment and Setback Map, presented in Appendix A for an overview of the new streams at the Site and the nearby park connected by the fishway to Watkins Creek, including a detail inset for the new stream in the park to Watkins Creek. Refer to H.Y. Engineering drawings, Stream Plan and Profile and the Lot Grading Plan, presented in Appendix C. The H.Y. Stream Plan and Profile drawing (Appendix C) presents inset details for the proposed fish passable culvert / fishway, as well as channel profiles for the new streams at the Site.

3 METHODS

Phoenix conducted a preliminary field assessment on November 20, 2017, and a complete field assessment on March 5, 2019, to determine the location of any watercourses, wildlife use and presence, vegetation communities, invasive species, and any environmentally significant features. Phoenix also

attended the Site on April 12, 2018 to assess the water levels of the stream. Phoenix has conducted several subsequent field visits in 2022 and 2023 for WSA and DFO applications and for joint site inspections with DFO and WSA staff.

Prior to the field assessments in 2017 and 2019, Phoenix reviewed the City's PoCoMAP mapping database to identify mapped watercourses and associated fisheries watercourse classifications, and existing land use and riparian area characteristics. As the Site is located on Victoria Drive, which is the boundary between Port Coquitlam and Coquitlam, the City of Coquitlam's GIS mapping database (QtheMap) was also reviewed for environmental features, watercourses, and infrastructure that should be considered in relation to the Site. Aerial photos, topography (0.5 m contours), and zoning designations have been reviewed by Phoenix. Phoenix has also reviewed the Ministry of Environment's (MOE) Conservation Data Centre (CDC) database of known and potential occurrences of provincially-listed (i.e., red-listed or blue-listed) plant and animal species, and federally-listed species on Schedule 1 of the Species at Risk Act (SARA) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Phoenix also conducted a search of the Fisheries Information Data Queries (FIDQ) database for the onsite and adjacent streams.

A land and topographic survey was completed on January 10, 2018 by Vernon C. Goudal & Associates which identified the top of bank for the existing watercourses on site, as well as structures, infrastructure, encumbrances, roads and significant tree stands on site. The top of bank shown on the topographic survey is based on top of bank flagging by another environmental consultant. The top of bank locations shown on the topographic survey have been assessed by Phoenix to be accurate for the purposes of this Environmental Impact Assessment of the the Site and proposed residential re-development. The Land and Topographic Survey is included as Appendix D.

An arborist assessment was conducted by Stickleback Environmental on December 27 and 28, 2017 to document the trees on/near the Site and give recommendations for tree retention and removal for the proposed development and watercourse realignment. The arborist report is available separately and has been referenced for this EIA.

A geotechnical assessment was completed by Cornerstone Geo-Structural Engineering Ltd. on January 9 and 12, 2018. The geotechnical assessment report is attached as Appendix E.

4 SITE DESCRIPTION

The Site is 1.73 hectares in size and comprises one legal lot at 1160 Victoria Drive in Port Coquitlam. The Site is located at the northern boundary of Port Coquitlam. Properties and services to the north fall under the jurisdiction of Coquitlam.

The Site is occupied by a single-family residential dwelling with a detached garage and a pool. There is also a small horse stable/barn to the east of the residence along the eastern property boundary. The Site is currently zoned RS3 (to accommodate and regulate detached dwellings on large lots with at least 30 m [~100 ft.] wide lots). The Site is bounded to the east, west and south by residential lots zoned RS1 (to accommodate and regulate detached dwelling units on lots that are at least 15 m [50 ft.] wide).

To the southwest of the Site is Hyde Creek Nature Park. Within Hyde Creek Nature Park, Watkins Creek extends from the northwest at Apel Drive and flows east towards the Site coming to within 60 m of the southwest corner of the Site. Watkins Creek then turns south and conveys flows into Hyde Creek which

flows into De Boville Slough which in turn drains to the Pitt River. Watkins Creek is classified and mapped (PoCoMAP) as a permanent, fish-bearing stream.

To the north of the Site is predominantly residential multi-family homes (townhouses) and an Elementary School in Coquitlam.

The location of the Site in Port Coquitlam is shown on Figure 1.

Figure 1: Site Location in Port Coquitlam (PoCoMAP, 2019).

5 TOPOGRAPHY AND GEOLOGY

The Site topography is gently sloping to the south with a small east-west slope bisecting the Site approximately midway. A small unnamed stream is entrenched in a steep-sided ravine that flows along the western boundary of the Site for approximately 35 m before the stream turns southeastward and enters a storm sewer at Lynnwood Ave. near the centre of the south boundary of the Site. Where the stream turns southeastward, the ravine opens to a broad, relatively flat area in the south-central part of the Site. Gentle slopes from the east and west adjoin the low-lying area in the south-central area of the Site where the existing unnamed stream at the Site meanders in shallow and bifurcated channels with couple of wet seepage zones along the east (left) banks of the stream channel. Refer to the topographic survey drawing in Appendix D for additional details on the topographic features and existing stream at the Site.

The Geological Survey of Canada describes the surficial geology of the Site area as Vashon Drift and Capliano sediments (VD) which consist of glacial drift including: lodgement and minor flow till, lenses and interbeds of substratified glaciofluvial sand to gravel, and lenses and interbeds of glaciolacustrine

laminated stony silt; up to 25 m thick but in most places less than 8 m thick (correlates with Va, b); overlain by glaciomarine and marine deposits similar to Cd normally less than 3 m but in places up to 10 m thick. Marine derived lag gravel normally less than 1 m thick containing marine shells casts has been found mantling till and glaciomarine deposits up to 175 m above sea level; above 175 m till is mantled by bouldery gravel that may be in part ablation till, in part colluvium, and in part marine shore in origin.

This Site and vicinity are listed as Unclassified in the BC Soil Survey mapping (Soils of the Langley-Vancouver Map Area, Luttmerding, 1980).

The geotechnical report (see Appendix E) describes the site topography as sloping gently to the south with a drop in elevation towards the central portion of the lot with slope heights varying from 1.0 m to 2.0 m and slope gradients not exceeding 50%. Based on analysis of five test holes (TH) dug at the Site, the soils were described as topsoil which is underlain by till described as very stiff, moist/wet, clayey silt, with the exception of TH-3 where soils consisted of random fill (found only in test hole 3) underlain by soft clayey silt which is underlain by till as described above.

The geotechnical assessment has concluded that the proposed development is feasible provided the recommendations in the geotechnical report are followed (refer to Appendix E – Geotechnical Report).

6 WATERCOURSES

The Site is within the drainage catchment area (i.e. watershed) of Hyde Creek. Hyde Creek (Watershed Code: 100-026700-07200-97700) is a permanent fish bearing stream under Port Coquitlam's Watercourse Protection classification system. Hyde Creek supports 6 species of salmonids including coho salmon (*Oncorhychus kisutch*), chum salmon (*O. keta*), pink salmon (*O. gorbuscha*), Chinook salmon (*O. tshawytscha*), cutthroat trout (*O. clarkii*), and both rainbow and steelhead trout (*O. mykiss*), as well as other fish species (e.g. Lamprey, sculpin, and threespine stickleback). Hyde Creek is one of the primary drainage catchments in Port Coquitlam.

The Site is located near Hyde Creek Nature Park. Within Hyde Creek Nature Park, Watkins Creek flows near the southwestern corner of the Site and conveys flows into Hyde Creek. Although Watkins Creek (Watershed Code: 100-026700-07200-97700-1743) has no records of fish presence in the Province of BC's Fish Inventory Data Queries (FIDQ) database, coho and chum salmon have been observed spawning at or above the confluence with Hyde Creek as per the Hyde Creek Integrated Watershed Management Plan.

An unnamed stream enters the Site from the western property boundary via a storm sewer outfall extending south from Victoria Drive. The stream conveys stormwater flows from a 450 mm concrete storm main, located to the west of the Site, across the southwestern corner of the Site and drains into the storm sewer system to the south of the Site through a 375 mm concrete culvert at Lynwood Avenue. Flows from this storm sewer system flow through the single-family residential subdivision to the south of the Site and are conveyed into Hyde Creek.

The unnamed stream at the Site is shown in PoCoMap as a storm ditch (non-permanent, non-fish bearing). However, based on field observations by Phoenix in November 2017, it has been determined that the existing unnamed watercourse at the Site should be classified as Class B stream (permanent, non-fish-bearing). The existing unnamed stream has been observed by Phoenix to be flowing in November 2017 and April 2018, as well as during a Site visit on March 5, 2019 after a period of 7 days with no rain (as per

City of Coquitlam Rainfall Monitoring – Flow works – Burke Mountain Rain Gauge). During the Site visit on March 5, 2019 flow volumes in the stream appeared to be larger towards Lynwood Avenue than at the storm sewer outfall area at the head of the ravine, indicating that the stream is also groundwater fed. There were also groundwater seepages observed along the east side of the low-lying reach of the stream in the south-central area of the Site.

Due to the change in classification from a storm ditch to a permanent Class B (non-fish bearing) stream, the setback that should be applied as per the OCP Section 9.8 Watercourse Protection is 30 m measured from the stream (or ravine) top of bank. However, if the subject stream is made fish accessible and becomes fish-bearing, the streamside setback would be 15 m from stream/ravine top of bank.

The northernmost reach of the unnamed stream is confined within a steep-sided ravine within the adjacent unopened (Newberry St.) road allowance to the west of the Site. The stream flows south and slightly east within the ravine until it crosses the western property line of the Site where the ravine condition ends. The stream appears to have been diverted by a large boulder and adjacent slope to the south causing the stream to bend and flow southeast across an area with fairly flat topography. Refer to the Photos in Appendix B for additional details regarding features along the stream and within the Site.

Within the Site, the stream meanders for approximately 75 m, and then the channel becomes braided for approximately 40 m before rejoining to a single channel and passing over an apparently constructed boulder weir. Beyond the weir, the stream channel becomes braided again for approximately 45 m and once again rejoins to a single stream channel for approximately 30 m before passing through a headwall into the storm sewer system at Lynwood Avenue. There are multiple seepages near where the stream channel is braided that convey groundwater into the stream and contribute to the flows. There are indications of higher flows along the stream within the low-lying areas. However, the high flow events do not appear to be substantially variable; that is, the stream at the Site appears to have relatively stable baseflows. While having a storm sewer source of flows, in addition to groundwater-based low flows, the higher velocity and volume flows associated with storm events has not scoured a deep stream channel; except near the storm outfall where the existing ravine slope on the west side has eroded and undermined an adjacent wood retaining wall. Rather, the stream channels throughout the Site are shallow (<30 cm bank height) with low flows around 5- 10 cm deep. The stream substrate comprises predominantly sand, silt and gravel with some scattered boulders and some areas of high silt/organics, particularly near the south end of the stream near the storm sewer inlet headwall at Lynwood Avenue.

The stream top of bank was observed by Phoenix to be between 0.5 m and 1.3 m wide and follows the stream channel, not the bottom of the slope along the east side as is indicated on the Land and Topographic Survey. However, there are two seepage zones adjacent to the stream and the east slope which are delineated as the top of bank on the topographic survey. These low-lying seepage areas are part of the stream and this EIA has applied the surveyed top of banks shown on the topographic survey (Appendix D).

7 VEGETATION COMMUNITIES

The Site is located within the Coastal Western Hemlock dry maritime sub-zone (CWHdm), as described by the Biogeoclimatic Ecosystem Classification (BEC) system developed for the Province of British Columbia. Coastal Western Hemlock dry maritime forests are typically dominated by Douglas-fir (*Pseudotsuga menziesii)*, western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*) with a shrub

understory of salal (*Gaultheria shallon*) and red huckleberry (*Vaccinium parvifolium*) and less commonly vine maple (*Acer circinatum)*, bracken fern (*Pteridium aquilinum*) and sword fern (*Polystichum munitum*).

Tree species noted at the Site in the arborist report (Stickleback Environmental) are red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), fruit trees (*Prunus sp.*), shore pine (*Pinus contorta*), Norway spruce (*Picea abies*), big-leaf maple (*Acer macrophyllum*), and bitter cherry (*Prunus emarginata*).

The Site appears to have been used as a hobby farm historically. There was a small stable/barn that still had hay present, although it is now being used as a storage shed and for recreation. The Site can be divided roughly north to south along the hill slope with the upper area around the house and to the north as disturbed/farm areas and the southern area has been left to naturalize with scattered mature trees and shrub and field grass-dominated riparian vegetation along the unnamed stream channel.

The invasive plants noted on the Site include Himalayan blackberry (*Rubus armeniacus*), yellow archangel (*Lamium galeobdolon*), English holly (*Ilex aquifolium*), English ivy (*Hedera helix*), morning glory (*Calystegia sepium*), reed canary grass (*Phalaris arundinacea*), bamboo (*Phyllostachys sp*.), and English laurel (*Prunus laurocerasus*).

7.1 Mature Riparian Mixed Forest Vegetation Type

The riparian vegetation within the ravine consists mainly of mature trees including Norway spruce, western red cedar, red alder, big-leaf maple, and western hemlock. The understory within the ravine is fairly sparse but is dominated by English ivy and yellow archangel with some sword fern.

The southern area of the Site is dominated by mature red alder and black cottonwood with some western red cedar, and big-leaf maple. There are large stands of hardhack to the south of the house and north of the unnamed stream. Along the unnamed stream channel within the Site there is extensive reed canary grass. Some skunk cabbage has been observed within the stream channel towards the western property boundary. The remainder of the southern portion of the site is dominated by salmonberry thickets with some blackberry, particularly along Lynwood Ave.

7.2 Disturbed Vegetation Type

The northern half of the Site is upslope of the stream and associated riparian area. The area immediately surrounding the house is maintained lawn with some ornamental garden plants (e.g. rhododendron) next to the house. There is a large patch of bamboo between the house and the stable/barn. Directly in front (north) of the house, underneath some large and decadent fruit trees, there is circular standpipe and cap within a wooden box that had the appearance as a possible well. Beyond the fruit trees, there is a large open area that has been used as a fire pit. To the north of the fire pit, a number of large fruit trees had been planted. There was a large area to the north of the stable/barn that appeared to have been mulched with heavy black plastic and had salmonberry planted in rows for cultivation. These areas all appeared to be overgrown. The fruit trees were in need of heavy pruning and there was morning glory growing on top of the salmonberry thickets indicating that they had not been maintained. To the south of the stable/barn, there is a large patch of reed canary grass that had some cold-frame greenhouse structures and raised planter box present indicating that this was intended to be a garden area.

The rest of the northern area consists of stands of hardhack, salmonberry, and blackberry. There are mature alder trees along the northern property boundary. In the northwest corner, the trees are mainly bitter cherry and alder with a cedar hedge along the property boundary on the north and west. In the northeast corner, the trees are a mixture of deciduous and conifers including big-leaf maple, red alder, Norway spruce, Sitka spruce and shore pine. Cedar hedging extends along neighbouring house lots to the east.

8 WILDLIFE

8.1 Observed Wildlife and Wildlife Habitats

The primary wildlife habitats on the Site are associated with the mixed mature riparian forest along the unnamed stream. There is some wildlife value in the overgrown agricultural area, the stable/barn, and the mature trees that are clustered in the northeast and northwest corners of the Site. During the field assessments, these areas were observed for any wildlife presence, wildlife use, or specific wildlife features.

During the Site visit on March 6, 2019 there were many songbirds foraging, calling, displaying breeding behaviours, and travelling through the site. The species observed on the Site include northern flicker, fox sparrow, black-capped chickadee, dark-eyed junco, American robin, varied thrush, Anna's hummingbird, spotted towhee, song sparrow, winter wren, and northwestern crow. An old barn swallow nest is present within the rafters of the stable/barn as well as numerous paper wasp nests.

No raptor nests have been observed at or near the Site during the site visits. There are several suitable trees on and near the Site that offered suitable perching habitat for raptors, but with limited potential for nesting due to surrounding residential uses. The Site offers some foraging habitat for raptors due to the overgrown previous agricultural uses (i.e. the salmonberry plantation) and tall field grass areas.

Phoenix observed several wildlife trees within the Site. A wildlife tree is any standing dead or living tree with special features that provide present or future critical habitats for the maintenance or enhancement of wildlife. There was evidence of woodpecker feeding on some of the wildlife trees (i.e. northern flicker and red-breasted sapsucker).

No mammals were observed during the site visit; however, upon speaking with the resident of the house to the southwest of the Site, raccoons, coyote, black bear and black-tailed deer have been observed using a wildlife trail that begins within the adjacent road allowance at the south and follows the stream into the ravine area. The neighbour said that bear have been using the area heavily as a corridor between Hyde Creek Regional Park and areas to the north in Coquitlam. Phoenix observed evidence of bear scratching on a downed log along the wildlife trail. It is expected that the Site would also support or provide habitat for small mammal species (e.g. skunk, opossum, shrew, vole, bats) that are common within riparian forests and suburban areas.

8.2 Potential Rare, Threatened or Endangered Wildlife and Plant Species

Phoenix has reviewed the Ministry of Environment's (MOE) Conservation Data Centre (CDC) database of known and potential occurrences of provincially listed (i.e., red-listed or blue-listed) plant and animal species and federally listed species from Schedule 1 of the Species at Risk Act (SARA) and from the

Committee on the Status of Endangered Wildlife in Canada (COSEWIC) candidate list. Search parameters were: Lower Mainland, Chilliwack Forest District, Metro Vancouver, Coastal Western Hemlock Biogeoclimatic Zone. A short list of rare and endangered wildlife and plant species at risk which may potentially or occasionally occur at the Site has been narrowed down from CDC list. This has been informed by Phoenix's experience in this area and nearby sites in Coquitlam, and the limited habitat capability of the subject suburban disturbed site.

No species at risk have been observed on the Site during any of the Site visits conducted. However, an intact barn swallow (*Hirundo rustica*) nest has been observed within the stable/barn. Barn swallows use the same nest over multiple years, slowly increasing the size of the nest each year which could indicate active use by barn swallows. There was also evidence of an old barn swallow nest location nearby, but the nest was absent. The barn swallow nest was not active during the Site visit; however, the Site visit occurred outside of the breeding period. It is also possible that the observed barn swallow nest has become inactive. There is low potential for species at risk to be utilizing the other disturbed areas of the Site, except for potential bird foraging within the old fruit trees and salmonberry plantation, or roosting within the mature trees around the Site.

The riparian forest area and wetted portions along the unnamed stream could provide suitable foraging habitat for occasional use Great Blue Heron (*Ardea herodias fannini*), olive-sided flycatcher (*Contopus cooperi*), barn swallow (*Hirundo rustica*), and Band-tailed Pigeon (*Patagioenas fasciata*). Northern red-legged frog (*Rana aurora*) may use the stream for movement and foraging.

8.3 Mapped Known Occurrences of Species at Risk

The BC-CDC mapping tool also has been referenced to determine if there are any known species at risk occurrences or ecosystems of concern at or near the Site. No mapped known occurrences of species and ecological communities at risk were reported on the Site.

There is a polygon for green heron (*Butorides virescens*) approximately 850 m east of the Site. The Site does not offer suitable habitat for green heron.

9 ENVIRONMENTAL PROTECTION

The primary environmental impacts associated with the proposed residential re-development at the Site are alteration of existing stream habitat at the Site, the loss of trees for proposed new lots and streets, soil excavation and re-grading with associated potential for erosion and sedimentation, and modified site hydrology through increases in impervious ground surfaces and re-direction of existing stormwater drainage.

The proposed development of the Site entails construction of 26 single-family residential lots accessed by new streets within the Site extending from Lynwood Avenue at the south edge of the Site. The Site will be re-graded to match the elevations of surrounding lands and to construct a more even slope across the central area of the Site from north to south. The Lot Grading Plan in Appendix C shows proposed lot grades for each lot, as well as the minimum building elevations (MBE) for each building at each lot. Environmental mitigation and protection associated with re-grading of the Site will require stabilization of exposed soils and other erosion and sediment controls during site clearing, utilities installation, house-

building and yard area landscaping. Environmental mitigation and protection during site clearing will entail avoiding tree removals during the bird breeding period or being preceded by a songbird nesting survey to protect trees or shrubs containing an active nest (i.e. nests containing bird eggs and young birds).

The existing unnamed stream on the Site is proposed to be realigned so that it flows predominantly south parallel to the western property boundary. The proposed stream realignment will enable fish migration from Watkins Creek southwest of the Site via a fish passable culvert into the unnamed stream at the Site that is presently non-fish bearing. The proposed stream realignment along the west edge of the south half of the Site will protect a prominent grove of large cedar trees at the opening of the existing ravine and nearby to the west of the new stream channel alignment. Within Hyde Creek Regional Park, a small channel will be constructed to connect the culvert to Watkins Creek. The proposed channel has been flagged by Phoenix and is shown on the Channel Realignment and Setback Map in Appendix A. A mature alder tree will be impacted by the construction of the stream channel along with two immature big-leaf maple trees and some vine maples. A new stream will also be constructed north of the existing stream and east of the existing ravine as shown on Channel Realignment and Setback Map in Appendix A. To construct the proposed new stream and realigned stream, much of the new stream alignment will require excavation below existing ground surfaces. The excavations for the new channel at the north are around 2 m, while those along the realigned stream in the south part of the Site are shallower. Along the southern realigned channel, there will be a defined stream channel top of bank and beyond the new stream top of bank, there will be graded slopes that are flatter than 3H:1V to meet the existing grades along the west edge of the Site. Refer to the Stream Plan and Profile drawing by H.Y. Engineering, as well as the stream cross-section drawings, in Appendix C for additional details. Environmental protection will include commonly applied best management practices (BMP) for in-stream works (ISW) such as adherence to low risk construction timing windows (August-September), construction works in isolation of flowing water, and enhancing stream morphology and habitat complexity within the new stream channels. Environmental protection of stream and riparian habitat will also be achieved by dedicating the stream and riparian habitats at the Site to the City as natural area park.

9.1 Fish and Fish Habitat Protection

The proposed new streams at the Site will become accessible to salmonids and other fish species that can migrate into the realigned and new stream, as well as the existing ravine stream, through installation of a fishway/fish passable culvert across Lynwood and Alderwood Ave. and connecting the fishway to a new stream channel through Hyde Creek Nature Park to Watkins Creek. By establishing fish access to the Site, the existing and proposed new streams will become fish-bearing, Class A streams. This would result in fish habitat enhancement and qualitative gains in fish habitat at the Site.

As per Section 9.8 of the OCP, if a stream is fish bearing, a 30-m streamside setback is required; except in agricultural, single residential or duplex zones, where a 15-m setback applies. Refer to the Channel Realignment and Setback Map by Phoenix in Appendix A. The Channel Realignment and Setback Map shows 15-m and 30-m setback lines that extend from the existing ravine stream reach within the Site and adjacent road allowance and into residential lots adjacent tom the west. The existing stream and ravine will be retained and protected within the Site by proposed streamside setbacks and park dedication of those streamside setback areas. The proposed realigned stream at the south and new stream to the north are shown with proposed top of banks in dark blue and high water marks in light blue. The proposed setbacks, which are 15 m from top of bank, are shown in bold red lines. The proposed new streamside setbacks will not impose streamside setbacks on any of the adjacent lots that are not already subject to

streamside setbacks (upon any future re-development). The alignment of the proposed fish-passable culvert/fishway is shown by a green line across the existing streets. The Channel Realignment and Setback Map also presents an inset showing the proposed new stream channel within Hyde Creek Nature Park connecting Watkins Creek to the proposed fishway. Existing spot elevations and surveyed significant trees are also more visible in the inset map. The proposed realigned stream and new streams at the Site and in the Park avoid losses of existing trees as much as possible; particularly within Hyde Creek Nature Park.

Also presented in Appendix A is the Habitat Balance Map prepared by Phoenix. The Habitat Balance Map has used the existing topographic survey as a base and includes the proposed new roads for the residential development at the Site as part of the map base. As with the Channel Realignment and Setback Map, the Habitat Balance Map shows the proposed new streams at the Site and in the Park outlined in blue. The existing unnamed stream within the ravine and the lower reach that will be eliminated and replaced by the new realigned stream and new stream to the north are outlined in blue and the portions to be lost for the proposed residential lots is shaded in orange hatching. A 15-m streamside setback boundary along the existing stream is shown on the Habitat Balance Map by a bold red line. As it is proposed for the existing and realigned stream to be made fish accessible by extending a new channel west along the south Site boundary to the proposed fish-passible culvert inlet, a 15-m streamside setback has been applied to the existing and realigned stream for the purposes of the Habitat Balance comparison of existing fish habitat losses to proposed fish habitat gains on a quantitative basis (e.g. square metre loss to square metre gain).

On the basis that the City may accept the streamside setback for the southern realigned stream channel extending into the unopened (Newberry St.) road allowance, and relative to the 15-m setback that applies to the new stream to the north of the existing stream, the area outside of the existing stream setback is shown with green hatching on the Habitat Balance Map as added streamside setback area within the proposed park dedication. As noted on the Habitat Balance Map, with the proposed stream realignment and new stream at the Site and proposed residential lot development, the loss of existing riparian fish habitat (1,602 m^2) is offset by gains in additional riparian fish habitat (1,963 m^2), with a net gain (340 m^2) of riparian habitat. The loss of existing wetted stream habitat would be 581 m^2, is offset by 856 m^2 of new wetted stream habitat; resulting is net gain of 275 m^2 of wetted fish habitat under the proposed development plan for the Site. While there will be quantitative net gains in fish habitat , there will also be qualitative gains in fish habitat associated with improved stream channel morphology (e.g. pools and riffles, increased stream depth at low flows) and enhanced streamside vegetation by planting overhanging new shrubs and trees for greater insect drop, leaf litter and shading than is currently provided by the existing stream habitat to be lost to the proposed development.

A Habitat Enhancement and Restoration Planting Plan prepared by Phoenix in February 2023 and is presented in Appendix A. The Habitat Enhancement and Restoration Planting Plan details how the new stream alignment and associated riparian areas will be enhanced and restored with native tree and shrub plantings. A fence design and fence alignments for protecting the new stream riparian area adjacent to the proposed residential lots and for a wildlife corridor fence along both sides of the wildlife corridor within the unopened Newberry St. road allowance are also shown on the Habitat Enhancement and Restoration Planting Plan.

Fish habitat protection can also be implemented during the construction phase of the new stream and realigned stream at the Site and in the Hyde Creek Nature Park. The alignment of the new streams has been selected to avoid loss of existing mature trees as much as possible. The new stream channels can

be constructed in isolation of flowing water by temporary diversion of flows around the work areas and continued flows into the existing storm sewers draining to Hyde Creek. Construction can be timed for August-September which is the regional least risk window for carrying out instream works. Environmental monitoring during channel construction can enable amphibian salvage and release prior to de-watering the existing stream for temporary pump-around of stream flows, minimizing siltation during temporary diversion and restoration of flows into new channels, avoidance and mitigation (with project arborist involvement) of damage to critical root zones for trees to be retained, placement of gravel substrates in new channels, planting of streambank vegetation, construction of the fish-passable culvert, and similar impact mitigation measures.

Further environmental protection of fish habitat would be achieved by dedicating the streamside areas at the Site to the City as park. Dedicating the streamside setback areas and park to the City will afford greater safeguarding of the fish habitat at the Site than by restrictive covenant. As shown on the Lot Grading Plan in Appendix C, the proposed lots adjacent to the new streamside setback area conform with the streamside setback boundaries.

Specific environmental impact mitigation measures that will be implemented for the proposed development include those that are detailed in the August 18, 2023 DFO Letter of Advice which is presented in Appendix F of this EIA Report. A Change Approval under the Water Sustainability Act (WSA) dated May 15, 2024 is also presented in Appendix F. The WSA Change Approval also specifies measures to mitigate impacts to the streams and aquatic habitat. The WSA Change Approval requires that a qualified professional (QEP) prepare and submit a post construction report by December 1 of the year the stream diversion and enhancement works are completed, as well as annual effectiveness monitoring reports for each year of the required 5-year monitoring program required through the WSA Change Approval. Refer to the DFO Letter of Advice and the WSA Change Approval documents in Appendix F for more details regarding environmental protection measures that will be implemented for the proposed residential development at the Site.

9.2 Wildlife and Wildlife Habitat Protection

The most valuable wildlife habitat on the Site is located within the riparian forest associated along the unnamed stream, particularly along the western boundary of the Site. The riparian area includes many of the mature trees on the Site, wildlife corridors, coarse woody debris, and habitat for birds, small mammals, and bats. Through review of the March 2019 draft EIA, an on-site meeting and commentary provided by the Hyde Creek Watershed Society, the development proposal for the Site now includes designation of the unopened Newberry St. road allowance as a wildlife corridor, as shown shaded in light green on the Habitat Balance Map in Appendix A.

Prior to works beginning on Site, a temporary no-clearing barrier fence (wood frame, 2X4, orange snow fence) should be erected along / around the protected area. The protection fencing should extend to protect the roots and drip lines of trees at the edge of the clearing areas. All trees designated to be retained outside of the SPEA and park areas must be protected including their tree root zone with protective fencing. If a post-clearing Hazard Tree Risk Assessment identifies any potential danger trees, cutting of those trees to wildlife trees should be considered, wherever possible. Some large coarse woody debris (trunks, root wads) from tree clearing can be retained and placed within the SPEA as habitat enhancement, but branches and slash should be removed to avoid unnecessary fire hazard. The invasive plants throughout the Site should be removed and controlled in conjunction with implementation and

maintenance of restoration planting areas. The primary invasive species at this Site is Himalayan blackberry; although there is also English holly, English ivy, yellow archangel (Lamium), English laurel, morning glory, and reed canary grass present on the Site or within the ravine adjacent to the Site. Clearing and removal of invasive species should avoid the spreading of seeds or plant material around the site or transplanted off-site.

The stable/barn provides nesting habitat for Barn Swallows which are listed as a threatened species in Canada (COSEWIC, May 2011). While the direct cause of population decline in barn swallows is not well understood, it is known that with increasing modernization of agricultural buildings, a loss of artificial nesting sites is occurring as well as the loss of open agricultural areas for foraging. As a balance for the loss of the nesting habitat with the stable/barn, artificial barn swallow nesting structures could be built within the SPEA to provide nesting habitat for this species.

It is recommended that any land clearing and tree removal be timed to avoid the songbird breeding window (March 15 to August 1). If tree removal and land clearing activities cannot avoid this construction timing window, then songbird nesting surveys will need to be conducted by a QEP to ensure compliance with the B.C. Wildlife Act provisions protecting birds, eggs and their young. While no raptor nests were observed on site during the assessment, prior to land clearing beginning, a survey should be conducted to confirm that no raptors are nesting in any trees on or near the site due to the active use of this site as a raptor perching and foraging habitat.

9.3 Stormwater Management

While adequate conservation of fish and aquatic habitat is important for sustaining fish habitat functions, stormwater management plays an important role in preventing and minimizing impacts to existing watercourses through channel erosion, bank failure, siltation and water quality degradation. A common impact associated with residential redevelopment is an alteration of the hydrologic regime, typically because of extensive areas of permeable ground surfaces which slow and infiltrate rainwater runoff are replaced with impervious ground surfaces such as buildings, road, driveways, and sidewalks.

The development of a Stormwater Management Plan is recommended once initial feasibility of the proposed residential subdivision at the Site has been determined. The Stormwater Management Plan should incorporate measures to separate sources of stormwater to increase infiltration of stormwater to slow, sink and spread stormwater as much as possible. Water quality treatment prior to stormwater leaving the Site should also be incorporated into the Stormwater Management Plan.

The proposed development and preliminary servicing plan (Appendix C) would direct stormwater from lots and streets within the development area into a different storm sewer network than that receiving flows from the existing stream at the Site. Both storm sewer networks eventually discharge into Hyde Creek, and it appears unlikely that the re-directed storm sewer discharge from the development area at the Site will reduce flow contributions into Hyde Creek or Smiling Creek

10 CONCLUSIONS AND RECOMMENDATIONS

This Environmental Impact Assessment has included a review of available information and field assessments of the key environmental attributes at the Site including vegetation communities, stream and aquatic habitats, wildlife habitat, and wildlife use at the Site. The redevelopment plan for the subject

Site would entail clearing of all structures on the Site, many of the existing mature deciduous and coniferous trees, and construction of 25 single family residential lots with associated internal roads, driveway and landscaped yard spaces. The proposed development includes realigning the existing unnamed stream on the Site so that it flows predominantly south parallel to the western property boundary. The proposed stream realignment will enable fish migration from Watkins Creek southwest of the Site through a fish passable culvert into the unnamed stream at the Site that is presently non-fish bearing.

This Environmental Impact Assessment has determined that the existing unnamed stream is currently a permanent, non-fish bearing stream ("Class B nutrient stream"), and with the width of existing and potential vegetation, is subject to a streamside setback area that is 30 m from the top of bank. By connecting a realigned stream and new stream through a fish passable culvert to Watkins Creek, the streams at the Site can become Class A, fish-bearing streams; for which in single-family residential areas the applicable streamside setback extends 15 m from top of bank. As shown on the Habitat Balance Map by Phoenix (Appendix A), the loss of existing riparian fish habitat is offset by additional new riparian fish habitat and the loss of existing wetted fish habitat will be offset by new wetted fish habitat, for a net gain in fish habitat. In addition, there will be qualitative gains in the new fish habitat features to be construct at the Site as part of the proposed development plan

The most valuable wildlife habitat on the Site is located within the riparian forest associated along the unnamed stream, particularly along the western boundary of the Site. The riparian area includes many of the mature trees on the Site, wildlife corridors, coarse woody debris, and habitat for birds, small mammals, and bats. The impacts on wildlife habitat at the Site can be mitigated by retaining mature trees where possible, protecting tree root protection zones around retained trees, by avoiding impacts to breeding birds, and safeguarding the most valuable wildlife habitat along the west edge of the Site with a park dedication to the City. In addition, a proposed wildlife corridor will extend along the unopened road allowance of Newberry St. which is known to be used as an existing wildlife corridor by local residents.

Changes to the hydrologic regime at the Site can be mitigated by incorporating best management practices (e.g. slow, sink and spread stormwater) into a Stormwater Management Plan based on an acceptable development layout has been confirmed through discussions with the City regarding the rezoning and subdivision application for the proposed development at the Site. This EIA report has been prepared in support of a Watercourse Protection Development Permit application for the Site.

CLOSURE

It is hoped that this Environmental Impact Assessment has adequately described environmental features at the Site, the proposed development plan for the existing rural residential lot, probable impacts associated with the planned residential development, including effective measures to mitigate potential impacts and to protect and enhance key environmental values at the Site.

Please contact us if you require any clarification or additional information regarding this report.

Sincerely,
Phoenix Environmental Services Ltd.

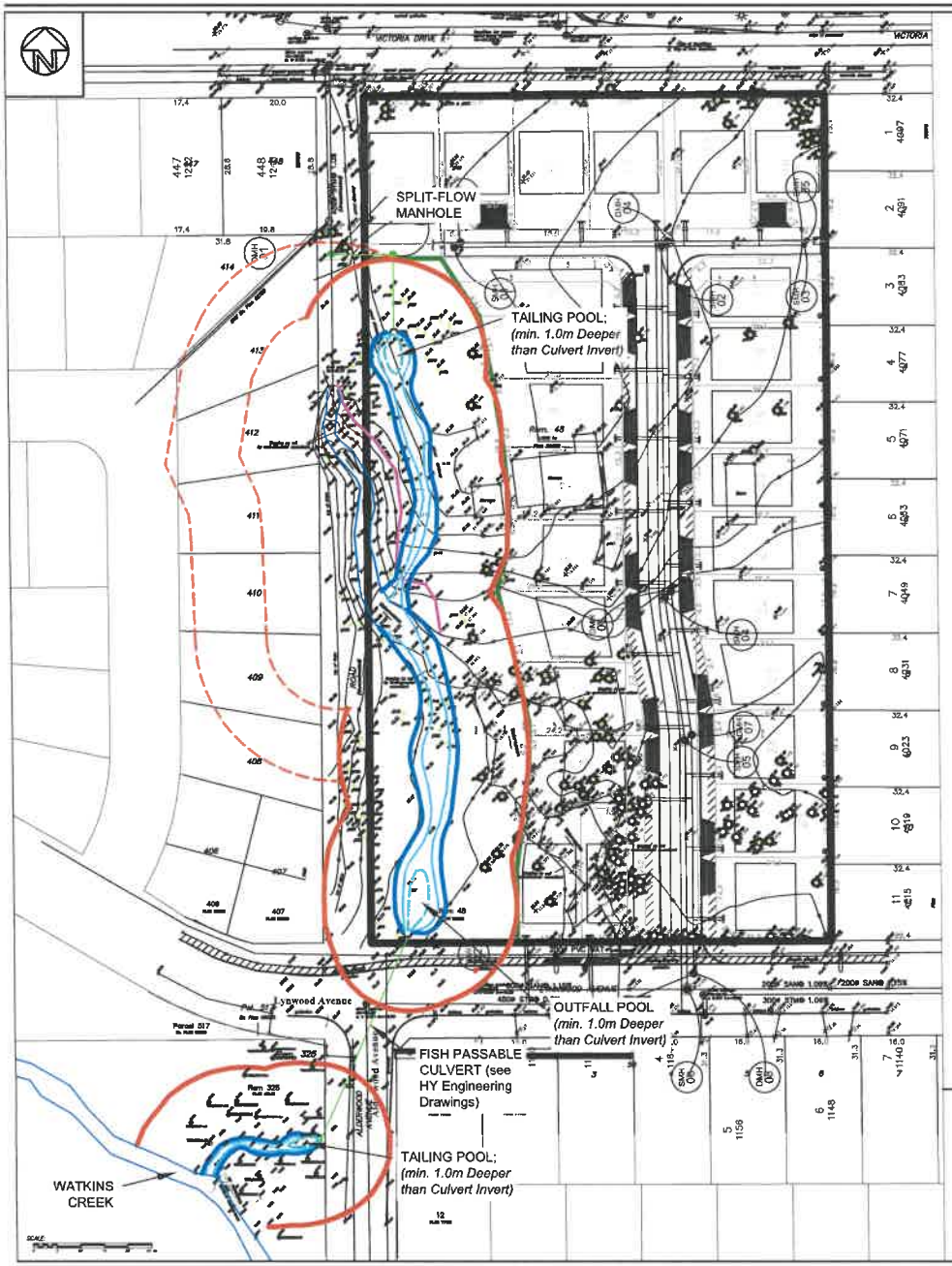
Ken Lambertsen, R.P.Bio.
Principal

Enclosures: Appendix A - Figures
Appendix B – Photos
Appendix C – Engineering Drawings, H.Y. Engineering Inc.
Appendix D – Land and Topographic Survey
Appendix E – Geotechnical Report
Appendix F – DFO Letter of Advice and WSA Change Approval

c.c. City of Port Coquitlam

APPENDIX A

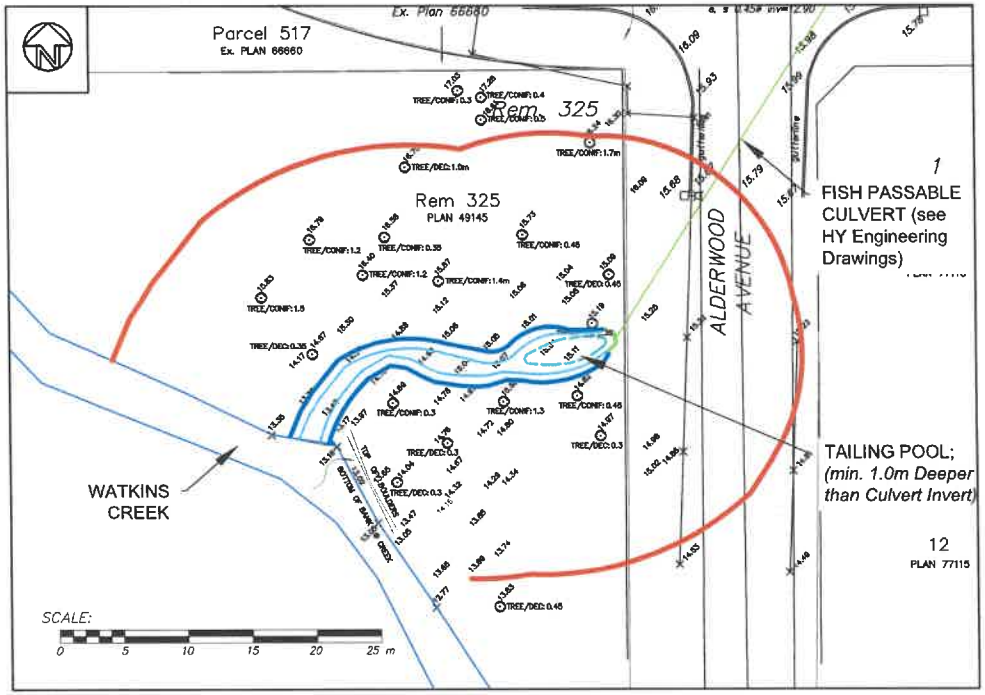
Figures



LEGEND:

- 1160 Victoria Drive, Port Coquitlam, BC
- Existing Watercourse
- Surveyed Top of Bank (TOB)
- NEW Watercourse(s)
- SETBACK FROM NEW WATERCOUSES (15 m)
- NEW High Water Marks
- Storm Sewer / Culverts / Headwalls
- Existing Setback (15 / 30 m)
- Pooling Areas *(min. 1.0m deeper than adjacent culvert inverts)*
- PROPOSED PARK BOUNDARY

INSET OF TIE-IN TO WATKINS CREEK:



CHANNEL REALIGNMENT & SETBACK MAP

FAR Victoria Joint Ventures
1160 Victoria Drive,
Port Coquitlam, BC

PHOENIX
ENVIRONMENTAL SERVICES LTD.
505 - 1755 W. Broadway, Vancouver V6J 1R3
tel. 604.689.3888 fax. 604.689.3880

DATE: Sept. 2022	DRAWN BY: NGL	SCALE: As Shown	DWG: 1160_Victoria - Richardson.dwg

LEGEND:

- Site Boundary (1160 Victoria Drive)
- Existing Stream / High Water Mark
- Surveyed Top of Bank (TOB)
- SETBACK (15m)
- Proposed New / Realigned Stream
- Proposed Park Boundary
- Wildlife Corridor

RIPARIAN AREA LOSS (within 15m of TOB) = **1,623 m²**

RIPARIAN AREA GAIN (outside of 15m of TOB) = **1,963 m²**

Net Riparian Gain = 340 m²

STREAM / WETTED LOSS = **581 m²**

STREAM / WETTED GAIN = **856 m²**

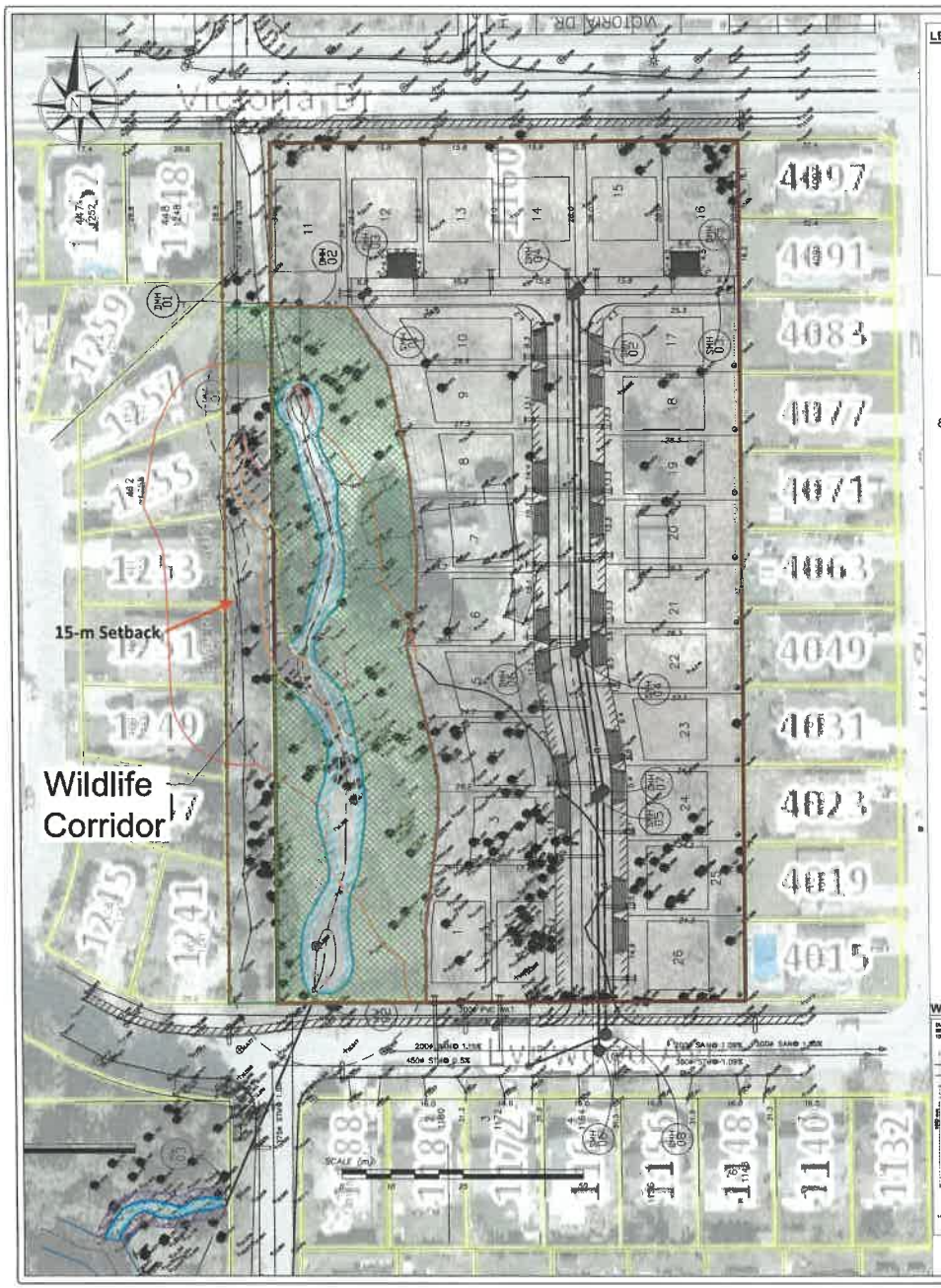
Net Wetted Gain = 275 m²

HABITAT BALANCE MAP

Glenn Richardson
1160 Victoria Drive,
Port Coquitlam, BC

PHOENIX
ENVIRONMENTAL SERVICES LTD.
565 - 1755 W. Broadway, Vancouver V6J 1R3
tel. 604.689.3858 fax. 604.689.3880

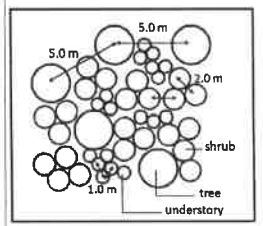
DATE: Sept. 2022	DRAWN BY: NGL	SCALE: As Shown	DWG: 1160_Victoria - Richardson.dwg



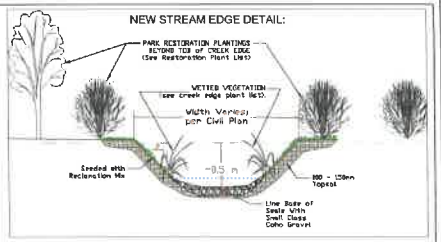
LEGEND:

- SITE BOUNDARY
- NEW WATERCOURSE
- TOP OF BANK OF EXISTING WATERCOURSE
- RIPARIAN AREA RESTORATION PLANTING
- WATERCOURSE EDGE PLANTING
- WATKINS CREEK RIPARIAN SWATH PLANTING
- WILDLIFE FENCING

(TYP) PLANT LAYOUT DIAGRAM:



NEW STREAM EDGE DETAIL:



Restoration Planting List

3367 m²

(List assumes only 80% of area requires plants based on existing / re-established vegetation)

Amount	Botanical Name	Common Name	Spacing	Size
45	*Acer macrophylum*	Big-leaf maple	5 m	5 gallon
40	*Sorbus aucuparia*	Mountain Ash	5 m	5 gallon
55	*Pseudotsuga menziesii*	Douglas Fir	5 m	5 gallon
50	*Thuja plicata*	Western Red Cedar	5 m	5 gallon
45	*Crataegus douglasii*	Black Hawthorne	2 m	5 gallon
175	*Salix lucida*	Pacific Willow	5 m	5 gallon
235	*Sambucus racemosa*	Red Elderberry	2 m	2 gallon
230	*Physocarpus capitatus*	Pacific Ninebark	2 m	2 gallon
220	*Mahonia nervosa*	Oregon Grape	2 m	2 gallon
260	*Rubus spectabilis*	Salmonberry	2 m	2 gallon
270	*Symphoricarpos albus*	Snowberry	2 m	2 gallon
270	*Acer circinatum*	Vine Maple	2 m	2 gallon
260	*Lonicera involucrata*	Black Twinberry	2 m	2 gallon
270	*Cornus stolonifera*	Red-osier Dogwood	2 m	2 gallon
270	*Gaultheria shalon*	Salal	2 m	1 gallon
Total Plants =	2695			

Watercourse Edge Planting List

480 m²

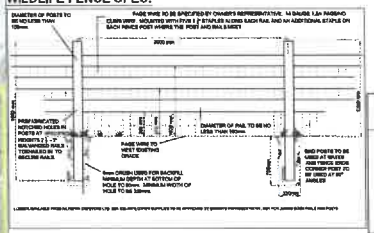
Amount	Botanical Name	Common Name	Spacing	Size
160	*Spiraea douglasii*	Hardhack	0.5 m	1 gallon
160	*Carex obnupta*	Slough Sedge	0.5 m	1 gallon
160	*Scirpus microcarpus*	Bulrush	0.5 m	1 gallon
Total Plants =	480			

Watkins Creek Riparian Swath Planting List

109 m²

Amount	Botanical Name	Common Name	Spacing	Size
20	*Rubus spectabilis*	Salmonberry	1 m	2 gallon
15	*Lonicera involucrata*	Black Twinberry	1 m	2 gallon
15	*Physocarpus capitatus*	Pacific Ninebark	1 m	2 gallon
20	*Cornus stolonifera*	Red-osier Dogwood	1 m	2 gallon
20	*Polystichum munitum*	Western Swordfern	1 m	2 gallon
20	*Gaultheria shalon*	Salal	1 m	1 gallon
Total Plants =	110			

WILDLIFE FENCE SPEC:



NOTES:

1. INITIAL PAVEMENT / DEBRIS REMOVAL WITHIN THE RIPARIAN PLANTING AREA MUST BE COMPLETED UNDER THE DIRECT SUPERVISION OF THE PROJECT ARBORIST, AND THE ENVIRONMENTAL MONITOR (PHOENIX ENVIRONMENTAL, 604.689.3888) TO ENSURE PROTECTION OF EXISTING TREES AND THE CHANNELIZED WATERCOURSE.
2. NO FILL IS TO BE ADDED INTO THE CRITICAL ROOT ZONE (CRZ) OF RETAINED TREES, UNLESS UNDER DIRECT ARBORIST SUPERVISION.
3. NO MACHINES OR STORAGE OF MATERIALS IS PERMITTED INSIDE THE CRZ OF TREES TO BE RETAINED.
4. ALL INVASIVE SPECIES (EG. HIMALAYAN BLACKBERRY) IS TO BE MECHANICALLY REMOVED INCLUDING ROOTS GRUBBED OUT ALONG THE EASTERN EDGES OF THE WATERCOURSE, AND ELSEWHERE IN THE PLANTING AREA IF PRESENT, AND DISPOSED OF OFF-SITE AT AN APPROVED DUMP SITE. THIS WORK MUST BE CONDUCTED UNDER DIRECT SUPERVISION OF THE PROJECT ARBORIST AND THE ENVIRONMENTAL MONITOR. EXISTING SOILS ARE TO REMAIN IN PLACE WHEREVER POSSIBLE, WITH THE EXCEPTION OF THE PROPOSED BENCHING SHOWN IN THE CROSS-SECTION.
5. ALL WORKS ARE TO BE CONDUCTED IN ACCORDANCE WITH SEDIMENT CONTROL PROVISIONS OF THE "LAND DEVELOPMENT GUIDELINES FOR THE PROTECTION OF AQUATIC HABITAT" AND COMPLY WITH THE CITY OF PORT COQUITLAM'S WATERCOURSE DEVELOPMENT PERMIT.
6. ADDITION OF 15CM OF WEED-FREE TOPSOIL IS REQUIRED THROUGHOUT THE RESTORATION AREA DUE TO BENCHING EXCAVATION AND PAVEMENT REMOVAL WORKS. TOPSOIL MUST MEET THE STANDARDS OUTLINED IN THE BC LANDSCAPE STANDARD SEVENTH EDITION FOR PLANTING AREAS IN "LEVEL 5 BACKGROUND & NATURAL AREAS".
7. FENCING IS TO BE ERECTED ALONG PARK / RIPARIAN RESTORATION AREA AS SHOWN, AND MUST BE AS PER THE DETAILS ACCORDING TO THE CITY OF PORT COQUITLAM. AN EXAMPLE SPEC IS PROVIDED.
8. ALL PLANTING STOCK SHALL BE NURSERY SUPPLIED, DISEASE FREE AND IN GOOD HEALTH WITHOUT BROKEN TOPS, BARK DAMAGE, ETC. ANY PLANTING SUBSTITUTIONS ARE TO BE REVIEWED AND APPROVED IN ADVANCE BY THE PROJECT BIOLOGIST (PHOENIX ENVIRONMENTAL, 604.689.3888)
9. PLANTED STOCK SPACING SHALL BE ADJUSTED TO ACCOMMODATE EXISTING VEGETATION AND NATURAL RECRUITMENT AS REQUIRED, HOWEVER THE LAYOUT DIAGRAM SHOWN ON THIS PLAN SHOULD BE ADHERED TO. SHRUBS OF THE SAME SPECIES ARE TO BE PLANTING IN GROUPINGS OF 10 OF THE SAME SPECIES TO ENSURE GREATER SURVIVAL.
10. PLANTING SHOULD OCCUR IN LATE FALL TO ENSURE HIGHEST POSSIBLE PLANT SURVIVAL RATE.
11. THE ADDITION OF WOOD-MULCH (5CM) IS TO BE BLOWN IN FOLLOWING INSTALLATION OF PLANTS, TO ASSIST IN EROSION CONTROL AND SUPPRESS WEEDS.
12. THE OWNER IS TO CONTRACT WEEKLY WATERING SERVICES BETWEEN THE SUMMER MONTHS OF JULY - SEPTEMBER FOR THE FIRST TWO YEARS AND AS REQUIRED THEREAFTER TO ENSURE PLANT SURVIVAL THROUGHOUT THE MAINTENANCE PERIOD. THIS SHOULD BE ACCOMPLISHED BY USE OF A CONTRACTED WATERING SERVICE COMPANY, OR BY INSTALLING A TEMPORARY IRRIGATION SYSTEM.
13. IT IS THE OWNER'S RESPONSIBILITY TO PROVIDE ANNUAL MAINTENANCE AND MONITORING OF THE RESTORATION AREA FOR A PERIOD OF 5 YEARS. PLANT SURVIVAL RATES MUST BE 100% FOR TREES, AND 80% FOR SHRUBS. AT NO POINT THROUGHOUT THE 5 YEAR MAINTENANCE PERIOD SHOULD THE RESTORATION AREA CONTAIN INVASIVE SPECIES EXCEEDING 5% OF THE PLANTED AREA.
14. **THE CITY OF PORT COQUITLAM & PHOENIX ENVIRONMENTAL ARE TO BE CONTACTED FOR A SITE MEETING PRIOR TO PLANTING

HABITAT ENHANCEMENT & RESTORATION PLANTING PLAN

FAR Victoria Joint Ventures
1160 Victoria Drive
Port Coquitlam, BC

PHOENIX
ENVIRONMENTAL SERVICES LTD.
505 - 1755 W. Broadway, Vancouver V6J 4S5
tel. 604.689.3888

DATE: FEB.28.2023 | DRAWN BY: NL/EL | SCALE: AS SHOWN | DWG: 1160 Victoria Dr_Rest.Plan.dwg

APPENDIX B

Photos

Photo 1: Storm water outfall to the unnamed stream.

Photo 2: View of the unnamed stream within the ravine adjacent to the Site.

Photo 3: The unnamed stream turns and continues to flow southeast towards the center of the Site. A small gravel bar has formed in front of the boulder.

Photo 4: View of the unnamed stream as it flows across the Site. The width of the stream was between 0.5 m to 1.3 m.

Photo 5: View of the unnamed stream where braiding of the stream was occurring. A tree had fallen into the stream channel which may have changed the flow of the stream. There were groundwater seepages along the toe of the slope in this area contributing to stream flows.

Photo 6: A man-made rock berm was located within the stream channel in between two areas where the stream was braided.

Photo 7: View of the unnamed stream where it becomes braided near the center of the Site. The substrate in this area was siltier with high organic matter.

Photo 8: View of the headwall and culvert where the unnamed stream discharges into the storm sewer that crosses Lynwood Avenue.

Photo 9: Sand and gravel substrate that was typical within most of the unnamed stream channel.

Photo 10: View of the house on the Site. Surrounding the house was grass and some landscaped garden areas. To the east of the house (shown on the left in the photo) was a large patch of bamboo that extended almost to the barn.

Photo 11: View of the small stable/barn on the Site.

Photo 12: View of the area to the north of the house that was being used as a fire pit.

Photo 13: View of the well located just to the north of the house on the other side of the driveway.

Photo 14: The area to the south of the stable/barn appeared to be in the process of being converted into a garden.

Photo 15: View of some of the overgrown fruit trees that had been planted at the northern end of the Site.

Photo 16: View of the salmonberry plantation to the north of the stable/barn.

Photo 17: The area within the salmonberry had thick black plastic which was acting as a mulch to prevent weeds from growing.

Photo 18: A barn swallow nest was observed inside the stable/barn in the rafters of the first floor.

Photo 19: An old stump along the unnamed stream had signs of woodpecker feeding on it.

Photo 20: A wildlife trail that enters the site from the southwest corner and continues up to and along the unnamed stream within the ravine.

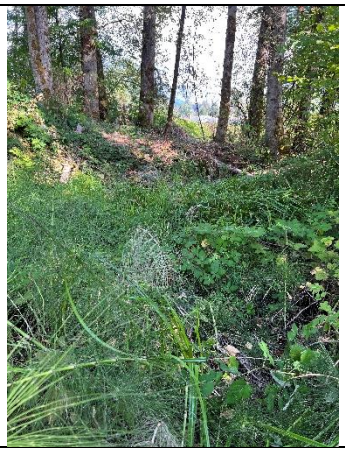
Photo 21: Signs of bear scratching were evident on this downed log along the wildlife trail.

Photo 22: View from Alderwood Ave. towards Hyde Creek Regional Park where the stream realignment will be undertaken.

Photo 23: View from within Hyde Creek Regional Park towards Alderwood Ave. where the stream realignment will be undertaken showing the vegetation that will be impacted. The pink flagging denotes the proposed stream edges.

Photo 24: View of the bank of Watkins Creek where the new stream will be constructed.

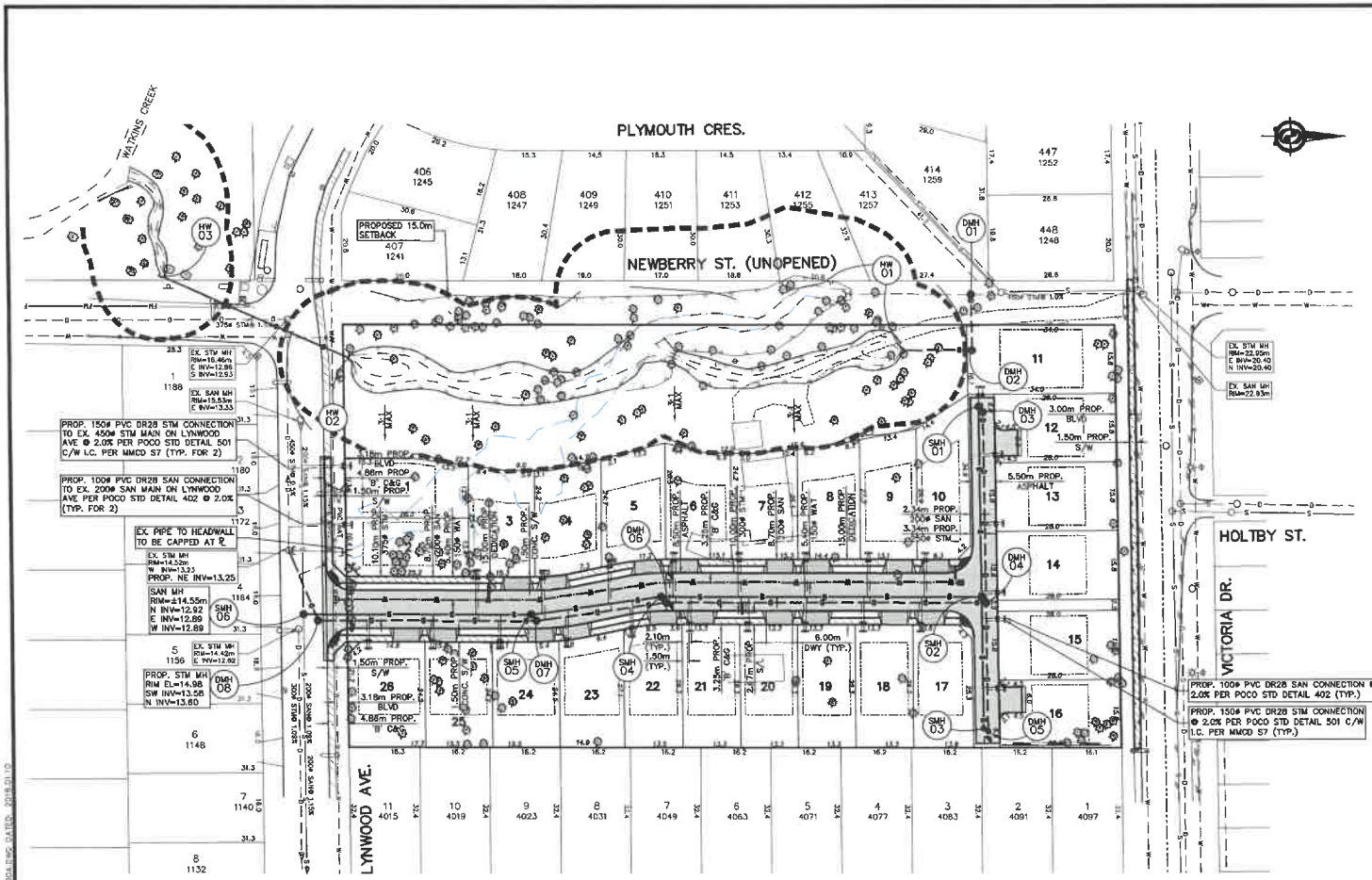
Site Photos – 1160 Victoria Dr

Photos: 1160 Victoria Dr, Port Coquitlam	
General Comments:	Photos are from 2019 and 2022.
	
September 2022 – Upstream extent of the exiting on Site stream. Entrance culvert is visible in the center.	September 2022 – Ravine section of existing stream that will retained. Near the upstream extent on Site.
	
September 2022 – Part of area to be infilled, northern/upstream section	September 2022 – Part of area to be infilled, southern-central section
	
March 2019 – Lynwood Ave, looking towards Hyde Creek Nature Reserve on the other side of the road.	March 2019 – Start of stream path through Hyde Creek Nature Reserve

	
March 2019 – Downstream extent of new stream in Hyde Creek Nature Reserve. Location of proposed outfall.	

APPENDIX C

Engineering Drawings, H.Y. Engineering Inc.



GENERAL NOTES:

1. ALL DESIGN IS IN CONFORMANCE WITH SUBDIVISION SERVICING BYLAW No. 2241 & ALL CONSTRUCTION MUST CONFORM TO CURRENT CITY OF PORT COQUITLAM SUBDIVISION SERVICING BYLAW No. 2241 & PASS THEIR INSPECTION.
2. THE CONTRACTOR SHALL ENSURE THAT ALL APPROVALS REQUIRED FOR THE PROPOSED WORK HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.
3. LOCATION OF EXISTING UNDERGROUND SERVICES DETERMINED FROM GVRD, BC HYDRO & GAS, TELUS & THE CITY OF PORT COQUITLAM AS-CONSTRUCTED DRAWINGS. CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION & NOTIFY ENGINEER OF ANY DISCREPANCIES, CONFLICTS OR OMISSIONS. THE CONSULTING ENGINEER ACCEPTS NO LIABILITY FOR ANY ERRORS IN ELEVATIONS OR LOCATIONS OF EXISTING SERVICES.
4. OPEN TRENCH OPERATIONS IN EXISTING PAVEMENT SHALL BE VERTICAL (EXCEPT WHERE NOTED) & REPLACED WITH HOT MIX AFTER BACKFILL & COMPACTION. ALL PAVEMENTS, BOULEVARDS, ETC. ARE TO BE RESTORED TO ORIGINAL CONDITION WHERE NO IMPROVEMENT IS PROPOSED UNDER THIS CONTRACT.
5. THE CONTRACTOR SHALL USE EXTREME CARE WHEN WORKING NEAR EXISTING SERVICES & ANY SERVICES DISTURBED ARE TO BE REPLACED BY THE CITY OF PORT COQUITLAM OR OTHER APPROVING AGENCIES AT THE CONTRACTOR'S EXPENSE.
6. ANY MATERIAL SUBSTITUTION MUST BE APPROVED BY THE ENGINEER.
7. ALL SURVEY MONUMENTS MUST BE PROTECTED & ANY DAMAGE TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. ALL EXISTING AMENITIES ARE TO BE RESTORED TO THE WRITTEN SATISFACTION OF AFFECTED PROPERTY OWNERS.
9. PROPOSED SITE BE SERVICED BY UNDERGROUND HYDRO & TEL.
10. CONTRACTOR TO SUPPLY CONSULTING ENGINEER WITH ALL "AS CONSTRUCTED" INFORMATION.
11. CONTRACTOR TO APPLY FOR PERMIT IN ACCORDANCE WITH BYLAW No. 3331 FOR SOIL REMOVAL OR DEPOSIT ON THE SITE

TREE LEGEND

- EXISTING CONIFER TO BE RETAINED
- EXISTING CONIFER TO BE REMOVED
- EXISTING DECIDUOUS TO BE RETAINED
- EXISTING DECIDUOUS TO BE REMOVED
- PROPOSED REPLACEMENT TREE
- TREE PROTECTION FENCING

ISSUED FOR TENDER

LEGAL DESCRIPTION: LOT 98, SECTION 7, TOWNSHIP 40, N.W.D., PLAN NWP29302, EXCEPT PLAN 72115.

SURVEY BENCHMARK: NOW 77HH130 N/A E/A ELEV 44.843m

SCALE 1:1000

REV.	DATE	DESCRIPTION	BY
1	2024-05-02	RE-ISSUED FOR TENDER	ARB
0	2022-06-17	ISSUED FOR TENDER	ARB

"BY SEALING AND SIGNING THIS DRAWING, I CERTIFY THAT THE INFORMATION CONTAINED IN THESE DRAWINGS ACCURATELY REFLECTS THE ORIGINAL DESIGN, ADDENDA, CHANGE ORDERS AND MATERIAL DESIGN CHANGES MADE DURING CONSTRUCTION AND FIELD REVIEWED BY ME, OR MY REPRESENTATIVE, AND THAT THE AS-CONSTRUCTED WORKS SUBSTANTIALLY COMPLY WITH THE ORIGINAL DESIGN INTENT. HOWEVER, I DO NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE AS-CONSTRUCTED INFORMATION SUPPLIED BY OTHERS CONTAINED IN THESE DRAWINGS."

H.Y. ENGINEERING LTD.
CIVIL ENGINEERS • BC LAND SURVEYORS • PLANNERS
#200 – 9128 152 Street, Surrey, BC V3R 4E7 Tel: 604-583-1616 Fax: 604-583-1737
www.hyengineering.com EGBC PERMIT NUMBER 1001151

CITY OF PORT COQUITLAM

CLIENT: RBD/GRD Cariboo DEV. LTD.
41A – 1145 INLET STREET
COQUITLAM, BC

TITLE: SERVICING KEY PLAN

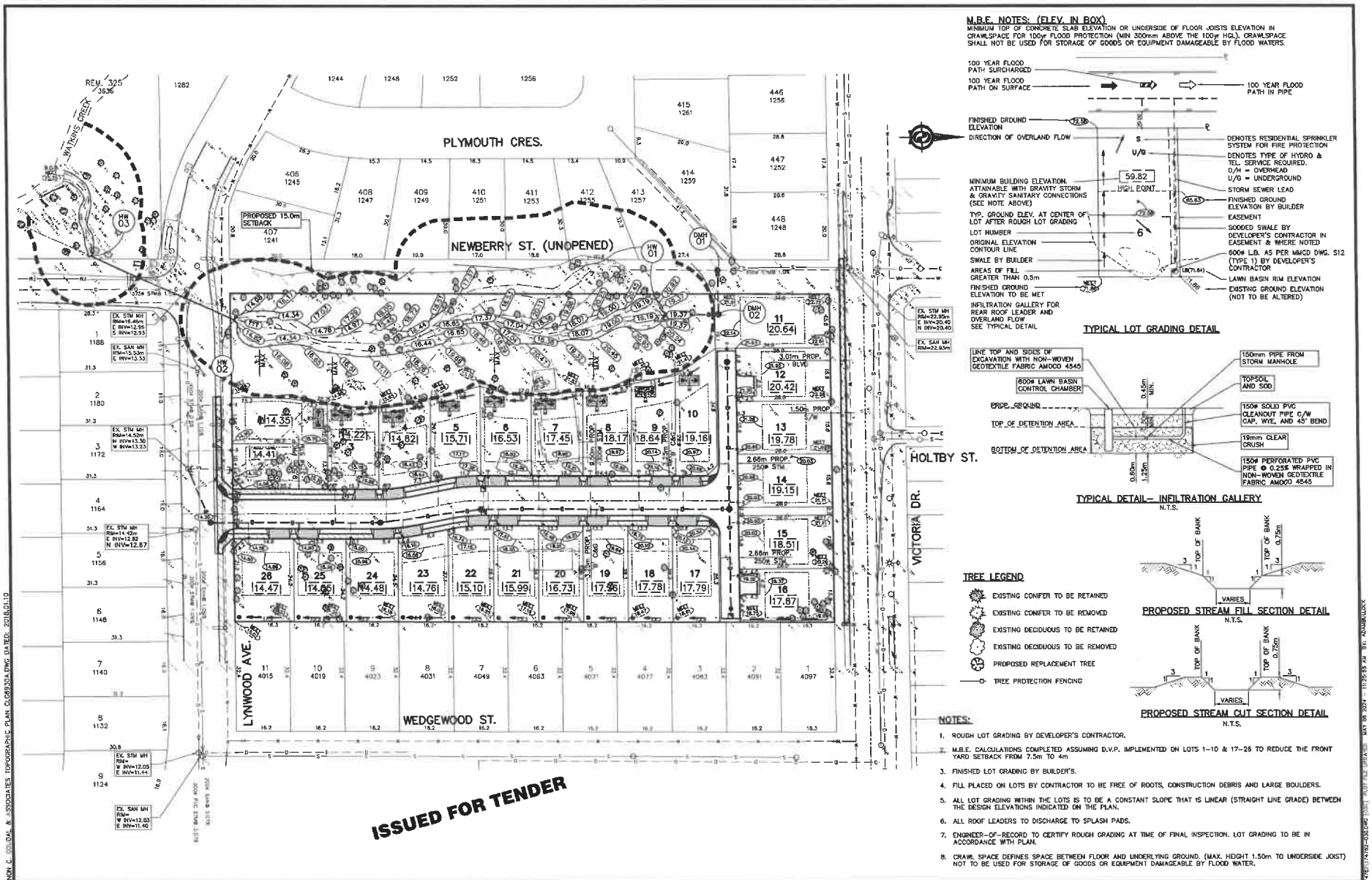
SEAL: ARTHUR RUSSELL BOUCHER, A. R. BOUCHER, 37899, REGISTERED PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, LICENCE NUMBER 37899, 2024-05-02

SCALE: HOR. 1:500 VERT. N/A
DESIGNED: ARB
DRAWN: AD
REVIEWED: WKB

DATE (YYYY.MM.DD): 2018.02.23
H.Y. PROJ. NO.: 174762
DWG NO.: 02
REV.: 1

MUNICIPALITY: CITY OF PORT COQUITLAM
MUNICIPAL PROJECT NUMBER: City Proj#
DRAWING TYPE:

DESTROY ALL PRINTS BEARING PREVIOUS NUMBER



M.B.E. NOTES: (ELEV. IN BOX)
MINIMUM TOP OF CONCRETE SLAB ELEVATION OR UNDERSIDE OF FLOOR JOISTS ELEVATION IN CRAWLSPACE FOR 100yr FLOOD PROTECTION (MIN 300mm ABOVE THE 100yr HGL). CRAWLSPACE SHALL NOT BE USED FOR STORAGE OF GOODS OR EQUIPMENT DAMAGEABLE BY FLOOD WATERS.

TYPICAL LOT GRADING DETAIL

TYPICAL DETAIL— INFILTRATION GALLERY
N.T.S.

PROPOSED STREAM FILL SECTION DETAIL
N.T.S.

PROPOSED STREAM CUT SECTION DETAIL
N.T.S.

TREE LEGEND

- EXISTING CONIFER TO BE RETAINED
- EXISTING CONIFER TO BE REMOVED
- EXISTING DECIDUOUS TO BE RETAINED
- EXISTING DECIDUOUS TO BE REMOVED
- PROPOSED REPLACEMENT TREE
- TREE PROTECTION FENCING

NOTES:

1. ROUGH LOT GRADING BY DEVELOPER'S CONTRACTOR.
2. M.B.E. CALCULATIONS COMPLETED ASSUMING D.V.P. IMPLEMENTED ON LOTS 1–10 & 17–28 TO REDUCE THE FRONT YARD SETBACK FROM 7.5m TO 4m
3. FINISHED LOT GRADING BY BUILDER'S.
4. FILL PLACED ON LOTS BY CONTRACTOR TO BE FREE OF ROOTS, CONSTRUCTION DEBRIS AND LARGE BOULDERS.
5. ALL LOT GRADING WITHIN THE LOTS IS TO BE A CONSTANT SLOPE THAT IS LINEAR (STRAIGHT LINE GRADE) BETWEEN THE DESIGN ELEVATIONS INDICATED ON THE PLAN.
6. ALL ROOF LEADERS TO DISCHARGE TO SPLASH PADS.
7. ENGINEER-OF-RECORD TO CERTIFY ROUGH GRADING AT TIME OF FINAL INSPECTION. LOT GRADING TO BE IN ACCORDANCE WITH PLAN.
8. CRAWL SPACE DEFINES SPACE BETWEEN FLOOR AND UNDERLYING GROUND. (MAX. HEIGHT 1.50m TO UNDERSIDE JOIST) NOT TO BE USED FOR STORAGE OF GOODS OR EQUIPMENT DAMAGEABLE BY FLOOD WATER.

DRAWINGS BASED ON VERNON C. KOLDAL & ASSOCIATES TOPOGRAPHIC PLAN C-6893-A.DWG DATED: 2018.01.10

LEGAL DESCRIPTION LOT 48, SECTION 7, TOWNSHIP 40, N.W.D., PLAN NWP29352, EXCEPT PLAN 77115

SURVEY BENCHMARK: MON 77H4135 N E — SCALE 0.9996 — ELEV 44.845m

REV.	DATE	DESCRIPTION	BY
1	2024-05-02	RE-ISSUED FOR TENDER	ARB
0	2022-06-17	ISSUED FOR TENDER	ARB

"BY SEALING AND SIGNING THIS DRAWING, I CERTIFY THAT THE INFORMATION CONTAINED IN THESE DRAWINGS ACCURATELY REFLECTS THE ORIGINAL DESIGN, ADDENDA, CHANGE ORDERS AND MATERIAL DESIGN CHANGES MADE DURING CONSTRUCTION AND FIELD REVIEWED BY ME, OR MY REPRESENTATIVE, AND THAT THE AS-CONSTRUCTED WORKS SUBSTANTIALLY COMPLY WITH THE ORIGINAL DESIGN INTENT. HOWEVER, I DO NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE AS-CONSTRUCTED INFORMATION SUPPLIED BY OTHERS CONTAINED IN THESE DRAWINGS."

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www.hyengineering.com EGBC PERMIT NUMBER 1001151

CITY OF PORT COQUITLAM

CLIENT: RBD/GRD Cariboo DEV. LTD.
41A – 1145 INLET STREET
COQUITLAM, BC

TITLE: LOT GRADING PLAN

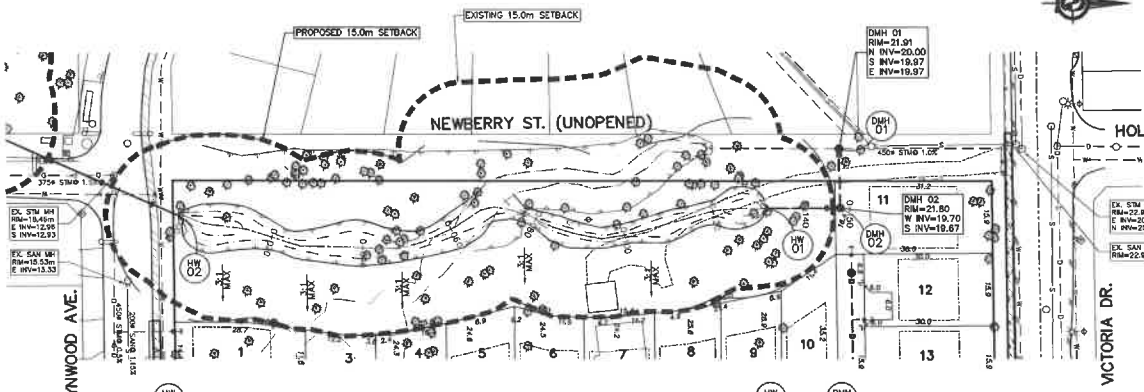
SEAL: A. R. BLOOD 17863 PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA 2024-06-06

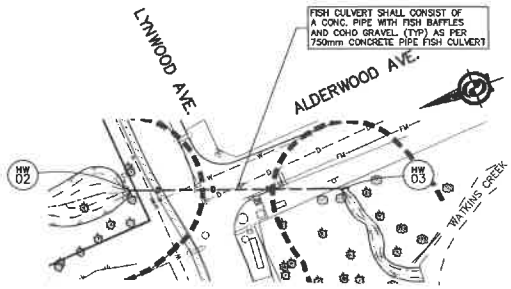
SCALE: HOR. 1:500 VERT. N/A
DESIGNED ARB
DRAWN AD
REVIEWED WKB

DATE (YYYY.MM.DD) 2018.02.23
HY PROJ. NO. 174762
DWG. NO. 03
REV. 1

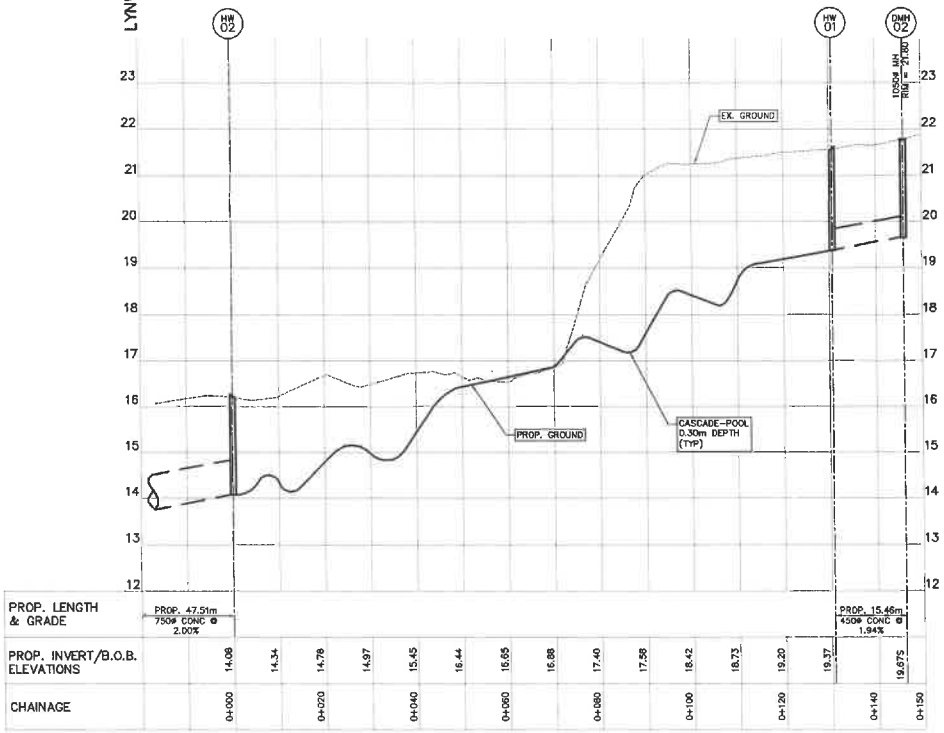
MUNICIPALITY: CITY OF PORT COQUITLAM
MUNICIPAL PROJECT NUMBER: City Proj#
DRAWING TYPE

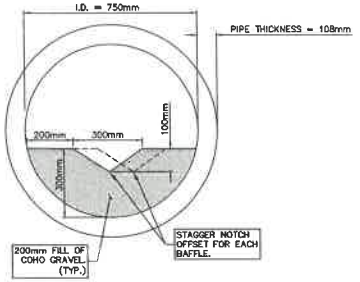
DESTROY ALL PRINTS BEARING PREVIOUS NUMBER



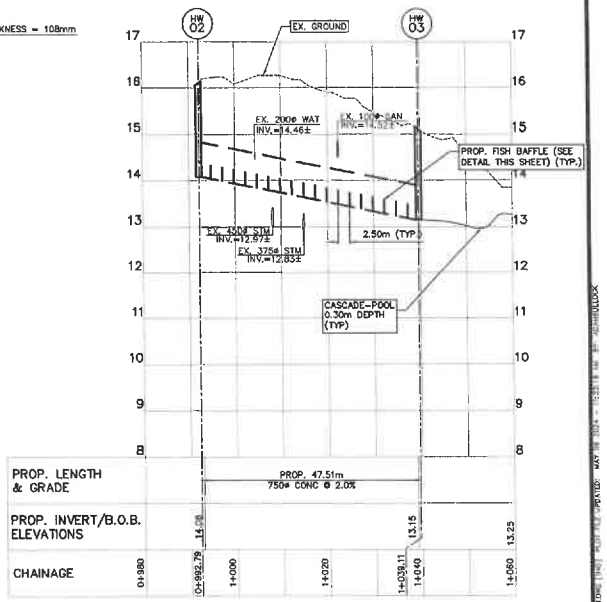


ISSUED FOR TENDER





750mmø CONCRETE CULVERT
C/W FISH BAFFLE
N.T.S.



DRAWINGS BASED ON VERNON C. COUDAL & ASSOCIATES TOPOGRAPHIC PLAN CLOSING TIME DATED: 2018.01.10

LEGAL DESCRIPTION LOT 48, SECTION 7, TOWNSHIP 40, N.W.D., PLAN NWP29352, EXCEPT PLAN 77115

SURVEY BENCHMARK MON 77H4135 N E SCALE 0.9996 ELEV 44.843m

REV.	DATE	DESCRIPTION	BY
1	2024-05-02	RE-ISSUED FOR TENDER	ARB
0	2022-06-17	ISSUED FOR TENDER	ARB

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www.hyengineering.com EGBC PERMIT NUMBER: 1001161

CITY OF PORT COQUITLAM

CLIENT RBD/GRD Cariboo DEV. LTD.
41A – 1145 INLET STREET
COQUITLAM, BC

TITLE STREAM PLAN AND PROFILE

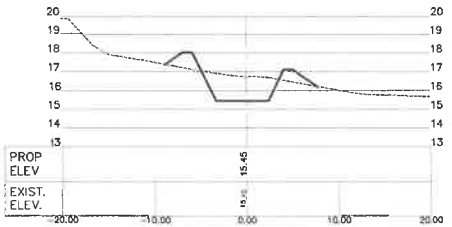
SEAL

SCALE: HOR. 1:500 VERT. 1:50
DESIGNED ARB
DRAWN AD
REVIEWED WKB

DATE (YYYY.MM.DD) 2018.02.23
HY PROJ. NO. 174762
DWG. NO. 04
REV. 1

MUNICIPALITY CITY OF PORT COQUITLAM
MUNICIPAL PROJECT NUMBER City Proj#
DRAWING TYPE

DESTROY ALL PRINTS BEARING PREVIOUS NUMBER



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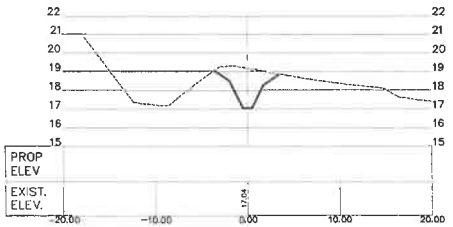

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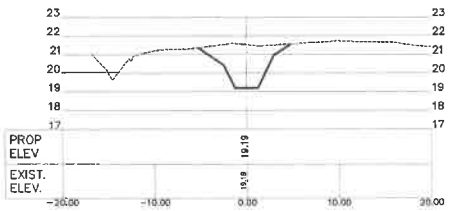

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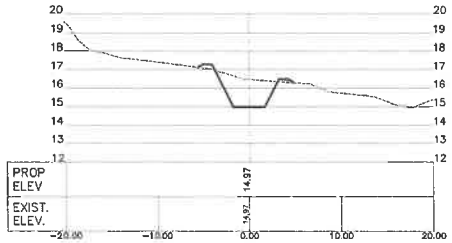

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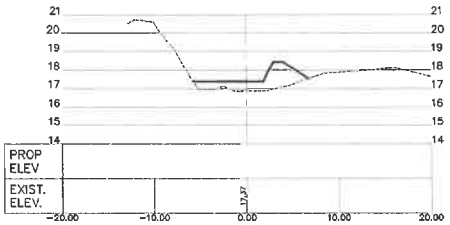

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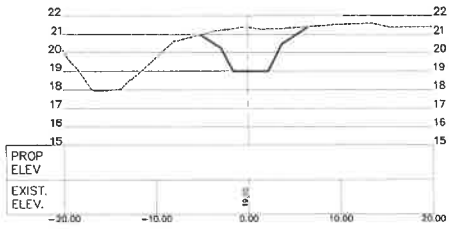

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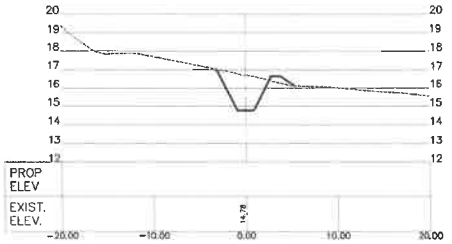

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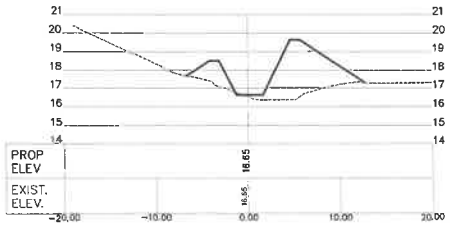

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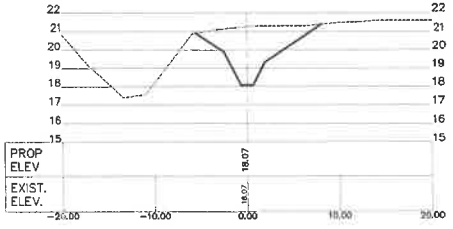

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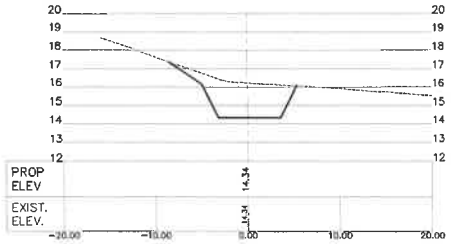

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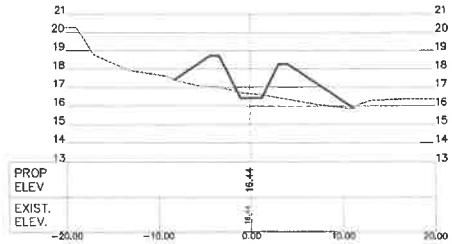

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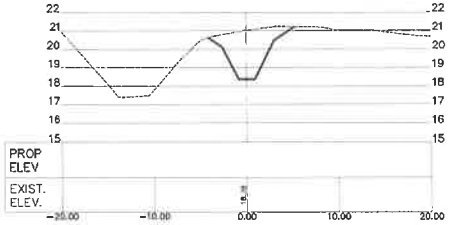

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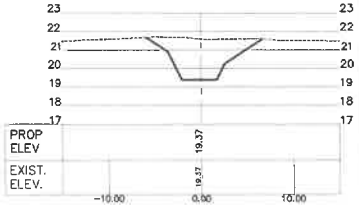

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ISSUED FOR TENDER

DRAWINGS BASED ON VERNON C. GOUDAL & ASSOCIATES TOPOGRAPHIC PLAN CL09330A.DWG DATED: 2018.01.10

LEGAL DESCRIPTION LOT 48, SECTION 7, TOWNSHIP 40, N.W.D., PLAN NWP29352, EXCEPT PLAN 77115

SURVEY BENCHMARK: MON 77M1135 N E — SCALE 0.9996 — ELEV 44.843m

REV.	DATE	DESCRIPTION	BY
1	2024-05-02	RE-ISSUED FOR TENDER	ARB
0	2022-06-17	ISSUED FOR TENDER	ARB

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www.hyengineering.com EGBC PERMIT NUMBER 1001151

CITY OF PORT COQUITLAM

CLIENT: RBD/GRD Cariboo DEV. LTD.
41A – 1145 INLET STREET
COQUITLAM, BC

TITLE: DITCH- PLAN, PROFILE & X-SEC

SEAL

SCALE: HOR. 1:250 VERT. N/A
DESIGNED: ARB
DRAWN: AD
REVIEWED: WKB

DATE (YYYY.MM.DD): 2018.02.23
HY PROJ. NO.: 174762
DWG. NO.: 05
REV.: 1

MUNICIPALITY: CITY OF PORT COQUITLAM
MUNICIPAL PROJECT NUMBER: City Proj#
DRAWING TYPE

DESTROY ALL PRINTS BEARING PREVIOUS NUMBER

APPENDIX D

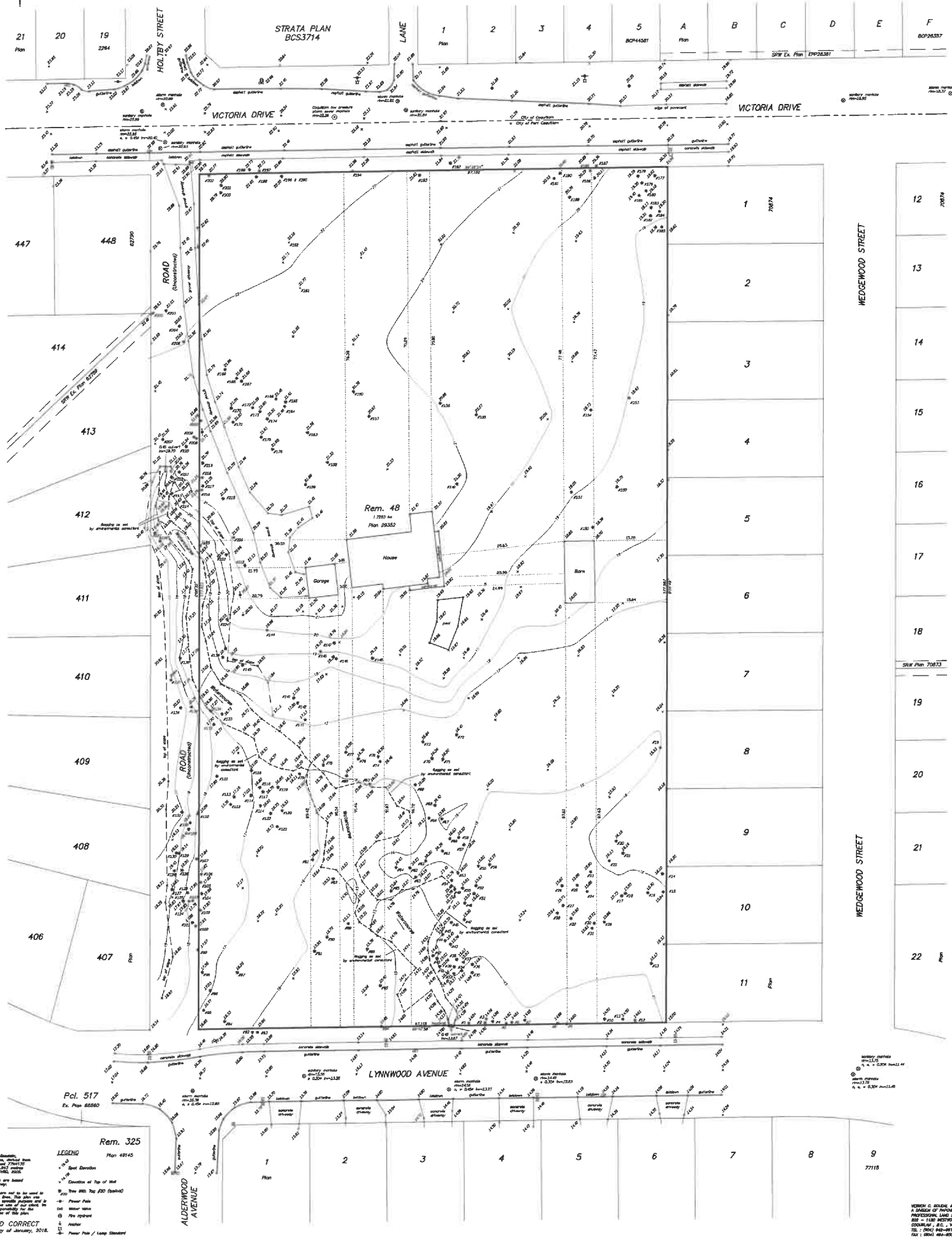
Land and Topographic Survey

EXCEPT: PART DEDICATED ROAD ON PLAN 77115,
SECTION 7, TOWNSHIP 40,
NEW WESTMINSTER DISTRICT, PLAN 29352

SCALE 1:250

All distances are in metres

PARCEL IDENTIFIER: 001-827-351
CIVIC ADDRESS: 1180 Victoria Drive, Port Coquitlam, B.C.



Distances are Geodetic, Zone 9 metres, derived from Control Monument 77H0139 Easting = 492,863.220 Northing = 5456640.882, 2009.

All dimensions are based on ground survey.

Offsets shown are not to be used to define property lines. This plan was prepared for a specific purpose and is for the exclusive use of our client. We assume no responsibility for its misinterpretation for other purposes.

CERTIFIED CORRECT
this 10th day of January, 2018.

LEGEND

- Spot Elevation
- Elevation at Top of Wall
- Tree With Tag #30 (typical)
- Power Pole
- Water Valve
- Fire Hydrant
- Anchor
- Power Pole / Lamp Standard
- Lamp Standard

VERNON C. BOLDIG, A. & ASSOCIATES
A DIVISION OF PANGEA
PROFESSIONAL LAND SURVEYING
205 - 1180 WESTWOOD STREET
COQUITLAM, B.C., V3K 7K8
TEL: (604) 945-9974
FAX: (604) 464-8009

APPENDIX E

Geotechnical Report

August 12, 2022

F.A.R. GROUP
Attn. Mr. Glenn Richardson
#41A 1145 Inlet Street
Coquitlam, BC V3B 6E8

Ref.: 1160 Victoria Drive, Port Coquitlam, BC – Proposed Single-Family Residential Development - Geotechnical Report

Dear Sirs:

As requested, Cornerstone Geo-Structural Engineering Ltd. (Cornerstone) conducted a geotechnical study at the above-referenced property for the construction of a proposed town home residential development. The purpose of the study is to assess the geotechnical subsoil conditions, address groundwater concerns, and conduct the assessment of potential geotechnical hazards affecting the site and provide recommendations for structural design and construction of the proposed building.

This report includes the site description, subsoil investigation, laboratory testing, and field review of the creek geotechnical conditions. The present study also summarizes the ground and groundwater conditions, and provides geotechnical recommendations as stated above. The scope of this report is for geotechnical purposes only and does not include the study of environmental aspects of the site.

1. Site and Project Description

The subject site is located at 1160 Victoria Drive, in northern Port Coquitlam at the boundary with the City of Coquitlam, BC, in a parcel located south of Victoria Drive (See Figure 1, attached). The lot, is identified with the following legal description:

LOT 48, SEC. 7, TWP. 40, NWD PLAN NWP29352 EXCEPT PLAN 77115

The property is also bounded by Lynwood Avenue to the south, by a strip of land corresponding to Newberry Street -not-built yet- to the west and by residential buildings to the east (adjacent to Wedgewood St – See Figure 2, attached). At the time of conducting this study, the lot was still occupied by a single-family dwelling, a swimming pool, and a shed, which are to be removed for the construction of the proposed development. The remainder of the lot is covered by trees, shrubs, grass and brush.

The geomorphological description of the site is shown in Section 4.2 of this report.

The proposed development consists of the subdivision of the parcel for the construction of single-family residential buildings. The current preliminary subdivision layout is designed for 26 units (see Figure 3, attached). The homes are anticipated to be built using conventional timber structure.

In the western portion of the property site, a watercourse of concern (or stream hereafter) gently meanders through a small-scaled ravine on the upstream/northern side to a relatively flat terrain on the downstream/south-eastern side.

The development works include the relocation of the stream. To contain the relocated stream bed, a ditch with an approximate length of 130 m will be built through cut and fill sections (see Figures 3, 4, attached).

2. Background Information

Cornerstone reviewed the following information relevant to the project:

- City of Port Coquitlam Official Community Plan, Bylaw No. 3838
- City of Port Coquitlam Zoning Bylaw No. 3630
- City of Port Coquitlam Building and Plumbing Bylaw No. 3710
- City of Port Coquitlam PoCo Map,
- Topographic map, from PoCo Map
- Proposed lot layout by H.Y. Engineering Ltd., supplied by the client
- Geological Survey of Canada (GSC) Map 1484A - Surficial Geology New Westminster
- Geotechnical Information from Cornerstone archives on nearby projects
- Topographic Survey of 1160 Victoria Drive, Port Coquitlam, BC, provided by the client and prepared by Vernon C. Goudal & Associates, dated January 10th, 2018.
- 1160 Victoria - Review Letter.
- 174762_Application_Reivew_Comment_Speadsheet_PESL edits
- Proposed Subdivision Layout (174762 Alt 15E), by H.Y. Engineering Ltd dated March 09, 2022, and provided by Client via email dated March 09, 2022.
- The following drawings by H.Y. Engineering Ltd, dated February 23, 2018, and provided by Client via email dated March 09, 2022:
    - Preliminary Servicing Plan (174762-02K),
    - Lot Grading Plan (174762-03G),
    - Ditch- Plan, Profile & X-Sec (174762-05X),
    - Stream Plan and Profile (174762-04D).
- Environmental Impact Assessment – 1160 Victoria Drive, Port Coquitlam, B.C., by Phoenix Environmental Service Ltd. dated December 23, 2020.
- BC Building Code 2018.
- Groundwater Impact Assessment, by Active Earth Engineering Ltd, February 2020.
- https://maps.portcoquitlam.ca/Html5Viewer/index.html?viewer=Public.v1

3. Geotechnical Investigation

The subsoil investigation was carried out in two stages on January 9, 2018, and July 06, 2022, respectively. Cornerstone's geotechnical engineers conducted geotechnical site assessments and visual inspections twice on January 12, 2018, and June 30, 2022, respectively. Five test holes in 2018 (TH18-01 through TH18-05) and four test holes in 2022 (TH22-01 through TH22-04) were excavated using track-mounted hoe excavators supplied by the client, to maximum depths of 1.8 and 3.0 m, respectively. Cornerstone's representatives laid out the test holes, logged the subsoil conditions, and collected soil samples for laboratory identification. Locations of these test holes (Figures 2 and 3) were recorded using a handheld GPS.

A walkthrough along the bed of the existing stream was also conducted on July 06, 2022. Minor water flow was observed at the time of our field review.

The subsoil conditions and test hole logs are summarized in Section 4.3.

4. Geology, Geomorphology and Soil & Bedrock Condition

4.1 Geologic Setting

The Geological Survey of Canada GSC Map 1484a – Surficial Geology New Westminster (See Figure 5) and the BCGS Geology Map indicate that the geomaterials underlying the area consist of Glacial Drift of the Vashon Drift and Capilano Sediments geologic unit (VC). This glacial drift includes lodgment and minor flow till, lenses and interbeds of substratified glaciofluvial sand to gravel, and lenses and interbeds of glacio-lacustrine laminated stony silt. Moreover, this drift is up to 25 m thick but in most places less than 8 m thick and overlain by glaciomarine and marine deposits. An excerpt of the geological map at the area of interest is shown in Figure 5.

According to MapPlace2, the BCGS database-driven geospatial web service, the surficial geology at the property site consists of the Glacial sediment – Veneer (Unit label Tv) and the alluvial sediments – undifferentiated sediments (Unit label A). The surficial geological features are basically in good agreement with the description of GSC as stated above.

4.2 Topography and Geomorphology

The site is located at the toe of Burke Mountain, between elevations 14 m.a.s.l. and 23 m.a.s.l., sitting on hard, fine grained glacial soil deposits.

The topography of the parcel slopes gently to the south, with slopes gradients varying generally between 2% and 10%; a drop in elevations takes place towards the central portion of the parcel, resulting in slopes gradients generally not exceeding 50% and slope heights varying from 1.0 m to 2.0m as seen in the topographic map shown in Figure 2. From this figure, the elevation for this property decreases from 22.8 m in the northwest corner to 14 m in the middle of the south

of property line. The densest contours are witnessed in the upper stretches of the stream and in the latitudes in the middle zone of the property. The topographical survey also indicates the relatively flat areas which are seen in the northwest and southeast quarters of the property.

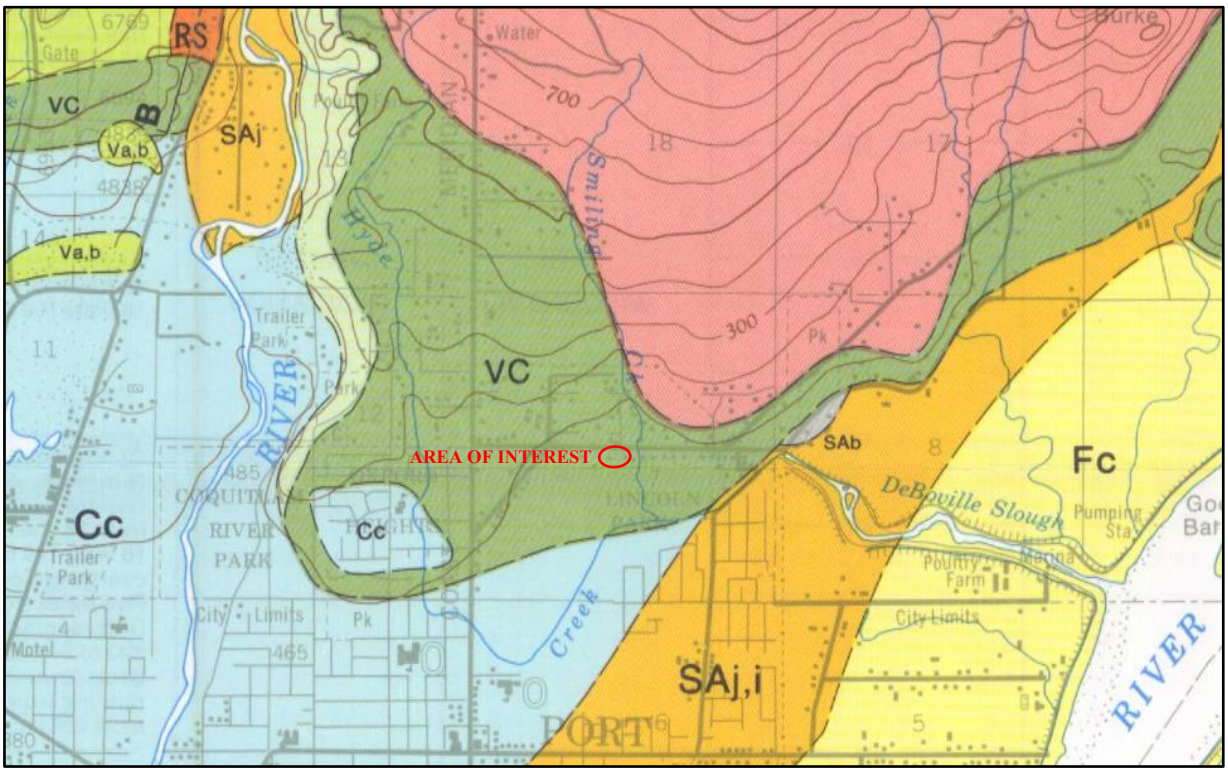


Figure 5. Geological Setting at the Area of Interest
(Taken from GSC Map 1484a – Surficial Geology New Westminster)

A ravine exists along a portion of the west property line. Its head slope and its west bank are located beyond the north property line on City's property. The water that forms the stream running at the bottom of the ravine is discharged through a culvert daylighting at the head slope.

The west bank near the head slope area is steeper than the east bank, varying in inclination from approximately 30 to 49 degrees. A timber tie wall retains fill forming the backyard of neighboring property to the west. Due to decay, however, part of this timber tie wall was failing near the culvert outlet. Hard till soil materials, observed at the base of the west bank during the 2022 investigation, underlie the surficial soils and render these slopes stable. The ravine banks gradually change from moderately steep/steep slopes to gentle/flat ground in the area where the stream turns southeast, and the proposed and the existing channel meet. The proposed new southern alignment of the creek would run along dry, stiff/very dense, and thus stable soils.

The stream, which is deemed as a tributary of Hyde Creek (see Phoenix report), traverses the parcel from the center of the west property line towards the center of the south property line,

approximately, and discharges into the city's storm system. In accordance with Cornerstone's 2022 site inspection, this stream originates from stormwater runoff, which is conveyed through the roadside gravity storm sewers starting from Apel Dr, through Victoria Dr. to the northwestern edge of the property via a circular pipe culvert (0.45 and Inv=19.7) — in agreement with the reported storm sewer by Phoenix. Neither culvert under Victoria Dr nor channel was found in PoCoMap to convey stormwater or surficial water through the property from north (the direction of Burke Mtn foothills) to south (the direction of Hyde Creek). During Cornerstone's 2022 site inspection a small water flow was observed on the stream bed. This water flow disperses over the low areas where the channel is not confined by sloping banks, leading to the creation of ponding on the surface.

According to the current preliminary subdivision layout and grading plan, the lower (southern) half of the existing stream is to be realigned westward and in approximate north-south direction in the western portion of the property. The upper (northern) half of the watercourse, however, is to be relocated eastward with the old channel backfilled. This realignment implements a 15 m Top-of-Bank (TOB) setback for the proposed Lots from 1 to 10.

Due to the generally gentle topography, the soil characteristics and good vegetation cover, no signs of slope instability or erosion are present over the property.

4.3 Subsoil Conditions

To understand the subsoil conditions the subsoil investigation was carried out in two series in 2018 (TH18-01 through TH18-05) and 2022 (TH22-01 through TH22-04), respectively. The maximum depth of investigation increased from approximately 1.8 m in 2018 to over 3.0 m in 2022. By increasing the test hole depths, the groundwater and seepage conditions were markedly revealed along with bearing subsoil layers for the proposed buildings.

Based on the test holes excavated, the soil units/groups exposed are consistent with those described by the geologic map reviewed and can be summarized as follows:

a. TOPSOIL & RANDOM FILL – Topsoil typically varies in thickness from 0.3 m to 0.6 m; random fill, 1.2 m thick, found at TH18-3 only. One exception of 1.1 m for topsoil thickness was observed at TH22-02 where big boulders are embedded. This top layer overlies (b) or (c).

b. CLAYEY SILT – Soft consistency clayey silt observed at TH18-03 only, 0.6 m thick. Stiff to very stiff silt was observed at TH22-01 through TH22-04 with thicknesses varying from 0.9 m to 2.7 m and to the total depth of investigation on the 2018 test holes. This layer overlies (c).

c. TILL – Observed at TH22-01, 03 and 04, the layer was further identified as sand, dense to very dense, moist to wet, with traces of silt or presence of cobbles and boulder, indicating glacial till features.

The results of groundwater table or seepage in 2018 and 2022 are qualitatively consistent with but quantitatively different from each other. Specifically, in 2018, no water table or groundwater seepage was observed up to the 1.8 m depth of investigation. However, in 2022 groundwater and seepage were encountered at depths ranging between 2.1 m and 2.7 m below ground surface, owing to the increased depths and differing locations of test holes.

The presence of surface water ponding or puddles caused by water dispersed over the unconfined areas of the stream, was noticed on the low areas during the 2022 investigation.

The detailed description of the soils at the Test Holes in the 2018 and 2022 investigations are depicted in the attachment (Table 3).

On the other hand, Atterberg limits of the subsoils at this project site were obtained based on water (moisture) content tests following ASTM D2216. These tests were carried out by Metro Testing and Engineering on July 12, 2022. Six soil samples from the four test holes in 2022 were measured in laboratory, with moisture content typically varying between 36.6% (Sample #1) and 54.5% (Sample #3). The moisture contents for Samples #4 and 6 are 9.0% and 9.3%, respectively. According to the laboratory results, samples #1 was identified as low plasticity clay with plasticity index of 9.5, whereas Samples # 2, 3 and 5 were identified as medium plasticity clay with plasticity indices of 18.4, 16.7, and 25.0, respectively. More information can be found in the attached test report 1.

5. Geotechnical Hazard Assessment

5.1 Area of Interest

The primary area to be assessed corresponds to the portion of terrain within the boundaries of the parcel identified in Section 1 of this report.

5.2 Methodology

The identification of geotechnical hazards was carried out based on the guidelines presented in the Hazard Acceptability Thresholds document (Cave, 1993). Slope stability analysis was carried out following the guidelines of APEGBC (2010). The methodology adopted to estimate the probability in this study is of qualitative character based on Cornerstone's field observations and desktop review.

5.3 Hazards

Seismic Hazard & Seismic Site Response

Based on the soil condition assessment and geological information reviewed for the site, the Site Classification for the structural design of the proposed building is C – "Very Dense Soil and Soft Rock" per the BC Building Code (2018: Table 4.1.8.4.-A).

Per the National Building Code of Canada (NBC 2015, Division B, Appendix C – Seismic Hazard), the parameters used to represent seismic hazard for a specific geographical location are: (a) the 5%-damped horizontal spectral acceleration values Sa(T), for T = 0.2, 0.5, 1.0, 2.0, 5.0 and 10.0 second periods; (b) the horizontal Peak Ground Acceleration (PGA) value; and (c) the peak ground velocity (PGV) that have a 2% probability of exceedance in 50 years.

For the property site, the PGA, PGV and spectral values -for Site Class C- to be used in the structural design for the 2% probability of exceedance in 50 years as provided by National Resources Canada (http://www.earthquakescanada.nrcan.gc.ca) are:

PGA = 0.306;
PGV = 0.462;
Sa(0.2) = 0.703;
Sa(0.5) = 0.616;
Sa(1.0) = 0.356;
Sa(2.0) = 0.221;
Sa(5.0) = 0.073;
Sa(10.0) = 0.026.

Because these spectral values are reported by the NBC and BCBC for firm ground (Site Class C), amplification factors F(T), F(PGA) and F(PGV) must be determined based on the above parameters and the Site Classification described above, per the BC Building Code 2018, where applicable.

These parameters need to be considered to account for seismic effects in the structural and geotechnical design, where required.

Small Scale, Localized Landslides

Based on the topographic characteristics of the site and geomechanical properties of the soils present, the potential for small scale, localized landslides is considered non-existent and the assigned probability of occurrence is < 1:10,000 (see Table 2 for comparative purposes).

Table 2. Indicative Measures of Landslide Likelihood (Australian Geomechanics Society, 2000)

Level	Descriptor	Description	Indicative Annual probability
A	Almost Certain	The event is expected to occur	$> \approx 10^{-1}$
B	Likely	The event will probably occur under adverse conditions	$\approx 10^{-2}$
C	Possible	The event could occur under adverse conditions	$\approx 10^{-3}$
D	Unlikely	The event might occur under very adverse circumstances	$\approx 10^{-4}$
E	Rare	The event is conceivable but only under exceptional circumstances	$\approx 10^{-5}$
F	Not Credible	The event is inconceivable or fanciful	$< 10^{-6}$

Other Hazards

Other potential geotechnical hazards including mountain stream erosion or avulsion, debris flow / debris torrent, debris flood, rockfall, major catastrophic landslide and liquefaction were considered in our assessment and are deemed to be inexistent in this property.

6. Discussion and Recommendations

6.1 General

Based on the geotechnical assessment of the subject site, it is our professional opinion that the construction of the proposed building is feasible from a geotechnical point of view provided that the recommendations presented below are followed.

6.2 Hazard Assessment

Based on the estimated likelihood of the hazard events described above, it is Cornerstone's professional opinion that the land may be used safely for the use intended provided that the recommendations described below are implemented. The above is based on the comparison of the assigned probabilities of occurrence of the hazards assessed to the Cave (1993) acceptability criteria.

6.3 Site Preparation

Topsoil, fill, and any other deleterious or soft soils must be removed prior to construction of building footings or grading fills if necessary. The foundation soil must be inspected and approved by the geotechnical engineer prior to construction.

It is anticipated that due footings will be founded on the native till-deposits or on structural fill in case grading fills are required.

Temporary excavations into the stiff or very stiff glacial silt deposits can be carried out at a maximum inclination of 0.5H:1V (H=horizontal; V=vertical); excavations into the gravely sand till can be conducted at the same inclination if dry; if water seepage occurs, the inclination must be reduced to 1H:1V. Excavations into fill or soft soils must be carried out at 1.5H:1V. Excavations at depths larger than 1.2 m must be supervised by a qualified geotechnical engineer.

Based on the proposed MBE per the grading plan prepared by the civil designer, H.Y. E0ngineering Ltd., (see Figure 3) excavations for the construction of crawl spaces will generally vary from 1.0 m to 3.2 m (see attached Excavations Table 1). The lots have been classified in two Types: A where the excavation is less than 1.5 m in depth, and B where the excavation is equal to or exceeds this depth. In general, it is expected that Lots Type A may be founded on the stiff to very stiff silt while Lots B may be founded on the very dense gravelly sand till and are more likely to experience groundwater seepage.

Due to the above, the geotechnical engineer must inspect the excavations to assess the need for permanent drainage measures: the buried portions of the foundation walls located in areas subject to groundwater seepage must be provided with a 300 mm thick chimney drain consisting of drain gravel extending from the top of the footing perimeter drain separated from the surrounding soil using a 6 Oz. non-woven filter fabric.

Perimeter drains shall be installed around the foundation walls and shall consist of a 100 mm perforated PVC drainpipe embedded in a 300 mm wide and thick drain gravel layer, connected to the storm system.

If fills are required for grading purposes under the buildings, structural fill compacted to a minimum density of 95% Modified Proctor Maximum Dry Density (MPMDD) must be placed under the supervision of the geotechnical engineer. The structural fill must extend to a minimum horizontal distance beyond the outer edge of the perimeter footings equal to the greater of: (i) two times the footing width or (ii) the thickness of the structural fill. Fill must be placed in 300 mm (1 ft.) thick loose lifts when compacted using large compaction equipment such as vibrating rollers. Lift thickness must be reduced to 150 mm if smaller plate compactors are used.

The structural fill shall consist of sound, durable, well graded granular material, free of earth lumps or deleterious materials, with a maximum size of 75 mm and fine contents (material passing sieve 0.075 mm/No. 200) less than 8% and plasticity index measured on the fraction of soil passing sieve No. 40 lower than 6 percent. Cornerstone must approve the structural fil prior to its use. Proctor compaction testing must be carried out on representative samples of any structural fill prior to its use in the project and the results submitted for Cornerstone's review.

If groundwater seepage is anticipated in the excavated areas, free draining structural fill (i.e., fine contents of less tan 5% in weight) shall be used.

A 100 mm min. thickness layer of granular material containing not more than 10% of material passing a 4 mm sieve, placed on top of the native foundation material, must be installed underneath Slabs-on-grade; a 0.15 mm poly vapor barrier must be installed in between the granular fill and the slab.

Roof and surface runoff water from yards and other areas must be collected and discharged into the storm system per the civil design.

Due to the low permeability of the glacially consolidated, till-like soils present at the site, infiltration of storm water through rock pits is not feasible. The estimated percolation rate of these materials is greater than 120min/2.54cm.

6.4 Bearing Capacity

Footings founded on the native, very stiff clayey silt or very dense sandy till or on structural fill, can be designed based on a factored bearing pressure (ULS condition) of 150 kPa (≅3,000 psf.), for a resistance factor φ of 0.5. The serviceability (SLS condition) bearing pressure is 100 kPa (≅2,000 psf.).

The above bearing capacity values do not consider the effect of eccentric or inclined loads. For these cases or for footings placed on top of fill or cut slopes, a geotechnical engineer must verify the validity of these values.

The footing widths must be selected based on the loads assessed by the structural engineer accounting for the above bearing pressures. The minimum footing width must comply with the requirements of BCBC 2018, Table 9.15.3.4 (shown below):

BCBC 2018, Table 9.15.3.4

No. of Floors Supported	Minimum Width of Strip Footings, mm		Minimum Footing Area for Columns Spaced 3 m o.c.,(1) m^2
	Supporting Exterior Walls(2)	Supporting Interior Walls(3)	
1	250	200	0.4
2	350	350	0.75
3	450	500	1.0

Notes to BCBC 2018, Table 9.15.3.4:

(1) See Sentence 9.15.3.7.(1).
(2) See Sentence 9.15.3.5.(1).
(3) See Sentence 9.15.3.6.(1).

Minimum footing embedment depth for frost protection is 450 mm (18”).

6.5 Groundwater and Surface Water Ponding

The glacial clayey silt observed near the ground surface in many areas of the property exhibit very low permeability, which impedes free groundwater movement or seepage flow. It suggests that the presence of an aquifer or groundwater flow or a groundwater table can be disregarded into this fine-grained layer. It can also be inferred that the stream is unlikely to be fed by this clay and silt layer. Based on Cornerstone's site investigation, the gravelly sandy till layer might feed the stream to some extent in areas where it daylights, such as the base of the west bank upstream.

Note that layers of sand and gravel were detected overlying the clayey silt layer near the ground surface (at test hole TH22-01); gravelly sand till was also observed underlying it at variable depths below the ground surface (TH22-03 and 04). The surficial coarse-grained layers were basically dry at the time of Cornerstone's 2022 investigation, yet seasonal seepage may occur. The gravelly sand till layer may serve as a medium conveying groundwater seepage at the site at variable depths; based on the observations at the 2022 test holes, groundwater seepage into this layer occurred at depths between 2.1 m and 2.7 m below the ground surface.

If excavation occurs into this layer, the potential seepage can be collected through drains and then discharged into the storm system, as discussed above.

Cornerstone also conducted a review of information at the BC Water Resource Atlas, in search for information regarding the presence of aquifers in the area. This map indicates that no aquifers underlie the project area.

Water ponding was observed at low areas. The water ponding is attributable to the creek flow which spreads over the ground surface and seeps into the upper layer of sandy topsoil. In some cases, the sandy topsoil exhibits a thickness of up to 1.10 m. The realignment and channelization of the watercourse can be anticipated to ensure that the water currently spreading onto these downstream areas shall be properly conveyed into the stream and discharged through a culvert under Lynwood Ave, thus preventing potential adverse or negative impacts on adjacent properties.

According to the PoCoMap, the stream within the subject property is classified as "Open Channels — Ditch", which accepts water from the storm sewers ("Storm Mains – Gravity Main") starting from Apel Dr through Victoria Dr. to the northwestern edge of the property. Neither of the culverts undercrossing Victoria Dr were observed or identified to convey stormwater or surficial water to or through the property in direction of the properties south of the subject area to be developed. The collected surficial water and runoff are led by the existing stream to stormwater sewers along Lynwood Ave, Alderwood Ave through another open channel – ditch to converge with Hyde Creek at elevation of approximately 5 m.

In contrast, the proposed watercourse realignment will convey the water flow to Watkins Creek, which is an upstream tributary of Hyde Creek through a culvert crossing under Lynwood Ave.

Based on our geotechnical assessment, we can foresee that the proposed drainage measures will enable the proper handling of the surface water flows as well as water collected from groundwater seepage preventing the occurrence of negative effects on the surrounding properties.

6.6 Ditch Construction

Surface water must be collected using temporary ditches prior to the construction of the realigned ditch and discharged into the existing culvert crossing at Lynwood Ave.

Based on the preliminary ditch design conducted by H.Y. Engineering Ltd., the re-aligned ditch will run through cut and fill sections, as shown on Figure 4.

It is anticipated that the excavated portions will take place mostly into the very stiff clayey silt deposits found near the ground surface. The preliminary ditch design indicates excavated channel depths of up to 2 m, approximately, inclined at 1H:1V, which is acceptable into these materials. The geotechnical engineer must inspect and approve the ditch excavation or provide additional recommendations to ensure its long-term stability.

The fill sections of the channel must be built using fill materials with low permeability to ensure that no seepage occurs through the ditch berms. The ditch fill material shall consist of sound, durable, granular soil, free of earth lumps or deleterious or organic materials, with a maximum size of 75 mm and fine contents (material passing sieve 0.075 mm/No. 200) between 15% and 30% in weight, plasticity index measured on the fraction of soil passing sieve No. 40 equal or larger than 7 percent and limit liquid less than 50%. Alternatively, the use of geomembranes, geosynthetic clay liners, clay cores or any other measures that satisfy the above provision must be implemented.

The internal walls of the compacted berms of the ditch in the fill sections must have a maximum inclination of 1.5H:1V, while the external slopes must have a maximum inclination of 2H:1V.

The ditch fill berms must be compacted to a minimum density of 95% MPMDD.

Erosion protection of the new ditch bed shall be provided based on the flow velocities estimated by the ditch designer.

7. Review and Inspection

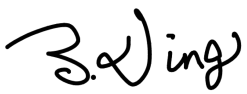
We recommend retaining Cornerstone Engineering to conduct the following activities:

- Review of final lot grading plan and foundation layout
- Excavation and foundation soil review

8. Limitations and Closure

The recommendations provided in this report are based on the analysis of the results of the subsoil investigation and geomorphological conditions of the site and our engineering judgement. Due the variable nature of the subsoil and limitations inherent to the subsoil investigation, unexpected conditions may be found; Cornerstone Geo-Structural Engineering must be informed by the client in this event to conduct the necessary reviews. This report has been prepared in accordance with general accepted engineering practice for the exclusive use of the client for the purposes stated. No other warranty expressed or implied is made.

Reviewed,



August 15, 2022

Zhouxiang (Joseph) Ding, M.Sc., E.I.T.
Geotechnical Engineer

German A. Cajigas Silva, M.Eng., P.Eng.
Senior Geotechnical Engineer

Cornerstone Geo-Structural Engineering Ltd.
EGBC Permit to Practice #1003365

APPENDIX 1. ATTACHMENTS

- Figure 1. General Site Location
- Figure 2. Topographic Survey and Location of Test Holes
- Figure 3. Preliminary Lot Grading Plan
- Figure 4: Ditch Cross Sections (based on H.Y. Engineering Dwg. No. 05)

- Table 1. Preliminary Excavation Analysis for Proposed Buildings
- Table 3. Test Hole Log

- Report 1. Laboratory Test Results

- Photo Annex

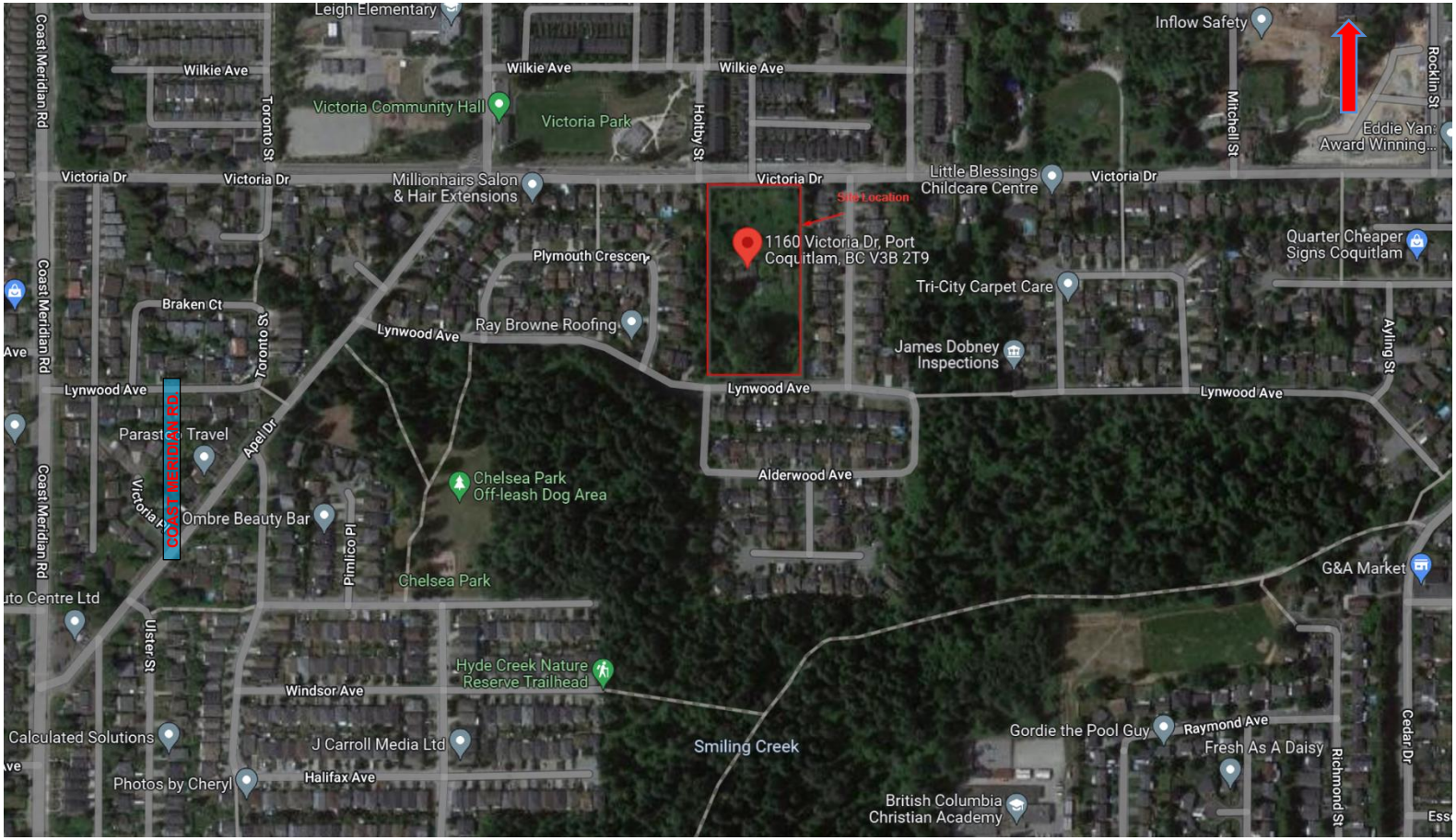
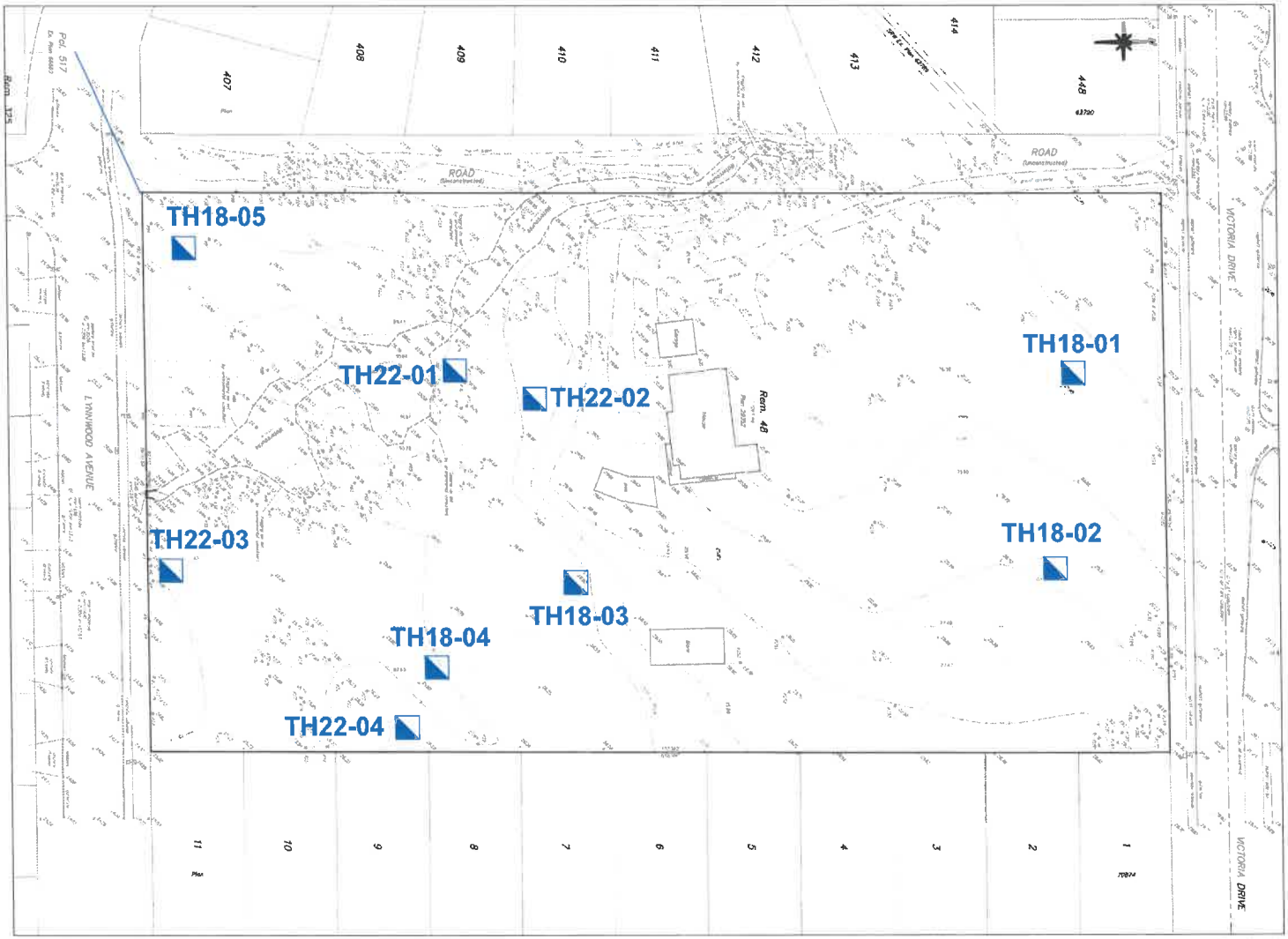


Figure 1. General Site Location (NTS – Taken from Google Earth)



BASED ON TOPOGRAPHIC SURVEY BY VERNON C. GOUDAL & ASSOCIATES

CORNERSTONE
GEO-STRUCTURAL ENGINEERING LTD
1B-30508 Great Northern Avenue
Abbotsford, BC, V2T 6H4
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PROFESSIONAL SERVICES BUILT UPON THE ROCK

FIGURE 2. TOPOGRAPHIC SURVEY AND LOCATION OF TEST HOLES

SITE: 1160 VICTORIA DR, PORT COQUITLAM, BC

CLIENT: FAR VENTURES

Drawn: German Cajigas | Date: 12 August, 2022

Revised: Jorge Silva | SCALE: 1:750 | 1/1

REVISIONS

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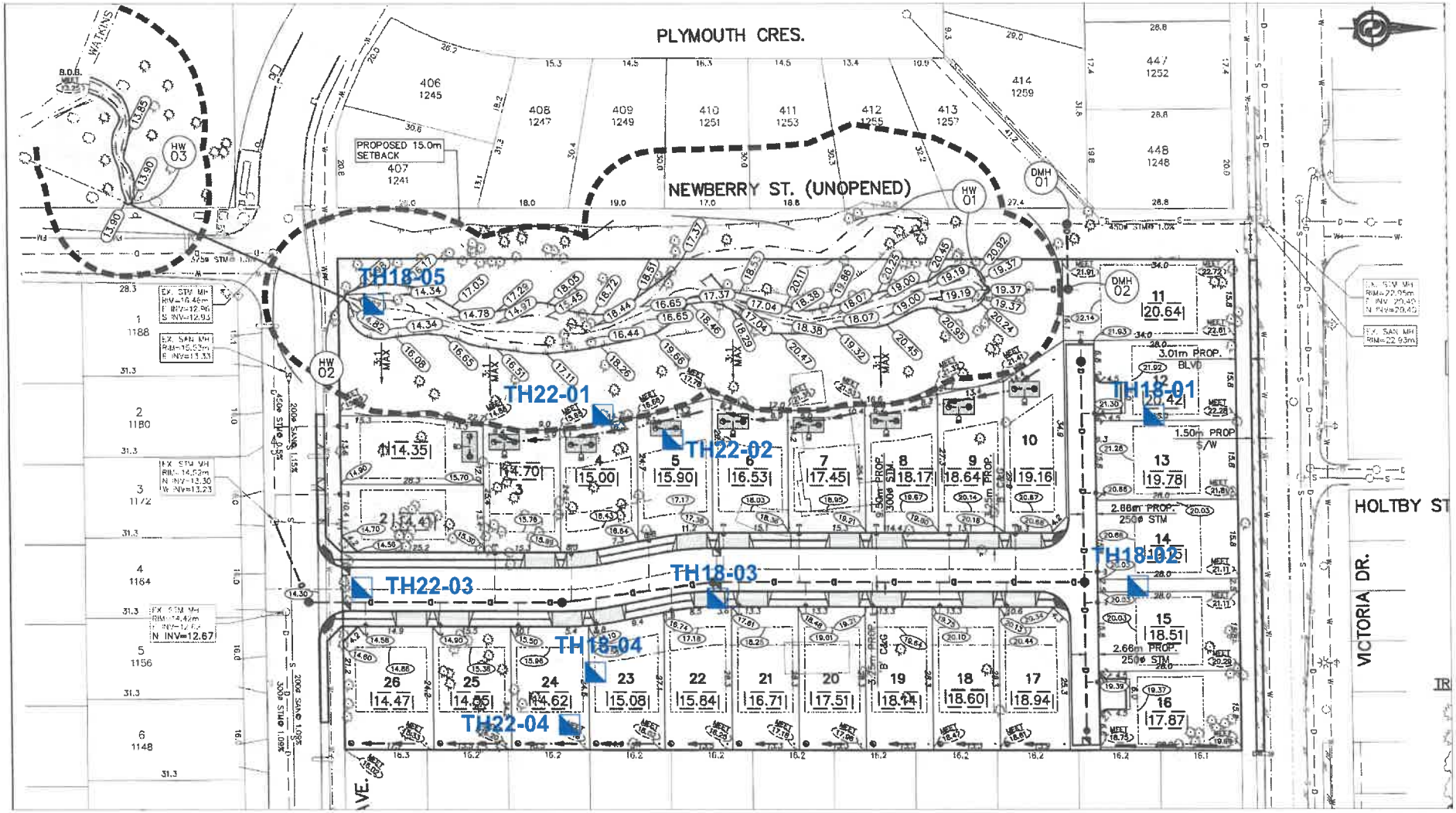

BASED ON DRAWING PREPARED BY H.Y. ENGINEERING LTD. DATED 2022-06-17

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FIGURE 3. PRELIMINARY LOT LAYOUT AND STREAM RELOCATION

SITE: 1160 VICTORIA DR, PORT COQUITLAM, BC

CLIENT: FAR VENTURES

Drawn: German Cajigas | Date: 12 August, 2022

Revised: Jorge Silva | SCALE: 1:750 | 1/1

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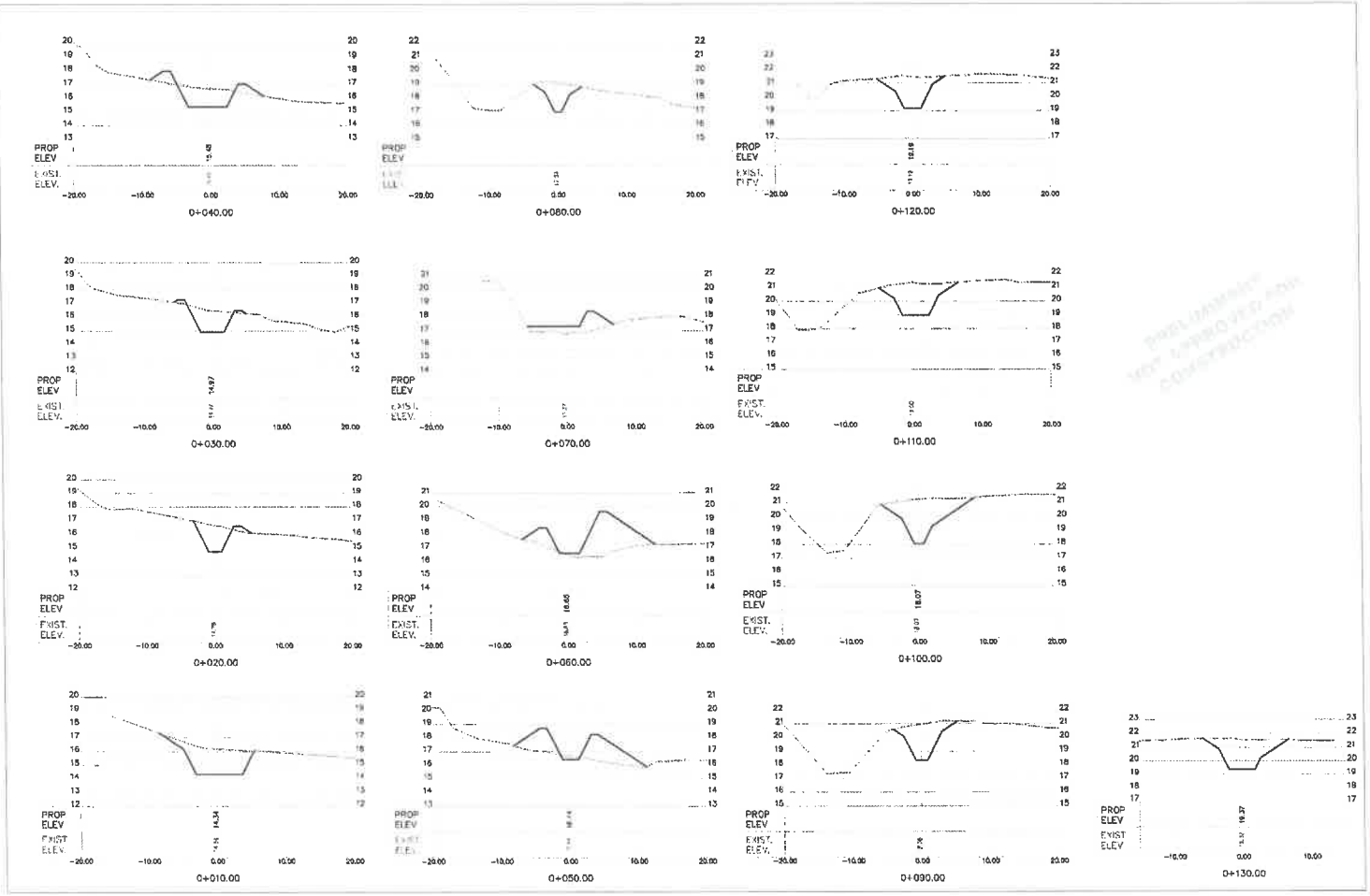

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FIGURE 4. DITCH CROSS SECTIONS

SITE: 1160 VICTORIA DR, PORT COQUITLAM, BC

CLIENT: FAR VENTURES

Drawn: German Cajigas | Date: 12 August, 2022

Revised: Jorge Silva | SCALE: NTS | 1/1

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Table 1. Preliminary Excavation Analysis (unit: m)

Lot No.	Prop. Bsmt El	Max. Ground El	Max.Depth of Excav.	Prop. F. Grade El	Type
1	14.35	15.40	1.05	15.70	A
2	14.41	15.39	0.98	15.30	A
3	14.70	16.40	1.70	15.89	B
4	15.00	16.50	1.50	16.64	B
5	15.90	17.00	1.10	17.38	A
6	16.53	19.70	3.17	18.36	B
7	17.45	20.00	2.55	19.21	B
8	18.17	21.40	3.23	19.80	B
9	18.64	20.98	2.34	20.16	B
10	19.16	21.38	2.22	20.68	B
11	20.64	22.45	1.81	21.93	B
12	20.42	22.18	1.76	21.30	B
13	19.78	21.43	1.65	20.66	B
14	19.15	21.01	1.86	20.03	B
15	18.51	20.30	1.79	20.03	B
16	17.87	19.20	1.33	19.39	A
17	18.94	20.44	1.50	20.34	B
18	18.60	20.06	1.46	20.13	A
19	18.14	19.64	1.50	19.75	B
20	17.51	18.70	1.19	19.21	A
21	16.71	18.60	1.89	18.48	B
22	15.84	17.18	1.34	17.61	A
23	15.08	16.58	1.50	16.74	B
24	14.62	15.90	1.28	16.10	A
25	14.55	15.87	1.32	15.50	A
26	14.47	14.66	0.19	14.90	A

CORNERSTONE
GEO-STRUCTURAL ENGINEERING LTD

Test Pit Log

Project: FAR Ventures - 1160 Victoria Avenue
Location: Port Coquitlam, BC
Date of investigation: 06-Jul-2022 (TH22), and 09-Jan-2018 (TH18)

Rev. 1 - 04 AUGUST 2022

Test Hole No.	Depth below ground surface (m)	Soil description
TH22-01	0.0 - 0.61	Topsoil, moist, brown to dark brown, sand and silt with grass roots.
	0.61 - 0.71	Compact, wet, light brown, coarse sand with angular gravel and traces of silt.
	0.71 - 3.4	Stiff, wet, mottled to light brown transition, clayey silt (low plasticity clay with PI = 9.5). Material is grading to some sand with depth.
		End of test hole at 3.4 m.
		Minor seepage observed at 2.1 m depth. Very minor seepage at the bottom of this test hole.
TH22-02	0.0 - 1.10	Topsoil, soft, wet, dark brown, silt and sand with roots. An embedded big boulder found in this layer. Creek water gushes into the test pit. Top soil layer walls were unstable and falling apart.
	1.10 - 2.0	Stiff to very stiff, wet, light brown, clayey silt (medium plasticity clay with PI = 18.4).
		End of test hole at 2.0 m.
TH22-03	0.0 - 0.46	Topsoil, moist, sand and silt.
	0.46 - 1.83	Stiff, wet, mottled brown to light brown, clayey silt (medium plasticity clay with PI = 16.7) with traces of sand.
	1.83 - 3.35	Dense to very dense, moist to wet, grey, medium to fine sand and gravel with traces of cobbles and boulders.
		End of test hole at 3.35 m.
		Seepage observed at 2.74 m (from bottom).
TH22-04	0.00 - 0.31	Topsoil, dark brown, wet, sand and silt with presence roots.
	0.31 - 1.83	Stiff, wet, mottled brown to light brown with some grey transition, clayey silt (medium plasticity clay with PI = 25) with sand. Minor seepage found at 1.02 m.
	1.83 - 3.02	Dense to very dense, moist to wet, grey, medium to fine sand and gravel with cobbles & boulders.
		End of test hole at 3.02 m.
		Water seepage found at 2.67 m.
TH18-01	0.0 - 0.6	Topsoil
	0.6 - 1.5	Very stiff, moist/wet, mottled, light brown clayey silt.
		End of test hole at 1.5 m.
		No groundwater or water seepage observed at the depth of investigation.
TH18-02	0.0 - 0.6	Topsoil
	0.6 - 1.5	Very stiff, moist/wet, mottled, light brown clayey silt.
		End of test hole at 1.5 m.
		No groundwater or water seepage observed at the depth of investigation.
TH18-03	0.0 - 1.2	Randon fill
	1.2 - 1.8	Soft, wet, clayey silt.
	1.8	Very stiff, moist/wet, mottled, light brown clayey silt.
		End of test hole at 1.8 m.
		No groundwater or water seepage observed at the depth of investigation.
TH18-04	0.0 - 0.3	Top soil
	0.3 - 0.9	Stiff, moist/wet, mottled light brown clayey silt.
	0.9 - 1.5	Very stiff, moist/wet, mottled, light brown clayey silt.
		End of test hole at 1.5 m.
		No groundwater or water seepage observed at the depth of investigation.
TH18-05	0.0 - 0.6	Top soil
	0.6 - 1.5	Very stiff, moist/wet, mottled, light brown clayey silt.
		End of test hole at 1.5 m.
		No groundwater or water seepage observed at the depth of investigation.

METRO TESTING + ENGINEERING

#18 3275 McCallum Rd., Abbotsford, B.C. V2S 7W5
Phone: 1-888-855-9733 Fax: (604) 855-7378

TO: **CORNERSTONE GEO-STRUCTURAL ENG'NG**
1B-30508 Great Northern Ave
Abbotsford, BC., V2T 6H4

REPORT DATE: 14-Jul-22
PROJECT NO: VE41345

ATTN: **SEBASTIAN SILVA**

PROJECT: 18-002 FAR VENTURES, 1160 VICTORIA DR COQUITLAM BC.
SCOPE: SOIL TESTING

ASTM D2216

Standard Test Methods for Water (Moisture) Content of Soil and Rock by Mass

SAMPLE DATA

Sample I.D.		Date Sampled:	6-Jul-22
Sample Location:	1160 VICTORIA DR COQUITLAM BC.	Date Received:	11-Jul-22
Sample Type:	Various	Date Tested:	12-Jul-22
		Tested By:	JR

Borehole	Depth	Moisture Content (%)	Remarks
Sample 1	-	36.6	For Atterberg Limits
Sample 2	-	44.6	For Atterberg Limits
Sample 3	-	54.5	For Atterberg Limits
Sample 4	-	9.0	-
Sample 5	-	44.1	For Atterberg Limits
Sample 6	-	9.3	-

Per:

Jaime Rivero
Laboratory Supervisor

Reviewed By:

Jim Hernandez, AScT
Laboratory Manager

METRO TESTING + ENGINEERING

#18 3275 McCallum Rd., Abbotsford, B.C. V2S 7W5
Phone: 1-888-855-9733 Fax: (604) 855-7378

CLIENT	**CORNERSTONE GEO-STRUCTURAL ENG'NG**	OUR JOB NO:	WF41067
	1B-30508 Great Northern Ave	YOUR JOB NO:	
	Abbotsford, BC., V2T 6H4	REPORT DATE:	11-Jul-22
		TESTED BY	JR
ATTENTION	**SEBASTIAN SILVA**		

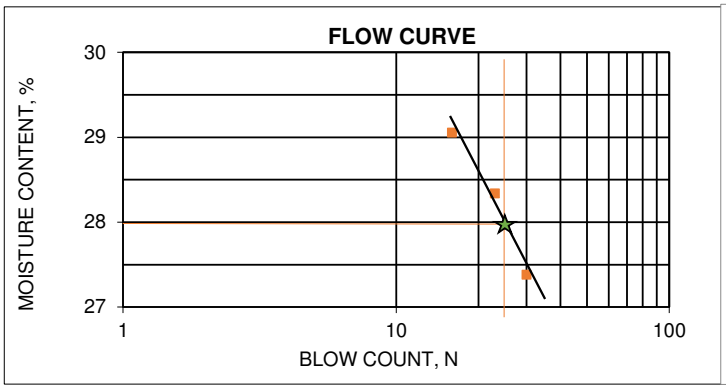
PROJECT: 18-002 FAR VENTURES, 1160 VICTORIA DR COQUITL
SCOPE SOIL TESTING

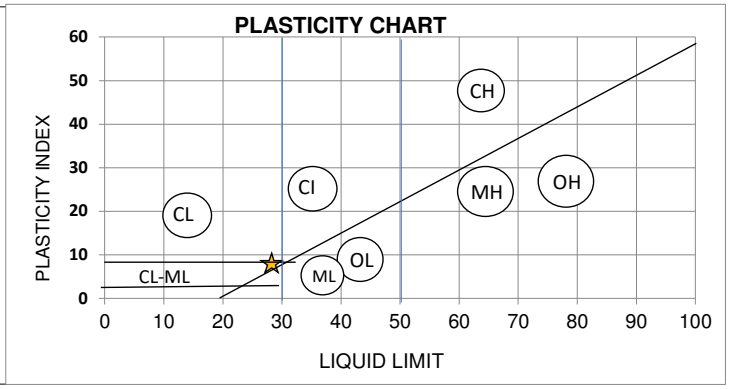
ASTM D 4318
Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

SAMPLE DESCRIPTION

HOLE NO	**Sample 1**	SAMPLE RECEIVED:	6-Jul-22
DEPTH	-	SAMPLE TESTED:	07-Jul-22
SAMPLE TYPE:	Clay		

POINTS	1	2	3		
NUMBER OF BLOWS, N	30	23	16	25	
% MOISTURE CONTENT, W_N	27.38	28.34	29.06	28.0	
CORRECTION FACTOR, K at	25.0	1.000			
CALCULATED LIQUID LIMIT = K (W_N) =		28.0			





RESULT SUMMARY

PLASTIC LIMIT	AS IS MOISTURE	LIQUID LIMIT	PLASTICITY INDEX	SOIL CLASSIFICATION
18.5	**36.6%**	**28.0**	**9.5**	**Low Plasticity CLAY** (ASTM D-4318)

Per: ***Jaime Rivero***
Laboratory Supervisor

Reviewed By: ***Jim Hernandez, AScT***
Laboratory Manager

METRO TESTING + ENGINEERING

#18 3275 McCallum Rd., Abbotsford, B.C. V2S 7W5
Phone: 1-888-855-9733 Fax: (604) 855-7378

CLIENT	**CORNERSTONE GEO-STRUCTURAL ENG'NG**	OUR JOB NO:	WF41067
	1B-30508 Great Northern Ave	YOUR JOB NO:	
	Abbotsford, BC., V2T 6H4	REPORT DATE:	11-Jul-22
		TESTED BY	JR
ATTENTION	**SEBASTIAN SILVA**		

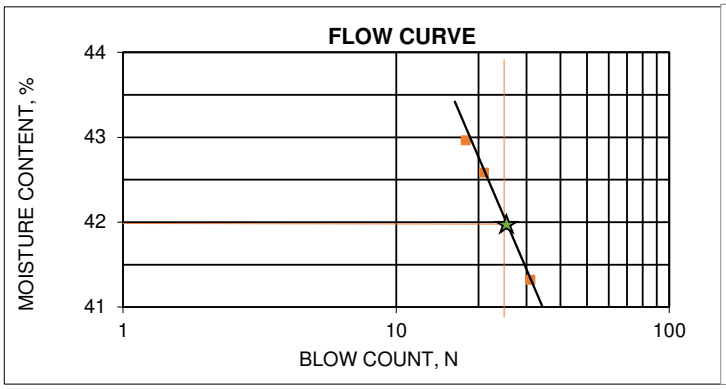
PROJECT: 18-002 FAR VENTURES, 1160 VICTORIA DR COQUITL
SCOPE SOIL TESTING

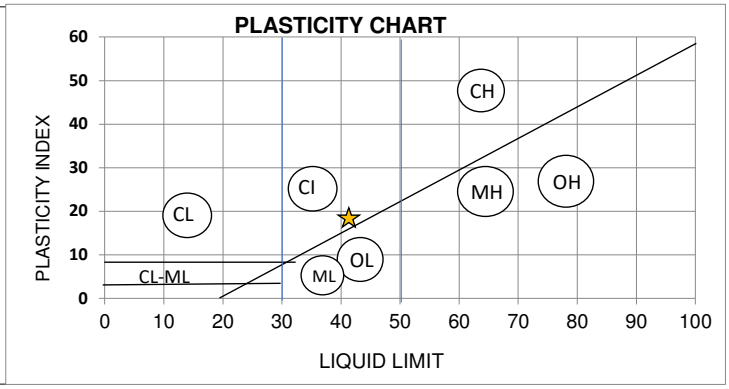
ASTM D 4318
Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

SAMPLE DESCRIPTION

HOLE NO	**Sample 2**	SAMPLE RECEIVED:	6-Jul-22
DEPTH	-	SAMPLE TESTED:	07-Jul-22
SAMPLE TYPE:	Clay		

POINTS	1	2	3		
NUMBER OF BLOWS, N	31	21	18	25	
% MOISTURE CONTENT, W_N	41.32	42.58	42.97	42.0	
CORRECTION FACTOR, K at	25.0	1.000			
CALCULATED LIQUID LIMIT = K (W_N) =		42.0			





RESULT SUMMARY

PLASTIC LIMIT	AS IS MOISTURE	LIQUID LIMIT	PLASTICITY INDEX	SOIL CLASSIFICATION
23.6	**44.6%**	**42.0**	**18.4**	**Medium Plasticity CLAY** (ASTM D-4318)

Per: ***Jaime Rivero***
Laboratory Supervisor

Reviewed By: ***Jim Hernandez, AScT***
Laboratory Manager

METRO TESTING + ENGINEERING

#18 3275 McCallum Rd., Abbotsford, B.C. V2S 7W5
Phone: 1-888-855-9733 Fax: (604) 855-7378

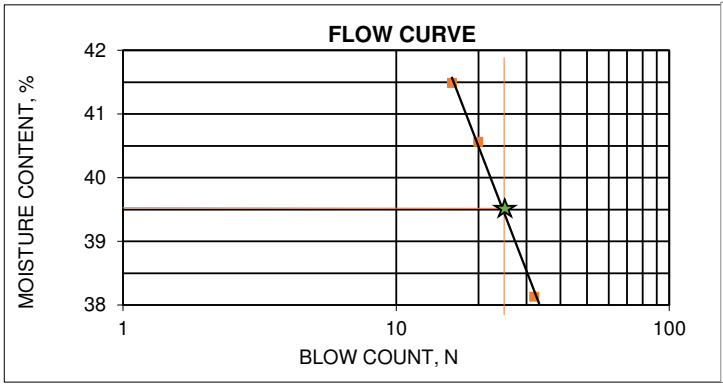
CLIENT	**CORNERSTONE GEO-STRUCTURAL ENG'NG**	OUR JOB NO:	VE41345
	1B-30508 Great Northern Ave	YOUR JOB NO:	
	Abbotsford, BC., V2T 6H4	REPORT DATE:	11-Jul-22
		TESTED BY	JR
ATTENTION	**SEBASTIAN SILVA**		
PROJECT:	18-002 FAR VENTURES, 1160 VICTORIA DR COQUITL		
SCOPE	SOIL TESTING		

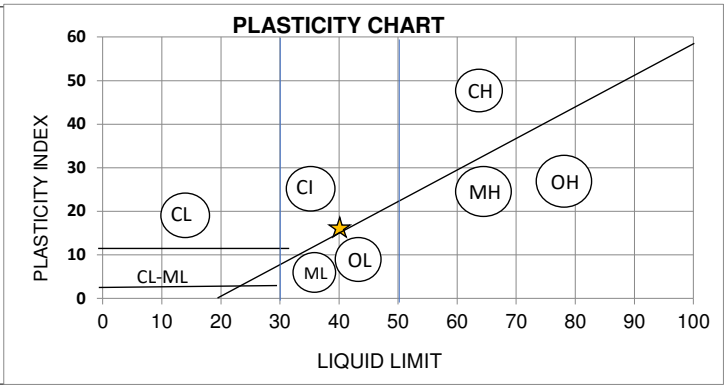
ASTM D 4318
Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

SAMPLE DESCRIPTION

HOLE NO	**Sample 3**	SAMPLE RECEIVED:	6-Jul-22
DEPTH	-	SAMPLE TESTED:	07-Jul-22
SAMPLE TYPE:	Clay		

POINTS	1	2	3		
NUMBER OF BLOWS, N	32	20	16	25	
% MOISTURE CONTENT, W_N	38.13	40.56	41.49	39.5	
CORRECTION FACTOR, K at	25.0	1.000			
CALCULATED LIQUID LIMIT = K (W_N) =		39.5			





RESULT SUMMARY

PLASTIC LIMIT	AS IS MOISTURE	LIQUID LIMIT	PLASTICITY INDEX	SOIL CLASSIFICATION
22.8	**54.5%**	**39.5**	**16.7**	**Medium Plasticity CLAY** (ASTM D-4318)

Per: ***Jaime Rivero***
Laboratory Supervisor

Reviewed By: ***Jim Hernandez, AScT***
Laboratory Manager

METRO TESTING + ENGINEERING

#18 3275 McCallum Rd., Abbotsford, B.C. V2S 7W5
Phone: 1-888-855-9733 Fax: (604) 855-7378

CLIENT	**CORNERSTONE GEO-STRUCTURAL ENG'NG**	OUR JOB NO:	VE41345
	1B-30508 Great Northern Ave	YOUR JOB NO:	
	Abbotsford, BC., V2T 6H4	REPORT DATE:	11-Jul-22
		TESTED BY	JR
ATTENTION	**SEBASTIAN SILVA**		

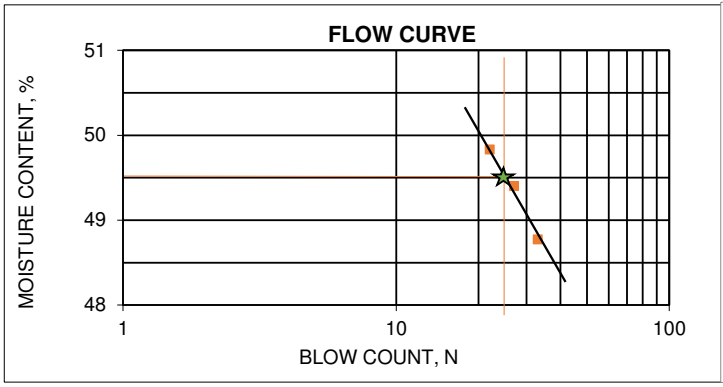
PROJECT: 18-002 FAR VENTURES, 1160 VICTORIA DR COQUITL
SCOPE SOIL TESTING

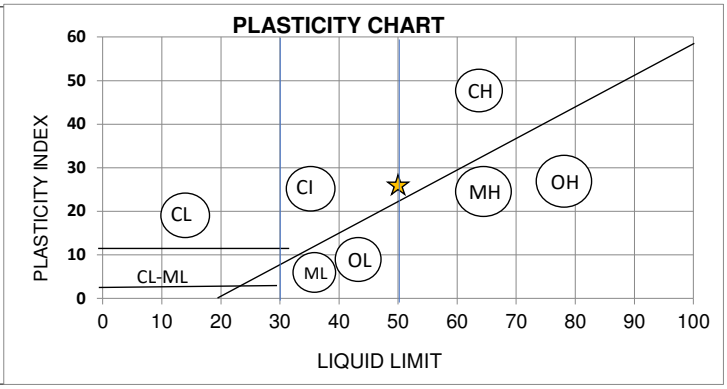
ASTM D 4318
Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

SAMPLE DESCRIPTION

HOLE NO	**Sample 5**	SAMPLE RECEIVED:	6-Jul-22
DEPTH	-	SAMPLE TESTED:	07-Jul-22
SAMPLE TYPE:	Clay		

POINTS	1	2	3		
NUMBER OF BLOWS, N	33	27	22	25	
% MOISTURE CONTENT, W_N	48.77	49.40	49.83	49.5	
CORRECTION FACTOR, K at	25.0	1.000			
CALCULATED LIQUID LIMIT = K (W_N) =		49.5			





RESULT SUMMARY

PLASTIC LIMIT	AS IS MOISTURE	LIQUID LIMIT	PLASTICITY INDEX	SOIL CLASSIFICATION
24.5	**44.1%**	**49.5**	**25.0**	**Medium Plasticity CLAY** (ASTM D-4318)

Per: ***Jaime Rivero***
Laboratory Supervisor

Reviewed By: ***Jim Hernandez, AScT***
Laboratory Manager

Captions of Photo Annex

- Photo 01: Walkthrough along the Site
- Photo 02: Test Hole Test (TH22-01) – Measurement of Depth
- Photo 03: Test Hole Test (TH22-02) – Surficial Water Inflow
- Photo 04: Test Hole Test (TH22-04) – Groundwater Seepage
- Photo 05: Test Hole Test (TH22-04) – Boulder in Exposed Subsoil
- Photo 06: Flow Path Transition of the Stream Approaching Flat Terrain
- Photo 07: Surficial Water on Site – Ponding
- Photo 08: Surficial Water on Site – Stream Bed
- Photo 09: Upstream Ravine Area – Culvert Outlet
- Photo 10: Upstream Ravine Area – Hard Soil Exposed
- Photo 11: Upstream Ravine Area – Timber Tie Wall
- Photo 12: View near TH22-04 – North facing
- Photo 13: View near TH22-04 – South facing
- Photo 14: View of Current Building – North facing
- Photo 15: West Bank near the Head Slope (Ravine) Area

Photo 01: Walkthrough along the Site

Photo 02: Test Hole Test (TH22-01) – Measurement of Depth

Photo 03: Test Hole Test (TH22-02) – Surficial Water Inflow

Photo 04: Test Hole Test (TH22-04) – Groundwater Seepage

Photo 05: Test Hole Test (TH22-04) – Boulder in Exposed Subsoil

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Photo 11: Upstream Ravine Area – Timber Tie Wall

Photo 12: View near TH22-04 – North facing

Photo 13: View near TH22-04 – South facing

Photo 14: View of Current Building – North facing

Photo 15: West Bank near the Head Slope (Ravine) Area

APPENDIX F

DFO Letter of Advice
And
WSA Change Approval

Fisheries and Oceans Canada
Pêches et Océans Canada

Pacific Region
Ecosystem Management Branch
200 – 401 Burrard Street
Vancouver, BC
V6C 3S4

Région du Pacifique
Direction de la gestion des écosystèmes
Pièce 200 – 401 rue Burrard
Vancouver (C.-B.)
V6C 3S4

August 18, 2023

Our file *Notre référence*
22-HPAC-01413

RBD Victoria and GRD Victoria Homes Inc
41A-1145 Inlet Street
Coquitlam, BC V3B 6E8

Via email: fargroupoffice@gmail.com

Dear Glenn Richardson:

Subject: Stream Realignment, Watkins Creek, Port Coquitlam – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on November 16, 2022. We understand that you propose to:

- Partially infill and re-align an existing stream within Port Coquitlam, BC (approximately 581 m^2 aquatic footprint and 1623 m^2 riparian footprint).

Our review considered the following information:

- Request for Review package received via email from Alexander Drake of Phoenix Environmental Services Ltd. on November 16, 2022 including:
  - *Appendices I-VI*, prepared by Phoenix Environmental Services Ltd, dated November 2022; and
- Site visit conducted by Eleanor Willson and Oliver Franklin from the Fish and Fish Habitat Protection Program, Fisheries and Oceans Canada on January 13, 2023; and
- Additional information provided via email by Ken Lambertsen, dated May 30, 2023.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned outcomes are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), it is important that all proposed measures are implemented as set out in the information that was submitted to the Program in relation to your project. In addition, we recommend implementing the measures listed below. If there is a conflict between the proposed measures as set out in the information that was submitted to the Program and the following measures, the following measures shall prevail.

- Ensure a Qualified Environmental Professional (QEP) is on site for start-up and during all works with the potential to harm fish or degrade fish habitat. The QEP is required to monitor for compliance with regulations and to ensure appropriate implementation of environmental best management practices, including adherence to water quality guidelines.
- Works are to be conducted during the least risk to fish instream work window of August 01 – September 15 and, if possible, when the watercourse is dry.
- The removal of or disturbance to riparian vegetation should be kept to a minimum during the works.
- If works cannot be conducted in the dry, works are to be conducted in isolation of flow and the following measures are to be implemented:
    - For works in fish-bearing waters, an appropriately qualified professional is to conduct a fish salvage of the isolated work area. Choose low impact salvage methods such as minnow trapping and seining before opting for higher impact electrofishing. In the event that isolation is breached, stop work and repeat fish salvage efforts.
    - Dewater the isolated area gradually to reduce the potential for stranding fish.
    - Ensure pumps are screened to prevent entrainment or impingement of fish in accordance with DFO's interim code of practice for End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html).
    - When diverting creek flows, maintain an appropriate depth and flow (i.e., base flow) for the protection of fish and fish habitat, both upstream and downstream of the isolated work area.
- Given the current drought conditions, additional fish salvage/work considerations should be implemented to reduce the risk of suffocation to fish or stress from high water temperature conditions. Conduct fish salvages in the morning, handle fish for short periods of time, and avoid works in areas of cold water refugia for fish where practicable (e.g., deep shaded pools).
- All culverts installed must be sufficiently sized and embedded such that scouring of the outlet streambed does not occur as a result of increased water velocities in the culvert.
- Equipment is to be situated in the dry stream channel within the footprint of the works or operated from the top of the bank.
- For works in fish-bearing waters, fish passage is to be maintained upon completion of the works.

- Ensure that material such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse is inert and free of silt, overburden, debris, or other substances deleterious to aquatic life.
- Minimize the introduction of sediments (e.g., silts, clays and sand) into the watercourse or downstream reaches of the watercourse.
- Develop and implement an erosion and sediment control plan to avoid and minimize the introduction of sediment into or induced sedimentation in the watercourse.
- Do not deposit any substances deleterious to fish or fish habitat directly or indirectly into the watercourse or downstream reaches of the watercourse.
- Develop and implement a spill prevention and emergency response plan to avoid a spill of deleterious substances into the watercourse.
- If mitigation measures are not effective, immediately reassess and implement appropriate contingency measures to avoid death of fish, and the harmful alteration, disruption, or destruction of fish habitat.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above-mentioned prohibitions and requirements.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, the *Species at Risk Act* and the *Aquatic Invasive Species Regulations.*

It is also your Duty to Notify DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption, or destruction of fish habitat. Such notifications should be directed to the DFO-Pacific Observe, Record and Report phone line at 1-800-465-4336 or by email at DFO.ORR-ONS.MPO@dfo-mpo.gc.ca.

Please notify the Program by email at Eleanor.Willson@dfo-mpo.gc.ca at least 10 days before starting your project, ensuring your file number and appropriate on-site contact information is included. We recommend that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

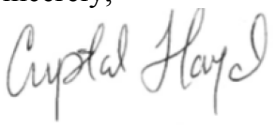
Please note that this Letter of Advice does not provide relief from the obligations set out in the government of British Columbia's Riparian Areas Protection Regulations (RAPR) and cannot be construed to provide authorization pursuant to section 3(2) of the RAPR, for any work, undertaking or activity within the Riparian Assessment Area. For more information on the RAPR, including contacts, please visit: https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/fish/aquatic-habitat-management/riparian-areas-regulation.

Please note that the advice provided in this letter will remain valid for a period of 1 year from the date of issuance. If you plan to execute your proposal after the expiry of this letter, we

recommend that you contact the Program to ensure that the advice remains up-to-date and accurate. Furthermore, the validity of the advice is also subject to there being no change in the relevant aquatic environment, including any legal protection orders or designations, during the 1-year period.

If you have any questions with the content of this letter, please contact Eleanor Willson at our Vancouver office by email at Eleanor.Willson@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Sincerely,



Crystal Lloyd
Senior Biologist
Fish and Fish Habitat Protection Program

c.c.: Ken Lambertsen, Phoenix Environmental Services Ltd., kenl@phoenixenvironmental.com

May 15, 2024 File Number: 2010276

RBD VICTORIA HOMES INC. INC.NO. BC1096064
41A-1145 Inlet Street
Coquitlam, BC V3B 6E8

Dear RBD VICTORIA HOMES INC. INC.NO. BC1096064,

Change Approval - Changes In and About a Stream (File 2010276)

A Change Approval for the above application has been granted and a *Water Sustainability Act* Section 11(1) Changes In and About a Stream Approval document verifying this is attached.

This Change Approval does not authorize entry onto private or Crown owned land. Permission of the affected landowner must be obtained and should be in writing for your protection.

This Approval does not constitute the authority of any other agency. The holder of this Approval must have the necessary permits from other agencies concerned prior to the commencement of the works authorized herein. The permit holder is required to adhere to all other applicable Provincial and Federal Regulations.

A copy of this Approval (and associated plans/drawings listed on this Approval) must be available for inspection, upon request, at any location where the authorized changes in and about a stream are being undertaken.

The holder of this Approval must advise Water Authorizations at SouthCoastWSAReporting@gov.bc.ca with the Approval number in the subject line, five (5) working days prior to commencement and five (5) working days following completion of the authorized work to facilitate the timing of auditing.

The holder of this Approval must have permits or other written consent from any affected right-of-way holders before commencing work that could affect utilities or other structures within the rights-of-way.

The holder of this Approval must take reasonable care to avoid damaging any land, works, trees, or other property and must make full compensation to the owners for any damage or loss resulting from the exercise of rights granted hereunder.

Ministry of Water, Land and Resource Stewardship
Mailing Address: 200-10428 153 Street, Surrey BC V3R1E1
Location: 200-10428 153 Street, Surrey BC V3R1E1
Phone: (604) 586-4400
Fax: (604) 586-4444
Web: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water

This Approval requires the oversight of an appropriately Qualified Professional. For the purposes of this authorization, that professional must be registered with one of the five professional regulatory bodies named under the *Professional Governance Act* of British Columbia. They must be in good standing and acting under that professional regulatory body's code of ethics and subject to disciplinary action by that professional regulatory body.

Please ensure that machinery is free of invasive plant material that could potentially be transported throughout or between sites. In addition, ensure that invasive species removed from a site are disposed of appropriately.

If land clearing is to occur within the breeding bird period (March 30 to August 16 in Zone A1, which includes the Lower Mainland and Fraser Valley), a nest survey should be conducted and a 10m no-clearing buffer placed around the nest until the nest is determined to be no longer active.

For the protection of wildlife species, the Qualified Professional is responsible for planning and implementing fish and wildlife salvages prior to any instream and riparian works. *Wildlife Act* permits must be obtained from the Ministry of Forests (https://portal.nrs.gov.bc.ca/web/client/home).

The holder of this Approval must ensure that any proposed development and/or changes do not impact traditional or special sites in accordance with the *Heritage Conservation Act* or the ability of First Nation community members to participate in traditional activities on the land and water.

Archaeological sites (both recorded and unrecorded) are protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archaeology Branch. The holder of this Approval must advise everyone who will be involved in ground-disturbance and construction that if archaeological materials are encountered, activities must be halted, and the Archaeology Branch contacted at 250-953-3334 for direction.

Section 105 of the *Water Sustainability Act* gives the recipient of this notice the right to appeal my decision. You may file an appeal within 30 days of the date indicated on this letter. Information on filing an appeal can be found on the Environmental Appeal Board website at http://www.eab.gov.bc.ca/.

If you have any questions or concerns regarding the document issued or the content of this letter, please contact the South Coast Office at WaterActReferrals.LowerMainland@gov.bc.ca.

Sincerely,

Roxanne Snook

Ministry of Water, Land and Resource Stewardship
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Senior Authorizations Specialist, Assistant Water Manager

Cc:
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City of Port Coquitlam
Musqueam Indian Band
Kwikwetlem First Nation
Ministry of Water, Land, and Resource Stewardship – Alexandra Holmes

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May 15, 2024 File Number: 2010276

APPROVAL

WATER SUSTAINABILITY ACT - Subsection 11(1)
(Changes in and about a stream)

RBD VICTORIA HOMES INC. INC.NO. BC1096064

is hereby authorized to make changes in and about a stream as follows:

a) The name of the stream is Unnamed Stream.

b) The changes to be made in and about the stream are:
   1. Create a daylit channel that connects Watkins Creek to the fish friendly culvert under Lynwood Avenue;

   2. Connect new fish friendly culvert to Watkins Creek channel connection and Unnamed Stream;

   3. Infill a maximum stream area of six hundred square metres outlined in Phoenix Environmental Services LTD: 1660 Victoria Map to Scale.dwg dated September 29, 2022, by NGL and EAL;

   4. Install a split flow manhole at the unopened section of Newberry Street to split flows between the existing channel and the new channel;

   5. Create new stream channel parallel to existing stream channel and connect streams downstream;

   6. Install new stormwater conjunction from the developed area to connect to existing stormwater system for flows to connect into Hyde Creek;

   7. Restore and plant project site in accordance with Phoenix Environmental Services LTD drawings Titled Habitat Enhancement and Restoration Plan dated February 28, 2023, prepared by NL/EL.

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All works must occur within Legal: Within Lot 48 Except: Part Dedicated Road on Plan 77115, Section 7, Township 40, New Westminster District, Plan 29352.

c) The location of the works are at the following coordinates, as provided by the applicant: 49.2851860, -122.7474230; 49.2842420, -122.7469340; 49.2839650, -122.7474710; and 49.2837230, -122.7478780.

d) The works authorized in this Approval must be completed on or before September 15, 2026.

e) All works associated with the Effectiveness Monitoring Plan, as outlined in clause (x) below, must be completed on or before December 1, 2031, seven years after the works are completed.

f) Work in the stream and stream channel must occur only during the period of the Fisheries Window based on species present, typically: August 1 to September 15, so that the fisheries interests are protected.

g) The holder of this Approval must advise the Water Authorizations at SouthCoastWSAReporting@gov.bc.ca with the Approval number in the subject line, five working days prior to commencement of the authorized work and five working days upon completion of the works authorized in this Approval.

h) All works must comply with the following documents and any minor changes hereafter. Any major changes to the design must be submitted to the Water Manager for written authorization.

1. Use Re-Issued for Tender Engineering Drawing, Titled Servicing Key Plan Number 02, version 1, dated May 02, 2024, prepared by ARB.

2. Use Re-Issued for Tender Engineering Drawing, Titled Lot Grading Plan Number 03, version 1, dated May 02, 2024, prepared by prepared by ARB.

3. Use Re-Issued for Tender Engineering Drawing, Titled Stream Plan and Profile Number 04, version 1, dated May 02, 2024, prepared by ARB.

4. Use Re-Issued for Tender Engineering Drawing, Titled Ditch-Plan Profile & X-Sec Number 05, version 1, dated May 02, 2024, prepared by ARB.

i) All work must be carried out in accordance with the Provincial "Requirements and Best Management Practices for Making Changes In and About a Stream in

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B.C." (2022). The Provincial guidance document can be found at the following link: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/working-around-water/wsa-cias-requirements-bmps.pdf.

j) The holder of this Approval must hire an appropriately Qualified Professional to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Qualified Professional is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities.

The Qualified Professional must:

1. Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on the land and on fish and fish habitat of the stream.
2. Where applicable, assist in the isolation of the stream prior to the commencement of works.
3. Implement and ensure erosion and sediment control measures are constructed, installed, and maintained appropriately for the full duration of instream works.
4. Supervise all instream works authorized under this Approval.
5. When the works involve temporary diversions to isolate the work site:
    i. Monitor all diversion works daily to ensure pumps and flow bypasses are in proper working condition;
    ii. Ensure diversion works that include pump intakes be screened for fish and aquatic species in accordance with the “Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater” (Fisheries and Oceans Canada, 2020); and
    iii. Ensure fish are prevented from entering the works.
6. When the works involve dewatering or isolation of flow and the stream is known or suspected to contain fish and/or amphibians:
    i. Attend the site prior to conducting any instream works to complete fish and wildlife search and salvage(s);
    ii. Obtain any permits needed prior to undertaking the salvage(s); and
    iii. Inspect the extraction area for fish stranding at least once after water levels have declined.
7. Be granted authority to stop the work authorized under this Approval if deemed necessary to address risks to the environment. The Qualified Professional or their designate, as specified in writing, must be on site during all phases of construction in and around the stream to ensure this component is upheld.

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8. Report any spills including detailed information such as time of day, staff involved, nature, cause, and degree of spill, recovery process deployed, and agencies notified.
9. In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, an appropriately Qualified Professional must immediately mitigate the situation. Within 48 hours, each incident must be reported to the Water Manager at SouthCoastWSAReporting@gov.bc.ca with the Approval number in the subject line. The incident report must describe mitigation measures employed and a rationale as to why works have resumed, or the next steps required before works may resume. The holder of this Approval must follow the advice of the appropriately Qualified Professional.

k) Wherever practicable, work must be carried out during favourable weather and low flow.

l) Upon commencement of the project, the work must be pursued to completion as quickly as possible.

m) All proposed works must be completed in isolation of the stream flows.

n) All equipment and machinery used in or near the stream channel must:
   1. Be in good operating condition and free of leaks, excess oil and grease;
   2. Have a spill containment kit readily accessible on-site with operators and/or staff on site trained in handling and applying a spill kit appropriately to any spills/incidents;
   3. Be refuelled a minimum of 30 metres away from all streams;
   4. Use environmentally sensitive hydraulic fluids which are non-toxic to aquatic life and which are readily or inherently bio-degradable;
   5. Any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities must be reported to the Dangerous Goods Incident Report 24-hour phone line at 1-800-663-3456.

o) Sediment and Erosion Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization. Care must be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate, or any deleterious substances. All control measures must meet or surpass the Provincial "Requirements and Best Management Practices for Making Changes In and About a Stream in B.C." (2022) and the "Land Development Guidelines for the Protection of Aquatic Habitat" (Fisheries and Oceans Canada and the Province of British Columbia, 1993).

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p) Discharge and runoff water from the site into any watercourse(s) must comply with the BC Approved Water Quality Guidelines for the Protection of Aquatic Life (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-quality/water-quality-guidelines/approved-water-quality-guidelines) and/or the applicable Local Government Bylaw(s).

Water quality monitoring must be conducted by an appropriately Qualified Professional or a designate (in writing) Environmental Monitor on every day in which instream works are being conducted. Measurements must be taken upstream of any works taking place and within the extent of the sedimentation downstream of where instream work is actively occurring. Measurements are to be taken immediately prior to works beginning, and then at regular intervals until the works are completed and may require additional frequency during wet weather conditions. Wet weather conditions will be defined as being equal to or greater than 25 millimetres of rainfall within a 24-hour period.

q) All excavated material and debris must be removed from the site or placed in a stable area above the high-water mark of the stream. Mitigative measures must be applied to protect the excavated material and debris from erosion and reintroduction into the watercourse.

r) The holder of this Approval must ensure that instream works are designed and installed so as not to restrict fish passage and/or lead to fish stranding. The works must not result in depressions that have the ability to trap fish and other aquatic life.

s) All temporary works (including a ford, stream crossing, flow bypass, and erosion and sediment control measures) must be removed on completion of the project, and the stream channel restored to its natural condition.

t) The new channel of the stream must have greater or equal hydraulic capacity than the existing channel.

u) The hydraulic capacity of installed culvert(s) must be equivalent to the hydraulic capacity of the stream channel or be capable of passing the 1 in 200-year maximum daily flow without the water level at the culvert(s) inlet exceeding the top of the culvert(s).

v) Rock used as riprap must be clean of any substances deleterious to aquatic life and must be durable, angular in shape and suitably graded and sized to resist movement by stream flow. Any other engineering material required for the construction of the works must be clean of any substances deleterious to aquatic life.

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w) The holder of this Approval must provide a detailed post-construction report no later than December 1 of the year works are completed. The report must be submitted by email to SouthCoastWSAReporting@gov.bc.ca with the Approval file number listed in the subject line of the email and the title of the report. The report must include a signed statement from an appropriately Qualified Professional summarizing:

1. The in-stream works undertaken;
2. The timing of those works;
3. The total in-stream area directly affected;
4. The volume of gravel or sediment removed (if applicable);
5. The frequency of monitoring, including the name(s) of the designated monitor(s);
6. The water quality reporting (e.g., turbidity, pH)
7. Representative site photographs;
8. Whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and
9. A description of any environmental incidents, non-compliance, or other difficulties, and how these were addressed and reported.
10. As-built drawings of the installed structures.

x) The holder of this Approval must retain an appropriately Qualified Professional to design, implement and report on the effectiveness of mitigation, restoration, and/or offsetting measures required in this Approval. This includes the monitoring and maintenance of works, and implementation of any adaptive management measures.

The effectiveness monitoring term required for this Approval is seven years following the completion of construction. Effectiveness Monitoring Reports must be submitted by December 1 of each calendar year for the duration of monitoring to SouthCoastWSAReporting@gov.bc.ca. The reports and subject line of the email must be labelled with this Approval file number.

The reports must include:

1. Documentation (including photographs) and summary of the survival of planted trees and shrubs. Tree survival rates must be 100%. Shrub and other plant survival rates must exceed 80%. Replanting may be required to achieve this success rate. If the area is susceptible to invasive species, the riparian planting plan should be modified to include a denser plant spacing as well as additional monitoring and maintenance to ensure an adequate plant survival rate of 80% can be achieved. It is recommended that trees and shrubs be protected from beavers and voles with metal fencing and vole guards, respectively. Additional watering may be required during sustained hot and dry periods.

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2. Observation and documentation (including photographs) related to flows and function of the restored or new channel and its features.
3. Seasonal observation records of fish [and amphibian] presence, including species composition and periodicity, time of year monitoring took place, and assessment of if and how the observations meet target values for that stream.
4. Assessment of fish stranding (direct observations of stranding, or potential stranding sites) within the newly constructed channel. Where stranding is, or is suspected to be, a problem, an appropriately Qualified Professional must provide solutions which are to be implemented by the holder of this Approval and described in the reports.
5. Summary detailing the monitoring, maintenance, and implementation of any adaptive management measures undertaken, such as additional channel complexing or modifications if required, to address habitat limitations such as insufficient flows, fish stranding, etc.
6. Water quality monitoring including but not limited to temperature, pH, and Dissolved Oxygen.
7. Water level monitoring (e.g., for wetlands).

The final monitoring report must include a signed statement from the appropriately Qualified Professional outlining the rationale for concluding monitoring or, if applicable, the next steps required before restoration works are considered functioning as intended. If the works are assessed to be working as intended and functional after five years, an Amendment may be submitted to terminate effectiveness monitoring. The holder of this Approval must follow the advice of the appropriately Qualified Professional.

Sincerely,

Roxanne Snook
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