

REGIONAL DISTRICT OF NORTH OKANAGAN

BYLAW NO. 2650, 2013

CONSOLIDATED FOR CONVENIENCE

This document is an office consolidation of the above-noted Bylaw and includes the amendments listed below. This Bylaw has been consolidated for convenience and is intended for information and reference purposes only. This document is not the official version of the Bylaw. Be advised that plans, pictures, other graphics or text in the official version may be missing or altered in this consolidated version. Where accuracy is critical, please contact the Corporate Services Department at the Regional District of North Okanagan.

TEXT AMENDMENTS

| Bylaw No. | Adopted | Amendment |
|-----------|--------------------|---|
| 2740 | February 22, 2017 | <ul style="list-style-type: none">– To amend provision of water service to low density developments within the GVW service area. |
| 2808 | January 23, 2019 | <ul style="list-style-type: none">– To amend the GVW Subdivision and Development Servicing Bylaw 2650 |
| 2814 | December 11, 2019 | <ul style="list-style-type: none">– To amend Section 113 (Exemptions) of the GVW Subdivision and Development Servicing Bylaw 2650 |
| 2861 | April 22, 2020 | <ul style="list-style-type: none">– To amend Section B.25.5 and B.25.9 of the GVW Subdivision and Development Servicing Bylaw 2650 |
| 3022 | October 16, 2024 | <ul style="list-style-type: none">– Add “and Risk to the System” to the title of Section 104 and add text regarding risk to the water system after first paragraph |
| 3050 | September 17, 2025 | <ul style="list-style-type: none">– To amend Section B.25.5 Water Services by deleting item 7 and replacing with “Where additional connections are requested, refer to the current RDNO Board approved GVW Permitted Maximum number of Water Services Policy. The policy is available for viewing at www.rdno.ca/gvw.” |

CONSOLIDATED FOR CONVENIENCE

REGIONAL DISTRICT OF NORTH OKANAGAN

GREATER VERNON WATER

**SUBDIVISION
AND
DEVELOPMENT
SERVICING
BYLAW NO. 2650, 2013**

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SECTION 100 – SCOPE AND APPLICABILITY

WHEREAS, Part 26 Division 11 of the *Local Government Act*, states that the Board of the Regional District of North Okanagan may, by bylaw, regulate and require the provision of works and services in respect to the subdivision of land and/or development;

AND WHEREAS the Board of the Regional District of North Okanagan wishes to ensure that subdivision and development does not result in excessive cost to the Regional District of North Okanagan to provide services;

AND WHEREAS the Regional District of North Okanagan has established the Greater Vernon Water Service through Bylaw 1262, 1994 being the “Regional District of North Okanagan – Greater Vernon Regional Water Supply Local Service Establishment Bylaw No. 1262, 1994 and amendments thereto for the purpose of providing water supply and distribution services to the Greater Vernon Water Service area.

NOW THEREFORE the Board of the Regional District of North Okanagan in an open meeting assembled, hereby enacts as follows:

101 Citation

This bylaw may be cited as “**Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013**”.

102 Definitions

In this bylaw, unless the context requires otherwise:

APPROVING OFFICER means a person appointed under the *Land Title Act*, or the *Local Government Act* of the Province of British Columbia.

BOARD means the governing and executive body of the RDNO.

BUILDING INSPECTOR means a person appointed by the RDNO as a Building Inspector, Vernon as a Building Inspector or Coldstream as a Building Inspector

BUILDING PERMIT means a building permit issued for a property by the local jurisdiction having authority to issue building permits

COLDSTREAM means the District of Coldstream.

CONTRACT ADMINISTRATOR means the Municipal Engineer or his/her duly appointed representative and shall include the Owner/Developer’s Consulting Engineer except where approvals of design drawings / as-constructed are required, then the Contract Administrator shall mean the Municipal Engineer or his/her authorized representative and where certifications / construction inspections / field reviews are required, then the Contract Administrator shall mean the Owner/Developer’s Consulting Engineer.

CONTRACTOR means the Owner/Developer or any person or persons appointed by the Owner/Developer to construct the Waterworks required by this bylaw.

CONTROLLED ACCESS HIGHWAY means a highway designated as a controlled access highway by the Province of British Columbia Ministry of Transportation and Infrastructure.

CUL-DE-SAC means a street that does not permit through traffic.

DEVELOPER means the Owner or agent acting on behalf of the Owner.

DEVELOPMENT means the alteration of land by the construction, installation, extension or alteration of any building or structure which requires a Building Permit.

DWELLING means any building.

DWELLING, SINGLE FAMILY means any building consisting of one (1) dwelling unit which is occupied or intended to be occupied as a permanent home or residence of one (1) family.

DWELLING, TWO FAMILY means any building divided into two (2) dwelling units connected by a common wall or by an adjoining ceiling/floor system each of which is occupied or intended to be occupied as a permanent home or residence of one (1) family. Two family dwellings shall be permitted to be attached by completely enclosed garages. The degree of attachment of the dwelling units shall be not less than fifty percent (50%) of the length or width of the common wall or common floor/ceiling system that is proposed to attach the dwelling units. Carports and breezeways shall not be permitted to attach the two family dwelling units.

FIELD REVIEW shall mean such reviews of the work at the project site, or at the fabrication locations, where applicable, as the Consultant, in his/her professional discretion, considers necessary in order to ascertain that the work substantially conforms in all material respects to the plans and supporting documents accepted by the Municipal Engineer. This will include keeping records of all site visits and any corrective actions taken as a result thereof.

FINAL APPROVAL means endorsement of a subdivision plan by the Approving Officer in accordance with the *Land Title Act* or *Strata Property Act*.

GENERAL MANAGER ENGINEERING means a person designated by the RDNO as the General Manager of Engineering or duly authorized representative.

GVW or GVWU shall mean the Greater Vernon Water Service as established by Regional District of North Okanagan – Greater Vernon Regional Water Supply Local Service Establishment Bylaw No. 1262, 1994 and amendments thereto.

HIGHWAY includes a street, road, lane, bridge, viaduct and any other way open to public use, but does not include a private right-of-way on private property.

INSPECTOR means any employee or designate of the Municipal Engineer to perform field reviews or approve the engineering, construction and/or installation of Waterworks.

LANE means a public way 10.0 metres (32.8 ft.) or less in width but more than 4.5 metres (14.7 ft.) in width.

MMCD means the Master Municipal Construction Document, Platinum Edition published by the Master Municipal Construction Documents Association.

MUNICIPAL ENGINEER means either of the Coldstream Director of Engineering Services, Vernon Director of Engineering & GIS or the RDNO General Manager Engineering.

NON-POTABLE WATER means water that is not potable.

OWNER/DEVELOPER means the person or persons registered in the Land Title Office as the Owner/Developer of a parcel.

PARCEL means a lot, block, bare land strata lot, or other area in which land is held or into which it is subdivided, but does not include a highway.

PARCEL LINE means a line dividing one parcel from another parcel; or from a highway; or from a natural body of water.

PARCEL LINE ADJUSTMENT means a change in boundaries between two or more parcels and no additional parcels are created but shall not include a parcel line adjustment where one of the parcels is divided by a highway, railway parcel or right-of-way or natural body of water and as a result of the boundary adjustment the portion divided by the highway, railway parcel or right-of-way or natural body of water is created as a separate parcel.

POTABLE WATER means water that is fit for human consumption as defined in the *BC Drinking Water Protection Act and Regulations*.

PROFESSIONAL ENGINEER means a person registered or licensed as such under the provisions of the *Engineers and Geoscientists Act of B.C.*

RECORD DRAWINGS means that set of drawings submitted by the Owners/Developers Consulting Engineer upon completion of the Waterworks. The Record Drawings must reflect all changes made in the specifications and the GVW Approved Design Drawings during the construction process, and show the exact dimensions, geometry, and location of all elements of the works to the UTM NAD83 (CSRS) Zone 11 coordinate system in accordance with the requirements of this Bylaw.

RDNO means the Regional District of North Okanagan.

STATUTORY RIGHT OF WAY means an easement without a designated dominant tenement registerable under section 218 of the *Land Titles Act*.

STREET includes a highway, road or cul-de-sac, but excludes a lane, trail, path, walkway, bridge, viaduct or any private access or private roadway and includes a frontage road that is adjacent to a Controlled Access Highway.

SUBDIVISION means the division of land into two or more parcels and includes a subdivision under the *Strata Property Act*.

UTILITIES means a basic service such as water, natural gas, electricity, sewage that is provided by an organization that is subject to forms of government controls and legislation.

VERNON means the Corporation of the City of Vernon.

WATERWORKS means a water utility which is required by this bylaw and is owned, or shall be owned by GVWU and without restricting the generality of the foregoing includes the supply and distribution of water, including water mains, fittings, valves, pump stations, service connections, reservoirs, control valves, fire hydrants and appurtenances.

103 Application

This bylaw applies to the lands located within the Regional District of North Okanagan – Greater Vernon Water Service Area as shown on Schedule A.

104 Compliance with Other Legislation and Risk to the System

Nothing in this Bylaw shall be taken to relieve the Owner/Developer from complying with the provisions of any other Bylaw of Vernon, Coldstream or the RDNO or applicable provincial or federal statute or regulation.

If, in the opinion of the RDNO, a development poses a significant unacceptable risk to water supply, quality, or operations, the RDNO Board in its sole unfettered discretion, may deny connection to the water system or modification of water service to a development already connected.

105 Severability

If any section, subsection, sentence, clause, or phrase of this Bylaw is for any reason held to be invalid by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Bylaw.

106 Duty of Care and Cause of Action

This bylaw does not create any duty at law on the part of the RDNO, its Board, Officers, employees, or other representatives concerning anything contained in this bylaw. All works, services, improvements, and all matters required pursuant to this bylaw are the responsibility of the Owner/Developer and all persons acting on their behalf. No approval of any kind, certificate, permit, review, inspection, or other act or omission by Vernon, Coldstream or the RDNO or any of its representatives, including any enforcement or lack of enforcement of the provisions of this bylaw, shall relieve the Owner/Developer and all persons acting on their behalf from this duty pursuant to this bylaw and shall not create any cause of action in favour of any person.

107 Measurements

Metric units are used for all measurements in this Bylaw. The equivalent of those units, in imperial measure, shown in brackets following each metric measurement, are included for convenience only.

108 Interpretation

1. Words or phrases defined in the *British Columbia Interpretation Act, Community Charter, or Local Government Act* or any successor legislation shall have the same meaning when used in this Bylaw unless otherwise defined in this Bylaw.
2. The headings contained in this Bylaw are for convenience only and are not to be construed as defining or in any way limiting the scope or the intent of the provisions of this Bylaw.
3. Any act or enactment referred to herein is a reference to an enactment of the Province of British Columbia and regulations thereto, as amended, revised, consolidated or replaced from time to time, and any Bylaw referred to herein (as may be cited by short title or otherwise) is a reference to an enactment of the Board of the RDNO, as amended, revised, consolidated or replaced from time to time.

109 Enforcement and Penalties

1. Any person who:
 - a. violates bylaw provisions;
 - b. causes or permits any act in contravention or violation of bylaw provisions;
 - c. neglects or omits bylaw requirements;
 - d. carries out, causes, or permits to be carried out any subdivision and/or development in a manner prohibited by or contrary to bylaw provisions;
 - e. fails to comply with bylaw orders, directions, or notices;
 - f. prevents, obstructs or attempts to prevent or obstruct the authorized entry of any person authorized under this Bylaw to enter upon lands;

will be guilty upon summary conviction of an offence under this bylaw.

2. Any person who violates bylaw provisions may, upon summary conviction, be liable to a maximum fine of \$5000 per offence¹, plus the cost of prosecution, for each offence. The penalties imposed under this section are a supplement to and not a substitute for any other remedy to an infraction of this bylaw. Each day of continuance of an offence under this Bylaw constitutes a new and distinct offence.
3. The Municipal Engineer or his/her designate, may order:
 - a. a person who contravenes this bylaw to comply with the bylaw within a time limit specified in the order; and/or
 - b. construction to stop on the works, or any part thereof, if such works is proceeding in contravention of this bylaw.

110 Administration

1. As a condition of the approval of a Subdivision or the issue of a Building Permit, the Owner/Developer of the land shall provide Waterworks and connect to GVW in

¹ In accordance with Section 787 of the *Criminal Code of Canada*

accordance with the standards prescribed in this bylaw and shall provide all fees and charges in accordance with the applicable RDNO bylaws.

111 Design Requirements

1. All Waterworks required for subdivision and/or development shall comply with the criteria set out in Schedule B attached hereto and forming part of this bylaw and compliance with the criteria shall be certified on engineering drawings prepared by a Professional Engineer.
2. All Waterworks which are to become the property of the RDNO, shall, unless situate upon, over or under a highway, be secured to the RDNO by a grant of statutory right-of-way in a form acceptable to the RDNO. Statutory rights-of-way shall be of the following minimum widths:

| # of Utilities in Corridor | Width of Utility Right-of-Way |
|----------------------------|-------------------------------|
| One (1) – Utility | 6.0m |
| Two (2) – Utilities | 6.5m |
| Three (3) – Utilities | 7.0m |

3. Subject to 111.2, statutory rights-of-way widths may be increased in width as determined by the Municipal Engineer to satisfy slope and access requirements, size and depth of utility.
4. A pipe corrosion report(s) shall be prepared by a professional geotechnical engineer at the Owner's/Developer's expense on prevention of corrosion of ductile iron, copper, grey iron and/or steel pipe and fittings used for construction of the waterworks unless otherwise requested by the Municipal Engineer. The corrosion report shall be subject to an engineering analysis of the potential of external pipe corrosion due to graphitization, pitting corrosion, galvanic corrosion, microbiologically influenced corrosion, corrosion due to dissimilar electrolytes and/or stray current corrosion. The report shall outline the construction methods to provide maximum corrosion protection requirements based on the latest Best Management Practices (BMP). A geotechnical report(s) may also be required for sites with adverse soil conditions, contaminated soils, groundwater, or other such conditions which, in the opinion of the Municipal Engineer or Building Inspector, require special attention. All recommendations provided in such reports shall become requirements for construction of Waterworks contained within this bylaw.

112 Servicing Requirements

1. All Waterworks required to be designed, constructed and installed at the expense of the Owner/Developer shall be designed, constructed and installed to the standards prescribed in this bylaw (before the Approving Officer approves the subdivision or the Building Inspector issues the building permit) unless the Owner:
 - a. Deposits with the RDNO a cash deposit, or an irrevocable Letter of Credit in a form prescribed in Schedule D (Form D-1) attached hereto and forms part of this bylaw (and from a financial institution, acceptable to the RDNO), in the amount of

125% of the estimated construction cost, as estimated by the Owner/Developer's Professional Engineer and accepted by the Municipal Engineer, are required for installing and paying for all Waterworks required under this bylaw; and

- b. Enters into a Servicing Agreement in the form prescribed in Schedule C attached hereto and forming part of this bylaw, with the RDNO to construct and install the required Waterworks by a specified date or forfeit to the RDNO the amount secured by the Security Deposit.
- c. Where the physical construction of part or all of the Waterworks required under this bylaw is considered by the Municipal Engineer to be premature or to create risk to public safety, then the requirement to construct will be fulfilled by the forfeiture of a cash deposit equal to 120% of the amount to construct the Waterworks based on the Owner/Developers Professional Engineer's design in accordance with this bylaw and estimated by the Municipal Engineer to cover the cost of the required Waterworks. This cash deposit will be used by the RDNO at a time in the future, chosen by the RDNO in its sole discretion, to construct such Waterworks. The Owner/Developer must enter into an "Agreement to Pay Non-Refundable Deposit" as set out in Schedule D (Form D-2) attached hereto and forming part of this bylaw.
- d. Cash deposits are required to be paid and a Servicing Agreement entered into prior to subdivision approval or issuance of a building permit.

2. Except as otherwise provided in **Section 112.12 or** Section 113 of this Bylaw, all parcels created by Subdivision including park land and all parcels on which a Development is proposed shall be provided with Waterworks in accordance with the standards and specifications set out in Schedule B attached hereto and forming part of this bylaw.
3. Where the RDNO requires that the Owner/Developer construct Waterworks that are classified as excess or extended services under Section 939 of the Local Government Act, the Board may deem the costs of these Waterworks to be excessive. In such a case, the costs of these Waterworks shall be the responsibility of the Owner/Developer and the Owner/Developer will be eligible to receive latecomer payments in accordance with Section 939 of the *Local Government Act*. Where the RDNO agrees to cost share a portion or all of the excess or extended services, then the Owner/Developer must enter into a Cost Sharing Agreement as set out in Schedule D (Form D-3) attached hereto and forming part of this bylaw.
4. Prior to the construction or installation of any Waterworks, the Owner/Developer shall submit for approval engineering drawings in accordance with Schedule B attached hereto and forming part of this bylaw. If the drawings are satisfactory, one set will be stamped "Approved/Accepted for Construction" by the Municipal Engineer and returned to the Owner/Developer. "Approved/Accepted for Construction" engineering drawings shall be valid for a period of twelve (12) months.
5. All Waterworks shall be installed by the Owner/Developer along the full frontage or the extension thereof furthest from the existing termination point of Waterworks except where it is essential that Waterworks be extended beyond the parcel to tie into RDNO water mains and/or where the Approving Officer has approved a phased subdivision with a separate plan of Subdivision required for each phase.

6. All engineering reports and/or survey information required by the Approving Officer, Municipal Engineer and/or Building Inspector shall be at the owner's expense and neither the RDNO, the Approving Officer, Municipal Engineer nor the Building Inspector shall be responsible for providing compensation.
7. Unless otherwise specifically approved by the General Manager Engineering, the RDNO will directly retain consultants for the design and construction supervision of modifications to existing or new pump stations, control stations, meter stations, and reservoirs for the RDNO's water utility. Where Developers are financially responsible for the work, they shall post adequate irrevocable letters of credit to design and construct these facilities prior to the RDNO commencing work. Similarly, contractors constructing or modifying these facilities shall also be retained directly by the RDNO.
8. Upon completion of all Waterworks, the Owner/Developer shall guarantee the Waterworks for a one (1) year period (Maintenance Period) from the date shown on the Certificate of Substantial Performance, as set out in Schedule D (Form D-4) attached hereto and forming part of this bylaw. The Owner/Developer or Contractor shall guarantee the stability and sufficiency of the materials and workmanship supplied and the whole of the works performed and shall be responsible for and shall make good all defects, imperfections, deficiencies and settlements which become apparent, during the Maintenance Period.
9. Should the Developer/Contractor fail to make good any defects, imperfections, settlements or clean-up after being given at least seven (7) days notice in writing during the Maintenance Period, the RDNO shall be entitled to make alternative arrangements for the execution of the repairs and to recover the costs from the Owner/Developer.
10. Upon expiration of the Maintenance Period and correction of all deficiencies and defects in the Waterworks, the Municipal Engineer will issue a Certificate of Total Performance as set out in Schedule D (Form D-5) attached hereto and forming part of this bylaw and release the Maintenance Period security deposit.
11. All Waterworks proposed within provincial highway rights of way must meet the specifications in the Province of British Columbia's Utility Policy Manual.

12. Notwithstanding any other provisions of this bylaw, connection to the GVW System is not permitted for the following parcels:

- (a) *in the case of Subdivision, parcels created by Subdivision where the average minimum lot size of the parcels to be created (to be determined in accordance with applicable zoning) is greater than 2.1 hectares; or*
- (b) *in the case of Development, a parcel proposed to be developed which parcel is not located within 500 m of the terminus of the existing Waterworks system as measured along the road centre line to the closest point of the parcel,*

and any Subdivision or Development of such parcel(s) shall be premised on the parcel(s) being serviced, in accordance with Regional District of North Okanagan Subdivision Servicing Bylaw No. 2600, 2013, with potable water from a source other than GVW.

113 Exemptions

Notwithstanding Sections 110, 111 and 112, exemptions to the servicing requirements are permitted as follows:

1. At the time of subdivision, the provision of new Waterworks shall not be required where:
 - a. The parcel being subdivided is zoned Non-Urban (N.U.) or Large Holdings (L.H.) in the RDNO Zoning Bylaw No. 1888, 2003 and an on-site water supply system is provided in accordance with RDNO Subdivision Servicing Bylaw No. 2600, 2013, or
 - b. The subdivision is limited to a parcel line adjustment, no additional parcels are created, each parcel is provided with a water service connection in accordance with Schedule B and the existing water service connections are not affected by the adjustment; or
 - c. The parcel being subdivided is zoned for single family residential, the subdivision creates not more than one new parcel plus the number of original parcels prior to subdivision, and the new parcel or parcels and the remainder have no further subdivision potential based on current zoning provided:
 - i. the Owner/Developer provides a non-refundable cash deposit which shall not exceed 50% of the calculated amount to construct the Waterworks adjacent to the subject property based on street frontage in accordance with Section 112.1.c.; and
 - ii. the terminus of the existing Waterworks system is greater than 200 metres measured along road center line from the closest point of the subject property,
 - iii. the Owner/Developer provides for an on-site water system in accordance with RDNO Subdivision Servicing Bylaw No. 2600, 2013,
 - iv. the owner enters into a covenant under Section 219 of the *Land Title Act* acceptable to the RDNO that requires the residence, upon completion of the GVW service installation be connected to the GVW utility.
 - d. The parcel being subdivided is proposed to have non-habitable use such as communication towers, reservoirs, pump stations, pressure reducing valve stations, relay stations, etc.
2. At the time of Development, the provision of new Waterworks shall not be required where:
 - a. The value of all construction, as determined by the Building Inspector, is less than \$50,000.00 within a five (5) year period provided the existing Waterworks have sufficient capacity based on the requirements of Schedule B attached hereto and forming part of this bylaw, for the proposed Development; or
 - b. The Development is limited to the construction or addition to a single family dwelling or the construction of a building or structure accessory to a single family dwelling provided the development is provided with a water service connection in accordance with Schedule B and existing Waterworks have sufficient capacity based on the requirements of Schedule B attached hereto and forming part of this bylaw, for the proposed development; or

- c. The parcel being developed is proposed to have non-habitable use such as communication towers, reservoirs, pump stations, pressure reducing valve stations, relay stations, etc.
3. At the time of Subdivision or Development, connection to the GVW System is not permitted where the subject property is provided a water service through a private water utility located in an area described in Schedule E.
4. At the time of Subdivision or Development, the provision of fire hydrants shall not be required in accordance with Schedule B where the parcel being subdivided or developed is located within the jurisdictional boundary of Vernon or Coldstream. Fire hydrants shall be located and placed in accordance with the requirements specified within Vernon in accordance with the "City of Vernon Subdivision and Development Servicing Bylaw No. 3843, 1992" as amended or in Coldstream in accordance with the "District of Coldstream Subdivision, Development and Servicing Bylaw No. 1535, 2008" as amended.
5. **At the time of Building Permit application, Section B.12 1 c. (minimum water main sizes) shall not apply to existing mains where all other provisions of this bylaw are met.**

114 Enactments

1. Any enactments referred to herein is a reference to an enactment of British Columbia and regulations thereto, as amended, revised, consolidated or replaced from time to time.

115 Repeal

The following bylaws are hereby repealed:

1. "*Vernon Irrigation District Subdivision Water Regulations Bylaw No. 248, 1960*" and amendments thereto; and
2. "*GVWU Waterworks Regulation Bylaw No. 2063, 2005*" and amendments thereto; and
3. "*GVWU Land Development Regulation Bylaw No. 2076, 2005*" and amendments thereto.

116 Effective Date

This Bylaw shall come into force and take effect upon the final reading and adoption thereof.

Read a First Time this 11th day of December, 2013

Read a Second Time as Amended this 18th day of June, 2014

Read a THIRD Time this 16th day of July, 2014

ADOPTED this 16th day of July, 2014

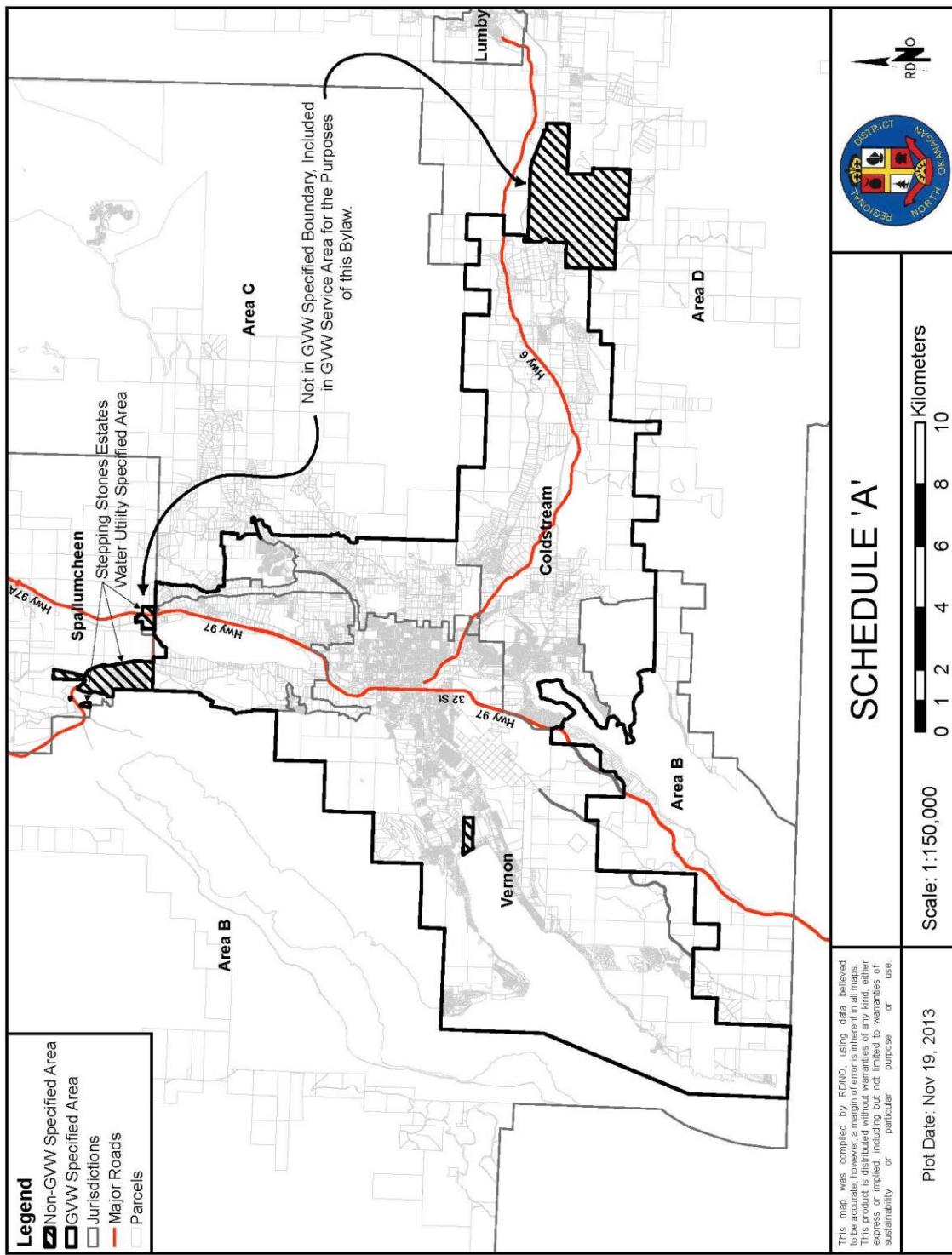
“signature on file”

Vice Chair
Rick Fairbairn

“signature on file”

Corporate Officer
David Sewell

SCHEDULE A – SERVICE AREA MAP



SCHEDULE B – DESIGN AND CONSTRUCTION STANDARDS

B.1 DESIGN AND CONSTRUCTION ADMINISTRATION

1. Where Waterworks are required in accordance with the provisions contained in this bylaw, the Owner/Developer shall appoint a qualified Professional Engineer registered with the Association of Professional Engineers and Geoscientists of BC (APEG BC) hereinafter referred to as the Consulting Engineer, to undertake all project engineering survey, design and field reviews and Record Drawings in accordance with the provisions of this bylaw. The Owner/Developer shall provide a confirmation of Professional Assurance Certificate Schedule D, (Form D-6) signed by a Professional Engineer.
2. Proof of Engineers Professional Liability Insurance (Errors and Omissions) shall be provided for all projects where the cost of the Waterworks exceeds One Hundred Thousand Dollars (\$100,000.00).
3. Review and acceptance of Engineering Plans by GVW or the Municipal Engineer does not confirm the accuracy or adequacy of the design; nor does GVW or the Municipal Engineer accept responsibility for any damages or costs incurred due to errors, omissions, or deficiencies in the design or location of any existing or new Waterworks.

B.2 DESIGN SURVEYS

1. Surveys shall be conducted in a manner so as not to create a nuisance to traffic or the general public. Approvals from member municipalities or Ministry of Transportation and Infrastructure (i.e. authority having jurisdiction) must be obtained to conduct surveys and provide traffic control measures prior to proceeding with work. The permission of registered property owners is required before entering private property.
2. All survey points shall be to the UTM NAD83 (CSRS) Zone 11 coordinate system and elevations shall be referenced to Geodetic Survey of Canada (GSC) datum.

B.3 DESIGN DRAWINGS

1. The following information, plus any additional information deemed necessary to fully describe the scope of the works and design, for both existing and proposed Waterworks, where applicable, shall be indicated on all design drawings:

| Legend | Fire Hydrants |
|---------------------------------------|--|
| Pump stations and PRV's | Prominent Features within the Right-of-Way |
| North Arrow | Air Release Valves |
| Referenced Geodetic Benchmark | Water Main Plans & Profiles |
| Legal Property Lines | Water Main Valve & Fittings |
| Lot Dimensions | Water Services & Curb Stops |
| Found Iron Pins | Blow-offs |
| Buried/Destroyed Iron Pins | Lot & Plan Numbers |
| Co-ordinates for Referenced Iron Pins | Stationing & Off-Sets |

Other information as determined by the Municipal Engineer.

2. Existing information shall be illustrated with a 0.18mm line size, and proposed construction shall be illustrated such that water main and appurtenances shall be illustrated in the largest line size and all other proposed construction works shown in a medium line size.
3. The scale of all design drawings shall be 1:500 Horizontal, 1:50 Vertical. Any deviation shall be first approved by the Municipal Engineer.
4. The Engineering Plans must include a Project Cover Sheet / Key Plan indicating the Designers Name, Address, Telephone and Fax Number, the Project Number, the Site Location, the Legal Description of the Properties involved, and an Index of the Design Drawings. Design drawings shall be organized and separate plan/profile for Waterworks, service connections and related appurtenances. The Engineering Plans shall include one (1) General Arrangement Plan that shows all utilities with the proposed waterworks shown in heavy line size (including private utility company servicing) on plan drawing.
5. All backup design calculations shall be retained by the Consulting Engineer and submitted when requested by the Municipal Engineer.

B.4 DESIGN DRAWING SUBMISSION

1. The Owner/Developer's Consulting Engineer shall use the RDNO standard AUTOCAD drawing templates, available from the RDNO at no cost.
2. The Consulting Engineer shall submit three (3) complete sets on size ANSI 'D' and one set reduced to 280mm x 430mm (11"x17") of design drawing prints, date stamped, sealed and signed by a Professional Engineer, shall be submitted for approval. All design drawings shall be submitted in the GVW standard format as shown in the Specification Drawings. The GVW has a standard digital template drawing in AUTOCAD with all the standard symbols, line types, layering conventions, etc. for preparation of the design drawings. The RDNO will make the digital templates available at www.rdno.ca or on CD-ROM.
3. Additional sets of drawings are to be submitted on request at the Owner/Developer's own cost.
4. Construction estimates for (a) off-site Waterworks and (b) on-site Waterworks shall be submitted with the design drawings. These construction estimates shall reflect current construction costs in the Greater Vernon area and shall be signed and sealed by a Professional Engineer and approved by the Municipal Engineer.

B.5 PRE-CONSTRUCTION REQUIREMENTS

1. No construction shall occur unless and until engineering drawings have been accepted by the Municipal Engineer. Such acceptance is indicated only by the signature of the Municipal Engineer or authorized delegate on the submitted design drawings. These drawings shall be referred to as the "GVW Approved Design Drawings".
2. The Owner/Developer shall provide the following documentation after acceptance of the Engineering Submission and before commencing any works as follows:

- a. A signed and sealed Servicing Agreement substantially in accordance with Schedule C where necessary.
- b. Proof of Insurance, in accordance with the terms and conditions provided in the Servicing Agreement, naming the "Regional District of North Okanagan", the "Corporation of the City of Vernon", the "District of Coldstream", and "Ministry of Transportation and Infrastructure" (MOTI), (where applicable) as 'Named Additional Insured'. The insurance provider must submit a completed Insurance Certificate (Schedule D, Form D-7).
- c. Performance Security equal to 125% of the estimated off-site servicing costs (cash or clean irrevocable letter of credit) in accordance with Schedule D, Form D-1.
- d. A copy of the WorkSafe BC 'Notice of Project'.
- e. A testing schedule for quality control of the constructed works including the name of the Testing Agency and the contact person.
- f. Outside Provincial and Federal Resource Agency approvals obtained (i.e.; Ministry of Transportation and Infrastructure, Ministry of Environment, Ministry of Health, Ministry of Forests, Lands and Natural Resource Operations, Department of Fisheries and Oceans, etc.), where applicable.

B.6 POST CONSTRUCTION AND GVW ACCEPTANCE

1. Following completion of the Waterworks, the Consulting Engineer shall submit a bound construction completion report to the Municipal Engineer that contains the following documentation:
 - a. Certificate of Inspection / Field Review signed and sealed by the Consulting Engineer and signed by the Owner/Developer in accordance with Schedule D, Form D-8;
 - b. Complete Materials and Performance Testing Report for construction of all waterworks (i.e., water system leakage and pressure test, bacteriological test results and certification in accordance with Schedule D, Form D-9). All materials testing reports shall be sealed by a Professional Engineer certifying that all works tested meet and/or exceed the requirements of this Bylaw;
 - c. Fire Hydrant Flow Test and Test Report for all new hydrants in accordance with Schedule D, Form D-10 and D-10a. The hydrant(s) must also be color coded based on the available flow and number stamped with the identification number provided by the GVW in accordance with Section B.11;
 - d. Signed releases from registered property owners of properties affected by the construction work;
2. On completion of the Waterworks the Owner/Developer shall notify the Municipal Engineer. The Municipal Engineer, upon receipt of the notice and bound completion report prepared by the Consulting Engineer, shall inspect the Waterworks and, if necessary, issue a list of deficiencies that must be corrected. If the Municipal Engineer determines the Waterworks can be put into service and are substantially complete, a Certificate of Substantial Performance (Schedule D, Form D-4) shall be dated and issued where all the monies held by the GVW shall be released, less 10% of the total cost of the Waterworks as a maintenance holdback plus two (2) times the value of any deficiencies and \$2,000.00 per sheet for submission of Record Drawings and Utility Service Cards. Upon correction of the deficiencies, to the acceptance of the Municipal Engineer, a Certificate of Completion (Schedule D,

Form D-11) shall be dated and issued and the deficiency portion of the maintenance holdback released.

B.7 RECORD DRAWINGS AND UTILITY SERVICE CARDS

1. At the conclusion of the project, and prior to release of the Owner/Developers Performance Security, the Owner/Developer shall submit two (2) paper prints of Record Drawings which have been revised, and certified, to illustrate the as-constructed works, plus a CD-ROM(s) containing the Record Drawings in AutoCAD format and Adobe Acrobat PDF format scaled to print on 11"x17" and ANSI D. The digital files shall be in structured formats and software versions that are current release or the previous release.
2. Utility Service Cards shall be submitted in accordance with Schedule D, Form D-12 indicating the exact location, and size, of the watermain and service(s), the Lot and Plan Number, the Street Name, civic address, North Arrow, Lot Lines, dimensions and bearings for each Lot created by Subdivision and/or the Development at the time of submission of the Record Drawings.
3. All Record Drawings and Utility Service Cards shall be submitted to the GVW within 90 days of issuance of a "Certificate of Substantial Performance" to the Owner/Developer, otherwise the GVW will not release the security deposit and may proceed with preparation and completion of the aforementioned information at the cost to the Owner/Developer.
4. Record Drawings shall be to the UTM NAD83 (CSRS) Zone 11 coordinate system and elevations shall be referenced to Geodetic Survey of Canada (GSC) datum.

B.8 FINAL ACCEPTANCE

1. Upon request from the Owner/Developer the Municipal Engineer will issue a Certificate of Total Performance (Schedule D, Form D.5) of the Waterworks when all deficiencies have been corrected, record drawings and utility service cards received, and the Maintenance Period outlined herein has expired.
2. Upon request from the Owner/Developer the Municipal Engineer will release the Maintenance Holdback, less the cost of any repairs chargeable to the Owner/Developer, upon issuance of the Certificate of Total Performance.

B.9 GVW SUPPLY DESIGN CRITERIA

GENERAL

1. Where the GVW water distribution system is not available and installation of an on-site (private) water supply system is permitted in accordance with this bylaw, the on-site water supply system must be provided in accordance with RDNO Subdivision Servicing Bylaw No. 2600, 2013. Where extension of or connection to GVW Water Distribution is required, extension of or connection to the GVW Water System shall be provided in accordance with this bylaw.

2. The proposed Waterworks must be designed to take into consideration water quality, reliability, looping and fire protection.

B.10 PROVINCIAL APPROVAL

1. The water main design shall conform to the requirements of the relevant Provincial Ministry.
2. The Owner/Developer shall submit a set of the water utility drawings to the relevant Provincial Ministry for a Permit issued under Section 7 of the *BC Drinking Water Protection Act* authorizing construction of the waterworks. The original of this Permit shall be submitted to the RDNO prior to commencing construction.

B.11 FIRE HYDRANTS

1. Hydrants shall be constructed in accordance with MMCD Standard Detail Drawing W4. **Pumper nozzles shall be provided with a Storz connection.** The bottom flange of the hydrant shall be located between 150mm to 200mm above final grade.
2. For subdivision and/or development not within the municipal boundaries of Vernon or Coldstream and within the GVW boundary, additional fire hydrants shall be located and spaced as follows:
 - a. Approval of plan of subdivision: fire hydrant spacing shall not exceed 150 metres in low density residential zones, 300 metres in rural zones and 90 metres in medium and high density residential zones, commercial, industrial and institutional zones.
 - b. Issuance of Building Permit: The calculation for fire hydrant spacing and the distance to the principle entrance of a building must be reasonable and practical and shall not be separated by a Controlled Access Highway for commercial, industrial or institutional development.
3. A one (1.0) metre radius clearance, free of obstructions both above ground and below ground must be provided around all fire hydrants.
4. Fire hydrant lead pipe shall be a minimum of 150mm diameter. Depth of bury shall be a minimum of 1.5 metres. A concrete wing wall shall be installed at hydrants adjacent to road cut slopes. In areas where road ditches exist, a culvert (sized for the drainage system) and a three (3) metre wide graveled pad shall be provided for foot access to the hydrant.
5. Fire hydrant bodies shall be painted canary yellow above the hydrant flange if they are installed on the combined or domestic water system. Hydrants on the non-potable irrigation system shall be painted purple above the hydrant flange. Private fire hydrants shall not be painted any of the above colors. The hydrant barrel and bottom half of hydrant flange shall be painted black.
6. Hydrant top bonnet and caps shall be painted in accordance with international standards using reflective paint according to flow rate and pressure as shown on the tables below:

Hydrant Top Bonnet Colors NFPA 291

| | |
|------------|----------------|
| Light Blue | 95 L/s or more |
| Dark Green | 65 – 94 L/s |
| Orange | 32 – 64 L/s |
| Red | Below 32 L/s |

Outlet Cap Colors

RDNO REQUIREMENT (DEVIATION FROM NFPA)

| | |
|------------|--------------------------|
| Dark Green | Over 830 kPa |
| Orange | 345 – 830 kPa |
| Red | Below 345 kPa |
| White | Non-draining |
| Black | Alarm pressure sensitive |

7. Caps may be painted in combinations of the above colors, indicating multiple conditions. All Storz ports shall remain black as provided by the supplier.

B.12 MAIN SIZING

1. The water system must be designed based on the following design parameters to provide day-to-day domestic requirements and also must provide capacity, minimum/maximum pressures and velocity specified in this Section to meet the following conditions:

- a. Maximum day demand plus fire flow,
- b. Peak hour demand, and
- c. Minimum water main sizes shall be as follows:

Residential – low and 150 mm (except for unlooped dead end medium density watermains the minimum diameter may be 100mm)

Commercial, High-Density

Residential, Institutional 200 mm

Industrial 250mm

2. Co-efficient of pipe friction: C value:

Design Computations for water distribution systems will be based on the Hazen-William's formula, with the following 'C' values:

| Hazen-Williams Coefficient | -C- |
|-----------------------------------|------------|
| Asbestos Cement | 120 |
| Cast-Iron – new unlined (CIP) | 120 |
| Cast-Iron 10 years old | 107 – 113 |
| Cast-Iron 20 years old | 89 – 100 |
| Cast-Iron 30 years old | 75 – 90 |
| Cast-Iron 40 years old | 64 – 83 |
| Cast-Iron, asphalt coated | 100 |
| Cast-Iron, cement lined | 140 |
| Cement lining | 110 – 120 |
| Concrete | 120 |
| Concrete lined, steel forms | 120 |
| Concrete, old | 100 – 110 |
| Ductile Iron Pipe (DIP) | 120 |
| Ductile Iron, cement lined | 120 |
| Polyethylene, PE, PEH | 130 |
| Polyvinyl chloride, PVC, CPVC | 130 |

3. Velocity:

The maximum allowable design velocity shall not exceed the following unless otherwise approved by the Municipal Engineer:

| | |
|---|-----------|
| Pump Supply, Reservoir and Trunk Mains | 2.5 m/sec |
| Distribution Lines | |
| - At Peak Hour Flow | 2.5 m/sec |
| - Maximum Day plus Fire Flow Conditions | 4.0 m/sec |

4. Per Capita Demand:

The following design criteria must be used for most applications. Where, in the opinion of the Municipal Engineer, the flow characteristics of the proposed Subdivision or Development are substantially different, the criteria may be modified.

| | |
|---------------------------|-------------------------------|
| Average daily flow | 700 litres/capita/day |
| Peak daily flow | 1440 litres/capita/day |
| Peak hour flow | 2160 litres/capita/day |
| | |
| Average Day Demand | 700 litres/capita/day |
| Maximum Day Demand | 1440 litres/capita/day |
| Peak Hour Demand | 2160 litres/capita/day |

Design population density:

Single Family 3.0 people/dwelling
 Multi-Family 2.0 people/dwelling

Zoning category:

Commercial 28 cu.m./ha/day
 Institutional 28 cu.m./ha/day
 Light Industrial 35 cu.m./ha/day
 Heavy Industrial 55 cu.m./ha/day

| | |
|---------------|----------------------------------|
| Agriculture | 0.78 L/s/ha |
| Sports fields | 3.12 L/s/ha (max. 70 cu.m./d/ha) |

For residential areas with an average lot area greater than 0.2 ha, the area above 0.2 ha shall have an additional design demand of 0.78 L/s/ha.

For residential areas with separate domestic and irrigation systems, the criteria for supplying domestic water to residential developments for all indoor uses shall be as follows

| | |
|--------------------|--------------------------------|
| Average Day Demand | 400 L/ca/day |
| Maximum Day Demand | 500 L/ca/day |
| Peak Hourly Demand | 2.5 times Maximum Daily Demand |

5. Water Pressure:

The water system must be designed to provide domestic water at the probable building main floor elevation on each Parcel as follows:

| | |
|--|--------------------|
| Maximum static pressure <i>*based on mid point reservoir level</i> | 1030 Kpa (150 psi) |
| Minimum static pressure <i>*based on low reservoir level</i> | 275 Kpa (40 psi) |
| Minimum system pressure at peak hour <i>*based on low reservoir level</i> | 200 Kpa (29 psi) |
| Minimum system pressure at fire flow conditions | 140 Kpa (20 psi) |

6. Fire Flow:

In separated water system areas, fire protection must be available to meet Insurers' Advisory Organization (IAO) requirements at all times of the year.

Water mains servicing fire hydrants shall be sized to provide Fire Flows in accordance with the recommendations of the Fire Underwriters Survey publication 'Water Supply for Public Fire Protection' 1999 edition. Calculations supporting the theoretical fire flow available are to be submitted with the design drawings. Fire flow requirements for a development with a sprinklered building under the Building Code may be determined in accordance with the water supply requirements in National Fire Protection Association (NFPA) 13. All fire hydrants shall be installed on a looped water system unless otherwise approved by the Municipal Engineer. Water distribution systems shall also be designed to ensure that fire flow, as required by the Insurers' Advisory Organization (IAO), is available for the required duration. Minimum available fire flow shall be calculated in accordance with the Fire Underwriters Survey (FUS). The following minimum fire flows must be met for the noted zones under Maximum Day Demand condition. The greater of these two standards shall apply, but in no case shall the minimum required fire flow be less than 60 L/s unless otherwise approved by General Manager - Engineering.

| Zone | Minimum Required Fire Flow |
|---|----------------------------|
| Detached Single Family Units (may have secondary suite) | 60 L/s |
| Low – Medium Density Multi-Family Residential | 90 L/s |
| Light Industrial, Commercial, Institutional | 90 L/s |
| High Density Residential | 150 L/s |
| Industrial | 200 L/s |

Note: The flows presented are the flows required in the water main to which the hydrant(s) or fire service is connected. Where no further extensions are possible as determined by the Municipal Engineer, watermains 100mm in diameter may be installed for domestic service on cul-de-sac roads beyond the last hydrant.

7. Water Storage

Prior to subdivision approval and/or issuance of building permit the Owner/Developer's Consulting Engineer must confirm the water storage requirements for the proposed development as follows:

a. Reservoir to be based on the formula; $A + B + C = \text{Total Storage Required}$;

$A = \text{Balancing Storage} = \text{Maximum daily water demand for service area for 6 hours;}$

$B = \text{Fire Storage} = \text{Highest fire demand for area for time span as specified by F.U.S.}$

$C = \text{Emergency Storage} = 25\% \text{ of the sum of } A \text{ and } B.$

b. Volume of reservoir may be reduced if emergency storage and fire protection can be supplied from a higher elevation reservoir. Balancing storage is to be provided at the local elevation. Water may be cascaded through no more than one pressure zone unless previously approved by the Municipal Engineer.

c. Reservoir is to be a minimum of two compartments with interconnection to promote turnover of reservoir water. Maximizing turnover of water is to be incorporated into the design. An approved baffle system is preferred but alternative mixing systems will be considered. If reservoir filling will be intermittent, such as during initial growth of the service area, additional mixing will be required.

d. A minimum freeboard of 0.3 m to be provided above high water level. This volume is not to be included in calculating the reservoir storage capacity.

e. Size and location of all reservoirs shall be subject to the approval of the General Manager Engineering.

Where the provision of water storage is required, Section 112.7 shall apply.

8. Hydraulic Network Considerations

- a. Where there is an existing hydraulic network in place, the RDNO will provide any available information for assistance in designing the network at the Owner/Developer's Cost.
- b. Depending on the complexity and extent of the proposed distribution system, the Municipal Engineer may require a hydraulic analysis design showing flows and pressures.
- c. The water system network must be looped where possible as determined by the Municipal Engineer and may necessitate the provision of statutory rights-of-way in favour of the RDNO.

B.13 LOCATION OF WATERMAINS

1. Watermains within Vernon and Coldstream shall be located at the standard offsets specified in their respective bylaws. All other watermains shall be located a minimum of 2.0m from property line. A greater offset for water mains deeper than 1.5m may be required.
2. All new watermains shall be located within a public road right-of-way except where required by the Municipal Engineer.
3. Water mains shall normally be designed to follow a straight horizontal alignment between intersections and a vertical alignment parallel to the road centerline. Curved alignments may be accepted provided that the pipe alignment is at a parallel offset with an established road right-of-way boundary. When joint deflection as permitted in the MMCD is insufficient to maintain a consistent offset following the road curvature, 5 degree bends may be utilized to follow the road curvature provided the design and as built drawings indicate the location and stationing of all bends.
4. On hill-side roads the water main shall be located on the cut side of the road in undisturbed areas unless otherwise approved by the Municipal Engineer.

B.14 DEPTH OF COVER

1. ~~The cover over any water main must not be less than 1.5m or greater than 2.5m. In the case where the minimum depths of cover can not be achieved due to a conflict and where the watermain cannot be deflected under the obstruction, and with approval from the Municipal Engineer, rigid insulation may be used to provide protection to the water main from freezing, in accordance with the DOW CHEMICAL CANADA Utility Line Insulation guidelines.~~
1. ***The cover over any watermain must not be less than 1.5 m and must not be greater than 2.5 m, OR in the case where the minimum depths of cover cannot be achieved, and with approval from the Municipal Engineer, rigid insulation may be used to provide protection to the watermain from freezing, in accordance with the DOW CHEMICAL CANADA Utility Line Insulation guidelines.***
2. ***The above provisions also apply to the space between a watermain and an air space that may freeze, such as from inside a culvert or a storm main.***

B.15 PIPE GRADE

1. Water mains must be designed with a rising grade (minimum 0.1%) wherever possible, to minimize high points in the main. Where a high point is unavoidable, an air release valve must be installed in accordance with Section B.19.1.
2. Where the slope of water main exceeds 15%, the design must provide for proper anchorage of the pipe in accordance with MMCD Drawing No. G8.
3. Where the slope of the watermain exceeds 30% the design must be reviewed for slope stability and where, in the opinion of the Municipal Engineer, the possibility of a landslide exists, geotechnical studies shall be completed in accordance with the "Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia" published by APEG BC.

B.16 CLEARANCE

1. ~~At all locations, there must be a minimum lineal horizontal clearance of 1 meter between the water main and other existing or proposed surface and underground services or open ditches, except a minimum horizontal clearance of 3 m must be maintained between the water main and sanitary sewers, non-potable watermains and/or storm drains, or where this is not possible as determined by the Municipal Engineer in accordance with Ministry of Health requirements.~~
2. ~~Where it is necessary for the water main to cross under other underground services, the crossing must be made at an angle greater than 45 degrees horizontal. The vertical clearance between pipes at the crossing point must be a minimum of 300 mm or as approved by the Municipal Engineer in accordance with Ministry of Health requirements. The drawings must indicate whether the water main passes over or under other underground services which it is crossing. Wherever possible, the water main is to pass over sanitary and/or storm sewer and non-potable water supplies.~~
1. *In order to retain the structural integrity from the minimum H20 highway design loading on the pipe/soil system, and to allow adequate room for construction and/or repair, the following apply:*
 - a. *At all locations, there must be a minimum horizontal clearance of 1 meter between the watermain and other existing or proposed surface or underground services or open ditches, except a minimum horizontal clearance of 2 m between raw watermains and 3 m must be maintained between the watermain and sanitary sewers, non-potable watermains and/or storm drains, or where this is not possible as determined by the Municipal Engineer.*
 - b. *Where it is necessary for the watermain to cross under other underground services, the crossing must be made at an angle greater than 45 degrees horizontal. The vertical clearance between pipes at the crossing point must be a minimum of 300 mm or as approved by the Municipal Engineer. The drawings must indicate whether the watermain passes over or under other underground services which it is crossing. Wherever possible, the watermain is to pass over sanitary and/or storm sewer and non-potable water supplies.*

c. All conditions above are subject Section B.10.

B.17 PVC WATER MAIN PIPE COLOUR

1. Potable water main pipe and service connections (where material type permits) will be standard Blue.
2. Non-potable water main pipe and service connections will be standard White.

B.18 GATE VALVES

~~In general, gate valves must be located as follows:~~

- ~~1. In intersections, in a cluster at the pipe intersection or at the projected property lines, to avoid conflicts with curbs and sidewalks:~~
 - ~~a. 4 gate valves at "X" intersection~~
 - ~~b. 3 gate valves at "T" intersection~~
 - ~~c. 1 gate valve on all branch line connections~~

~~Or as directed by the Municipal Engineer, in order to allow for the isolation of specific sections of the main.~~

- ~~2. Gate valves shall be installed not more than 200 m apart for single family residential. All property zoned other than single family residential require special designs and valve spacing must not exceed 200 m.~~
- ~~3. Gate valves shall be installed in locations and at a frequency so that not more than one hydrant is out of service when a section of the main is turned off for maintenance or repair.~~
- ~~4. An exclusive gate valve for each hydrant, flanged to the watermain, tee.~~
- ~~5. Valves must be the same diameter as the main up to 300mm diameter. Gate valves must be used up to and including 300mm diameter. Direct bury butterfly valves with gear operators will be allowed in mains larger than 300 mm.~~
- ~~6. A gate valve must be provided at each end of a statutory right of way, railway crossing and/or controlled access highway crossings.~~

In general, isolation valves must be located as follows:

- 1. In intersections, at the projected property lines in areas having curb and gutter cross-section and in clusters in more rural areas without curb and gutter cross-section:*
 - a. Four (4) isolation valves at "X" intersection*
 - b. Three (3) isolation valves at "T" intersection*

c. One (1) isolation valve on all branch line connections

Or as directed by the Municipal Engineer, in order to allow for the isolation of specific sections of the main.

2. *Isolation valves shall be installed not more than 200 m apart for single family residential. All property zoned other than single family residential require special designs and valve spacing must not exceed 200 m.*
3. *Isolation valves shall be installed in locations and at a frequency so that not more than one (1) hydrant is out of service when a section of the main is turned off for maintenance or repair.*
4. *An exclusive isolation valve for each hydrant on the hydrant lead, flanged to the watermain tee unless otherwise approved by the Municipal Engineer.*
5. *Valves must be the same diameter as the main up to 325 mm diameter. Gate valves must be used up to and including 300 mm (12") diameter. Direct bury butterfly valves with gear operators may be allowed in mains larger than 325 mm. Isolation valving on mains 400 mm diameter and larger may require a smaller main valve bypass line with separate isolation valves to assist in opening and closing the main valve.*
6. *An isolation valve must be provided at each end of a statutory right-of-way, railway crossing and/or controlled access highway crossings.*

B.19 AIR VALVES

1. Air release valves designed for the main size shall be installed at all high points of watermains and located off the travelled portion of the highway.

B.20 BLOW-OFFS

1. Blow-offs are required at the terminal ends of all water mains whether permanent or temporary, in order to achieve scouring velocities resulting in proper flushing.
2. Every 100 - 150mm watermain that terminates without looping must come with a 50mm blow-off assembly as per MMCD standard detail drawing W8. All watermains that are 200mm and larger with a terminating end must come with a 100mm or larger blow assembly as per MMCD standard detail drawing W9 as determined by the Owner/Developers Consulting Engineer and approved by the Municipal Engineer.
3. Where practical, and with the approval of the Municipal Engineer, hydrants may also be used in a secondary role as a blow-off.

B.21 THRUST BLOCKING

1. ~~Concrete thrust blocking and/or adequate joint restraining devices must be provided at bends, tees, wyes, reducers, plugs, caps, valves, hydrants and blow-offs. All joint restraining devices shall include additional cathodic protection and coatings to ensure the restraining device has a life expectancy greater than the watermain and fitting. Subject to approval by the Owner/Developers Consulting Engineer, 5 degree bends may be constructed without thrust blocking and/or joint restraining devices. The restraining device system must take into account potential future excavations of the road in the vicinity of the water main.~~
2. ~~Provide the Municipal Engineer, when required, with engineered calculations for the thrust block design, based on fitting type, design, water pressure and soil bearing capacity.~~
 1. ***Cast-in-place concrete thrust blocking and/or joint restraining systems must be provided at bends, tees, wyes, reducers, plugs, caps, valves, hydrants and blow-offs, and other locations where differential thrust occurs. Thrust blocks are preferred over joint restraints and shall be designed in accordance with AWWA Manual M11.***
 2. ***All joint restraining devices shall include additional corrosion protection (in addition to epoxy coatings) so that the restraining device has a life expectancy greater than the watermain and fitting.***
 3. ***Subject to approval by the Owner/Developer's Consulting Engineer, five (5) degree bends may be constructed without thrust blocking and/or joint restraining devices. The restraining device system must take into account potential future excavations of the road in the vicinity of the watermain.***
 4. ***Provide the Municipal Engineer, when requested in writing, with engineered calculations for the thrust block design, based on fitting type, design, water pressure and soil bearing capacity.***

B.22 MAIN

1. Water main pipe shall be designed to accommodate 1.5 times the maximum projected working pressure for the applicable pressure zone at the lowest point.
2. Regardless of static main pressure all services shall be protected with a pressure reducing valve within the structure on private property at the Owner/Developer cost.

B.23 MAIN LOOPING

1. Water mains shall be looped or interconnected at a maximum of 200 metre intervals unless it is a temporary situation and the watermain will be extended by future Subdivision or Development and approved by the Municipal Engineer.
2. ~~Where it is not feasible to loop a water main as required above, the Owner/Developer's Consulting Engineer shall design a water quality loop or flushing system to the satisfaction of the Municipal Engineer.~~
2. *Where it is not feasible to loop a watermain as required above, the Owner/Developer's Consulting Engineer shall design a water quality loop or automatic flushing system to the satisfaction of the Municipal Engineer. The automatic flushing system may require a sampling station where required by the Municipal Engineer.*

B.24 WATER SYSTEM CORRIDORS THAT REQUIRE STATUTORY RIGHTS-OF-WAY

1. When the Waterworks are required to cross private land(s), the statutory right-of-way must be of sufficient width to repair or replace the utility line without the use of caging or shoring.
2. When a utility is located within a statutory right-of-way; manholes, valve chambers, or other appurtenances which require maintenance are located within the statutory right-of-way; the Municipal Engineer may require road access be constructed from a municipal road for maintenance vehicles. The maintenance access must be adequate to support the maintenance vehicles for which the access is intended.

B.25 WATER SERVICES

1. Water services to single family dwellings and each unit of a two family dwelling shall be no less than 19mm diameter, installed and located in accordance with MMCD Standard Detail Drawing No. W2a.
2. Water services to all other development shall be sized in accordance with the current edition of the British Columbia Building Code.
3. Services and curb stops must have a minimum cover of 1.5m and curb stops must be no deeper than 2.0m below final grade.
4. Water services shall not be connected to watermains located in statutory rights-of-way that have been designed for looping water systems, unless otherwise approved by the Municipal Engineer.
5. ~~Water meters are required for all Development (including single family and two family dwellings). Water meters must be located within 0.5 m of the entrance through the building foundation wall or floor slab. See RDNO Standard Detail Drawing 05 – Typical Water Meter Installation in Building.~~

5. **Water meters are required for all Developments as per the Greater Vernon Water Metering Bylaw. This requirement may be varied by the Board for Industrial, Commercial and Institutional properties.**
6. ~~Only one water service connection will be permitted per legal lot, including single family residential, multi family sites, mobile home parks, institutional, commercial and industrial developments, except the Owner/Developer may provide separate water services and water meters to each single family unit that is developed in accordance with the *Strata Property Act* provided all units in the development are ground-oriented. Refer to MMCD Standard Detail Drawing W2a. Strata developments and other major developments will be permitted only one connection unless otherwise approved by the Municipal Engineer where site conditions warrant additional connections, fire flow requirements or where a single service is not practical.~~
6. **Only one water service connection will be permitted per parcel, including single family residential, strata developments, multi-family sites, mobile home parks, institutional, commercial and industrial developments.**
7. ~~Where additional connections are requested, refer to RDNO Policy ENG-WTR-001 which was approved by the Board of Directors on October 17, 2012. Policy is available for viewing at www.rdno.ca.~~
7. **Where additional connections are requested, refer to the current RDNO Board approved Greater Vernon Water Permitted Maximum Number of Water Services Policy. The policy is available for viewing at www.rdno.ca/gvw.**
8. ~~GVW will supply all water meters, complete with remote reader and strainer at the full cost to the Owner/Developer.~~
9. ~~All domestic water and irrigation water use are to be metered separately. Water for fire hydrants, fire sprinklers or other fire control facilities may not require metering as approved by the Municipal Engineer.~~
8. **Metering requirements for fire hydrants, fire sprinklers and other fire control facilities will be installed as per the Greater Vernon Water Metering Bylaw.**
9. Water service connections for fire hydrants, fire sprinklers or other fire control facilities shall be sized appropriately. The Owner/Developer's Consulting Engineer shall ensure the existing municipal water distribution system is adequate under maximum day demand for the fire flow and residual pressure design requirement at the point of connection. **A separate unmetered line (after the water service) may be used for fire hydrant supply where a detector check valve connected to RDNO's remote reader is provided immediately downstream of the branch tee on the hydrant line provided there is adequate backflow protection as per the RDNO Cross Connection Control Regulation Bylaw No. 2651, 2014.**

~~Where there is more than one dwelling per legal lot and the length of service is greater than 50 metres, or in other site specific cases as determined by the Municipal Engineer, a meter vault will be required on the Owner/Developer's property within one meter of property line at the Owner/Developer's cost.~~

10. Backflow prevention is required in accordance with Regional District of North Okanagan Cross Connection Control Regulation Bylaw No. 2651, 2014.

11. All water services shall be connected to the watermain in the adjacent road right-of-way. Water services that cross adjacent private property must be protected by easements registered at the Land Titles Office and are subject to the approval of the Municipal Engineer.

B.26 APPROVED STANDARD MATERIALS

| Section | Item | Size | Approved Product / Material – Type | Conforming to Standard | Other Requirements |
|---------|---------------------------|----------------|--|----------------------------------|---|
| 2.0 | Fire Hydrants | | Terminal City C71P Clow Canada M93 Brigadier Mueller Canada, Century | AWWA Standard Specification C502 | |
| 5.0 | Joint Restraints | | EBBA Iron Uni-flange | ASTM A536 | Equivalents as approved by the GM Engineering |
| 6.0 | Service Box | 19mm to 38mm | Mueller A726 Trojan VSB1 | | Complete with threaded galvanized riser and stainless steel rod & cotter key. |
| | | 50mm or Larger | Mueller A728 | | |
| 7.0 | Service Connection Pipe | | MuniCipex – Polyethylene blue dye UV coated | CSA B137.5 | |
| | | | Type K annealed copper tubing | ASTM B88M | |
| | | | Class 200 SDR9 Polyethylene Municipal tubing | AWWA C901, CSA B137.1 | |
| 8.0 | Service Connection Saddle | | Mueller Cambridge Robar 2706 | | Bronze (No Galvanized) Double Stread Equivalents as approved by GM Engineering |
| 9.0 | Valve Boxes | | | | Nelson Type |
| 10.0 | Air Release Valves | Minimum 25mm | Valmatic Cla-Val Apco ARI | | Equivalents as approved by GM Engineering |
| 12.0 | Valves, Corporation stops | | Mueller 300 Cambridge | | Ball valves only |
| 130. | Valves, Curb Stop | 19 – 50mm | Mueller 300 Cambridge | | Ball valves only Equivalents as approved by GM Engineering |
| 14.0 | Valves, Stop for blow-off | Minimum 50mm | Mueller 300 Cambridge | | Ball valves only Steel Body Non Draining Valve Powder Coated 2" nut Equivalents as approved by the GM Engineering |
| 15.0 | Vault, Air Release Valve | 24 inch Frame | West View Sales Model TR40 | | Equivalents as approved by GM Engineering |

B.27 CONSTRUCTION SPECIFICATIONS - MMCD

1. All Waterworks shall be completed in accordance with the Platinum Edition Volume II of the MMCD excluding Instructions to Tenderers and General Conditions as amended from time to time, which shall form part of this Bylaw, unless specifically modified herein.

B.28 SUPPLEMENTAL SPECIFICATIONS TO MMCD

1. The supplemental specifications are to be applied in conjunction with the Specifications of the Master Municipal Construction Document (MMCD), both of which shall apply to all Waterworks to be constructed in accordance with this bylaw. The following Supplemental Specifications supplement or supersede the (MMCD). Where the RDNO Supplemental Specifications are in conflict with the MMCD, the RDNO Supplemental Specifications shall take precedence.
2. Section number and clause numbers in the RDNO Supplemental Specifications coincide with the MMCD numbering protocol.

The following exceptions apply to MMCD Section 33 11 01 - Waterworks

| SECTION | SUB SECTION | SUPPLEMENTARY SPECIFICATIONS |
|---|--|--|
| 1.0 General | 1.0.3 | <p>Add new paragraph as follows:</p> <p><i>A list of approved waterworks products is provided by the Regional District of North Okanagan (RDNO)</i></p> |
| 1.5 Shop Drawings and Technical Data | 1.5.1 | <p>Delete in its entirety and replace with the following:</p> <p><i>Shop Drawing and technical data are required for valve chambers, meter chambers, valve stations, pump stations, and reservoirs.</i></p> |
| 1.6 Record Drawings | 1.6.1 | <p>Add the following:</p> <p><i>Record Drawings to conform to Section B.3.1</i></p> |
| 2.2 Mainline Pipe, Joints and Fittings | 2.2.1 Ductile Iron Pipe | <p>Add the following:</p> <p><i>.3 Wrap: Ductile iron pipe to be installed with a polyethylene encasement conforming to AWWA C104, unless the Consulting Engineer has arranged suitable testing of the soil conditions to satisfy the RDNO that there is no risk of accelerated corrosion.</i></p> |
| | 2.2.2.2 Polyvinyl Chloride (PVC) Pressure Pipe | <p>Delete in its entirety and replace with the following:</p> <p><i>Joints: It is mandatory that AWWA C900 and C905 PVC push on pipe be integrally thickened bell and spigot type conforming to ASTM D3139 Clause 6.2 with single elastomeric gasket to ASTM F477</i></p> |
| | 2.2.3 High Density Polyethylene Pipe | <p>Delete entire section in its entirety and replace with the following:</p> <p><i>High Density Polyethylene Pipe to be installed only where approved by the General Manager Engineering</i></p> |
| | 2.2.4 Fittings | <p>.14 Tapping sleeves for branch connections 75 mm and larger:</p> <p>Delete the following sections in their entirety (not permitted)</p> <p>2.2.4.14.2 (not permitted)</p> <p>2.2.4.14.3 (not permitted)</p> |
| 2.3 Valves and Valve Boxes | 2.3.2 Mainline Gate Valves | <p>2.3.2.7 – Delete in its entirety and replace with the following:</p> <p><i>Acceptable manufacturers are as specified in the Approved Products list.</i></p> |
| | 2.3.3 Mainline Butterfly Valves | <p>Delete in its entirety and replace with the following:</p> <p><i>Mainline butterfly valves: Butterfly valves: may only be installed on mains greater than 300 mm, to AWWA C504 Class 150B.</i></p> |
| | 2.3.5 Air Release, Air/Vacuum and Combination Air Valves | <p>.1 Delete in is entirety and replace with the following:</p> <p><i>.1 high strength composite material (nylon/plastic) body</i></p> |
| | 2.3.6 Mainline Valve Boxes | <p>2.3.6.1.1 – Delete in its entirety</p> <p><i>Not permitted</i></p> |
| | 2.3.7 Service Valve Boxes | <p>2.3.7.1 to 2.7.7.4 inclusive: add to reference (300 mm from property line or as approved by the General Manager Engineering)</p> |
| 2.4 Valve and Large Meter Chambers | 2.4.2 | <p>Add to sentence: Section 112.7</p> <p><i>All other vaults, valves, and chambers and meter chambers approved</i></p> |
| 2.6 Hydrants | 2.6.1.6.2 | <p>Delete in its entirety</p> |

| SECTION | SUB SECTION | SUPPLEMENTARY SPECIFICATIONS |
|--|--------------|--|
| | 2.6.1.6.3 | Delete in its entirety and replace with the following: <i>Pump nozzle to be "quick connect" STORZ type.</i> |
| | 2.6.2 Colour | 2.6.2 – Delete in its entirety and replace with the following: <i>All fire hydrants are to be painted in accordance with Section B.11 of this bylaw.</i> |
| 2.7 Underground Service Line Valves and Fittings | | 2.7.1 – Delete in its entirety and replace with the following: <i>Underground service line valves and fittings 19 to 50 mm to AWWA C800 suitable for 1035 kPa (150 psi) working pressure, or greater where required.</i> |
| 3.3 Trenching | | 3.3.3 – Delete in its entirety and replace with the following: <i>Trench depth to provide cover over pipe of not less than 1.5 m from finished grade unless shown otherwise on Contract Drawings</i> |
| 3.6 Pipe Installation | 3.6.1 | - amend the section to add the following text to .1: <i>Unless otherwise approved by the Municipal Engineer, all pipe to be delivered from the manufacturer with weather proof plugs/bagging to prevent contamination while being delivered and during storage. Pipe to remain this way until placed into trench and installed.</i> |
| | 3.6.15 (new) | 3.6.15 – Add the following: <i>Marking tape labeled WATERWORKS is to be placed at a depth of 0.45m below finished grade above all pipes in statutory rights-of-way and above all pipe installed with variable offset in road rights-of-way.</i> |
| 3.7 Valve Installation | 3.7.2 | 3.7.2 - Delete in its entirety and replace with the following: <i>Support valves located in valve boxes by means of concrete blocks, located between valve and solid ground. Maximum length of pipe on each end of valve to be 1 m. Valves not to be supported by pipe.</i> |
| 3.12 Hydrants | 3.12.7 | The Consulting Engineer, or RDNO at the Owner/Developer's cost must complete a hydrant flow test on all new hydrants in accordance with NFPA 291 and submit |
| 3.17 General Procedure Flushing, Testing and Disinfection | 3.17.4 | Delete in its entirety and replace with the following: <i>If the discharge water is to be released into a watercourse, storm drain, or body of water, then it shall be treated to reduce the concentration of Total Residual Chlorine (TRC) below the levels established by the Government of British Columbia Ambient Water Quality Criteria for Chlorine. At no time shall water from the GVW community water system be released into the environment with a TRC concentration greater than 0.1 mg/L.</i> |
| | 3.17.7 (new) | Add the following: Leakage tests shall not be performed against a valve connected to the existing GVW System. Add the following: <i>Leakage tests may be allowed against a closed valve connected to the existing system under certain pre-approved conditions. The Owner/Developer's Consulting Engineer must provide a written Flushing, Testing and Disinfection Plan to the Municipal Engineer and must receive the Municipal Engineer's written approval prior to proceeding with flushing, testing and disinfection of the watermains.</i> |

| SECTION | SUB SECTION | SUPPLEMENTARY SPECIFICATIONS |
|---|--------------|--|
| 3.20 Disinfection, General | 3.20.2 | Delete in its entirety and replace with the following: <i>Disinfect and flush pipes and appurtenances in accordance with section 3.21, AWWA C651.</i> |
| | 3.20.3 (new) | Add the following: <i>Disinfect and flush water reservoirs and appurtenances in accordance with AWWA C652.</i> |
| 3.21. Disinfection and Flushing Procedures | 3.21.2 | Delete the first sentence of the paragraph and replace with the following: Retain water containing not less than 25 mg/L free chlorine and not more than 150 mg/L free chlorine in water system for a period of at least 24 h, in accordance with AWWA C651, Continuous Feed Method. |
| | 3.21.8 | Delete and replace with the following text: ...until chlorine concentration in the remaining water is less than 0.3 mg/L "or equal to or less than the chlorine concentration of the water being used for flushing". |
| 3.23 Connections to Existing Mains | | Delete and replace with the following text: <i>Replace with: The Consulting Engineer shall submit a separate form (provided by the RDNO) for the results of the leakage, disinfection and bacteriological test. In addition, the bacteriological forms must be accompanied by the lab results indicating that a tamperproof seal was placed on the bacterial sample bottles. The original forms must be sent to the Municipal Engineer. When the Municipal Waterworks Crews receive connection approval from the Municipal Engineer, connection of the newly constructed water system to the GVW system can be completed.</i> |
| | 3.23.2 (new) | Add the following: <i>Make connection (or disconnection) in presence of water staff. Provide Municipal Engineer two (2) full working days' notice to schedule procedure.</i> |
| | 3.23.3 (new) | The Owner/Developer will be required to provide written notification to customers when there is any planned interruption to water service to perform works, and a minimum of 24 hours prior to a service interruption. All notices provided to property owners must first be approved by the Municipal Engineer. |

The following exceptions apply to MMCD Drawing Index - Waterworks

| Drawing No. | Description | SUPPLEMENTARY SPECIFICATIONS |
|-------------|--|--|
| W0 | Drawing Index | <p><i>Insert the following after W10</i></p> <p>RDNO-01 - Air Valve Chamber RDNO-02 - Highway / Railway Crossing RDNO03 - U-Bend Detail RDNO-04 - AC Pipe Crossing RDNO-05 - Typical Water Meter Installation in Building RDNO-06 - Typical Outdoor Water Meter Pit RDNO-07 - Typical Outdoor Meter Box RDNO-08 - Typical Irrigation Service RDNO-09 - Watermain Anchors</p> |
| W2a | Water Service Connection – Service Box | <p>1. <i>Minimum depth = 1500</i> 2. <i>Maximum depth = 2000</i> 3. <i>Delete words "Direct tap permissible for 19 Dia. And 25 Dia service off ductile iron main"</i> 4. <i>Note 2 – delete in its entirety and insert the following: PVC Pipe: Saddles to Section 33 11 01</i> 5. <i>Add Note 7: Pex pipe to be capped at end of service</i></p> |
| W2b | Water service Connection – Valve Box | <i>Delete in its entirety</i> |
| W2c | Meter Installation for 19mm and 25mm Service Connections | <i>Delete in its entirety</i> |
| W2d | Meter Installation for 38mm and 50mm Service Connections | <i>Delete in its entirety</i> |
| W4 | Fire Hydrant Installation | <p>1. <i>Minimum depth = 1500</i> 2. <i>Maximum depth = 2000</i></p> |
| W5 | Test Point Installation | <i>Delete words "Direct tap permissible off ductile iron main"</i> |
| W6 | Air Valve Assembly – 25 and 50mm valves | <i>Delete in its entirety</i> |
| W7 | Air Valve Assembly – 100mm valves | <i>Add Note 2 – Install minimum 100 rigid Styrofoam insulation above air valve</i> |
| W9 | Blow – Down Chamber | <i>Add Note 4. – The Blow-Down Chamber to connect to a dechlorination manhole, see W10</i> |
| W10 | Waterworks Chamber Drain | <i>Add Note 5. – The manhole to include a stainless steel wire mesh basket for sodium thiosulfate pucks</i> |
| RDNO-01 | Air Valve Chamber | <i>Drawing Inserted</i> |
| RDNO-02 | Highway/Railway Crossing | <i>Drawing Inserted</i> |
| RDNO-03 | U-Bend Detail | <i>Drawing Inserted</i> |
| RDNO-04 | AC Pipe Crossing | <i>Drawing Inserted</i> |
| RDNO-05 | Typical Water Meter Installation in Building | <i>Drawing Inserted</i> |

| Drawing No. | Description | SUPPLEMENTARY SPECIFICATIONS |
|-------------|--|------------------------------|
| RDNO-06 | Typical Outdoor Water Meter Pit | <i>Drawing Inserted</i> |
| RDNO-07 | Typical Outdoor Water Meter Box | <i>Drawing Inserted</i> |
| RDNO-08 | Typical Irrigation Service 38mm – 75mm | <i>Drawing Inserted</i> |
| RDNO-09 | Watermain Anchors | <i>Drawing Inserted</i> |

B.29 RDNO STANDARD DETAIL DRAWINGS

RDNO-01 – Air Valve Chamber

RDNO-02 – Highway/Railway Crossing

RDNO-03 – U-Bend Detail

RDNO-04 – AC Pipe Crossing

~~RDNO-05 – Typical Water Meter Installation in Building~~

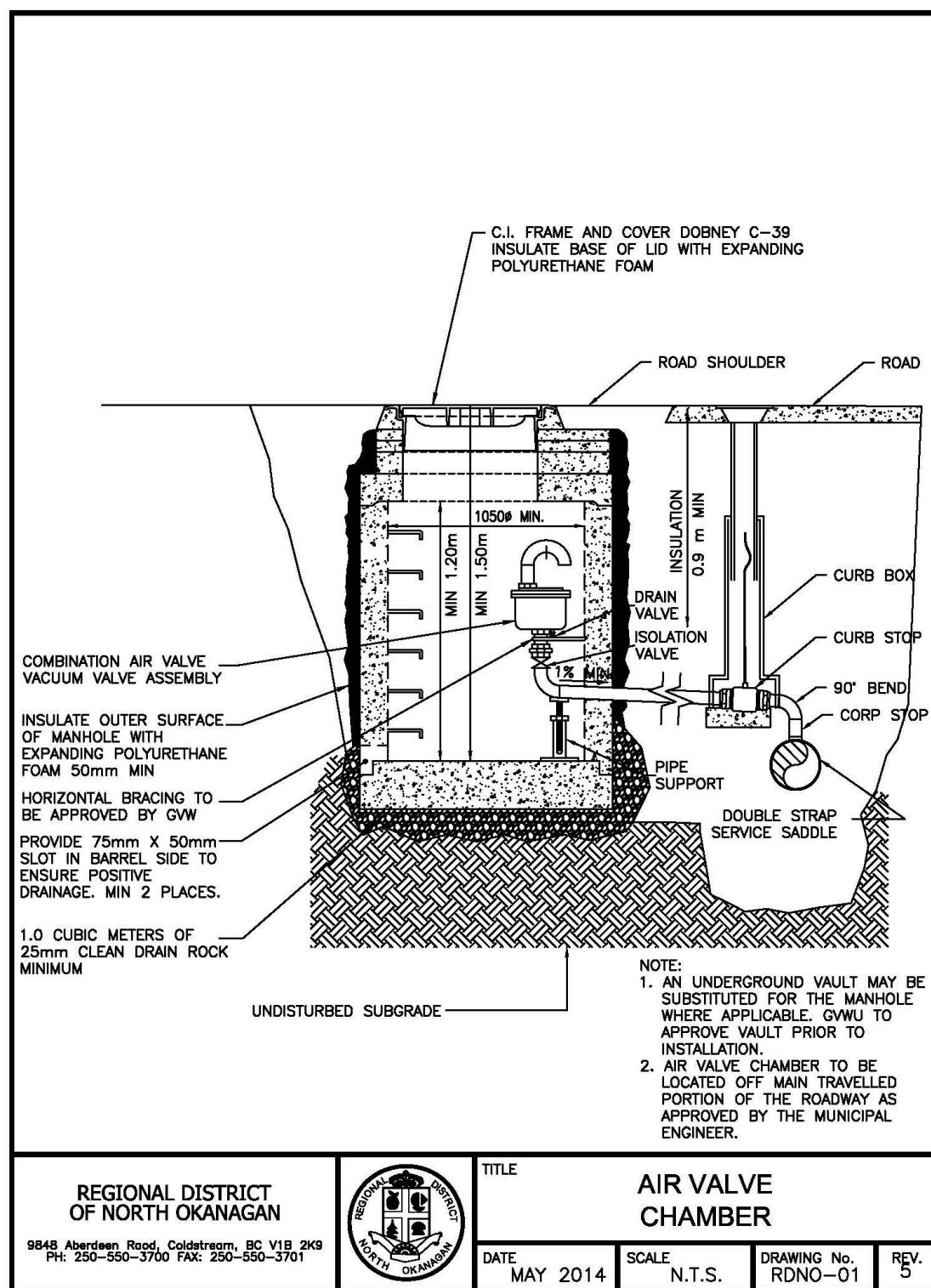
~~RDNO-06 – Typical Outdoor Water Meter Pit~~

~~RDNO-07 – Typical Outdoor Water Meter Box~~

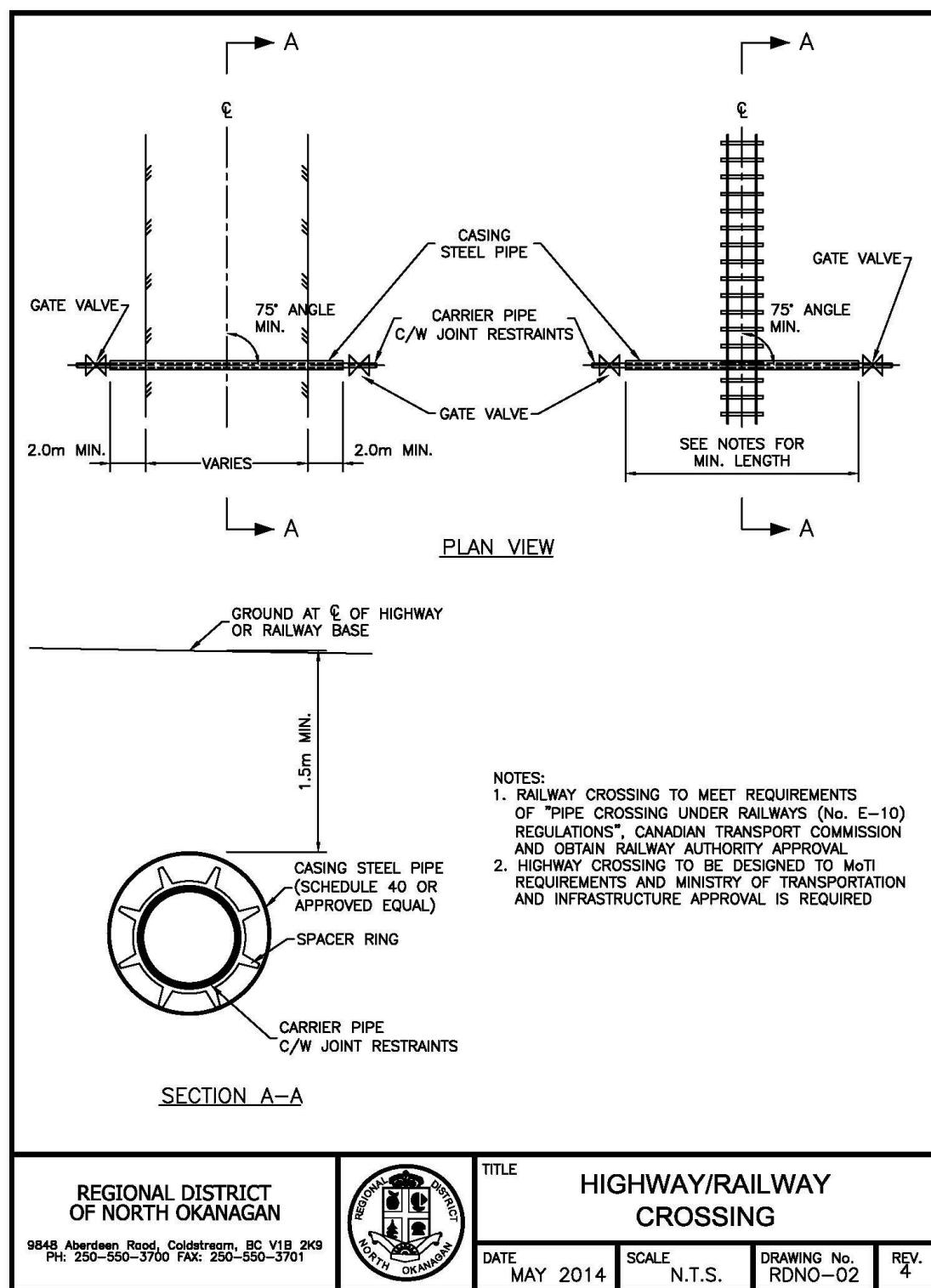
RDNO-08 – Typical Irrigation Service – 38mm – 75mm

RDNO-09 – Watermain Anchors

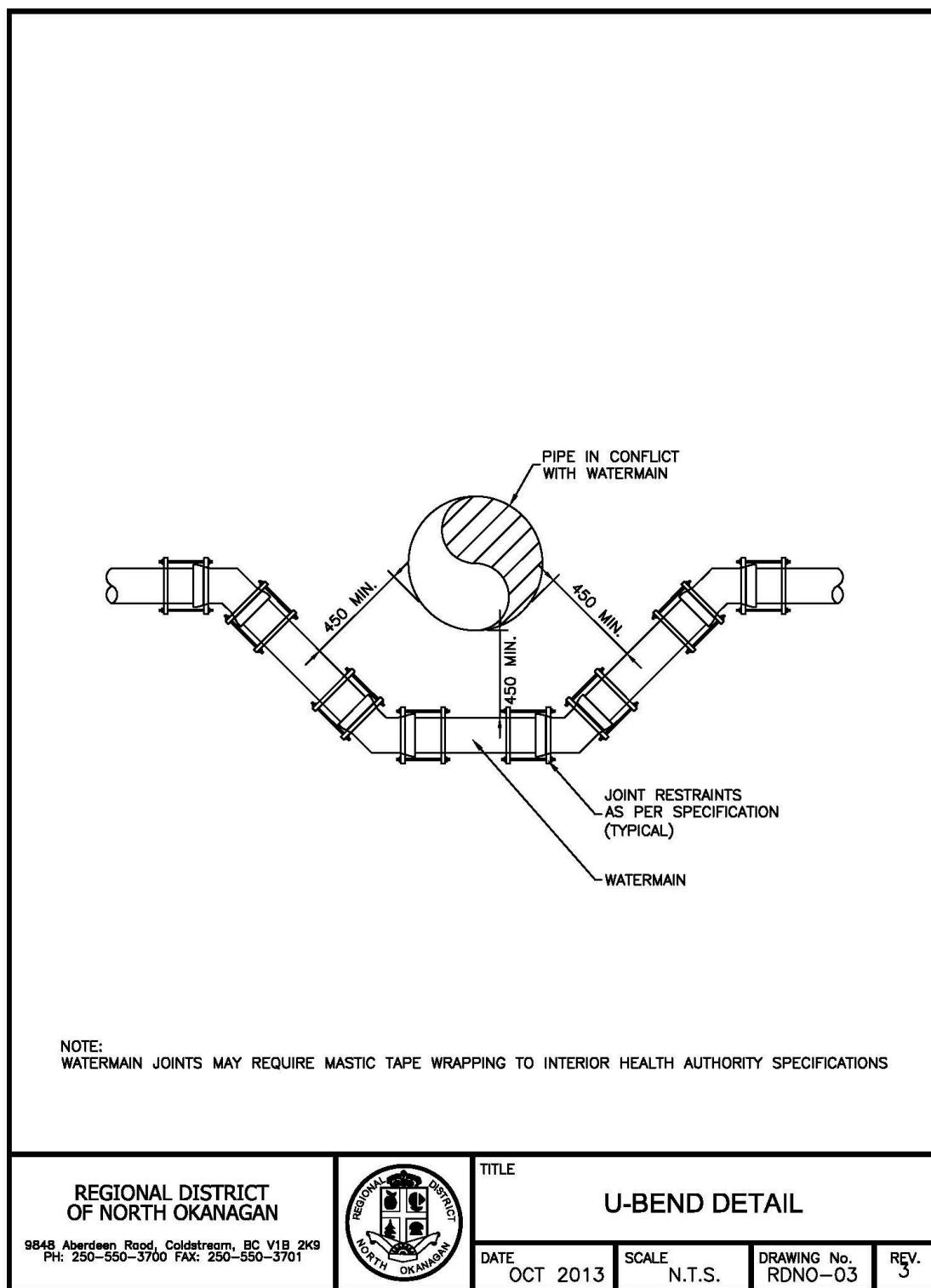
RDNO-01 – Air Valve Chamber



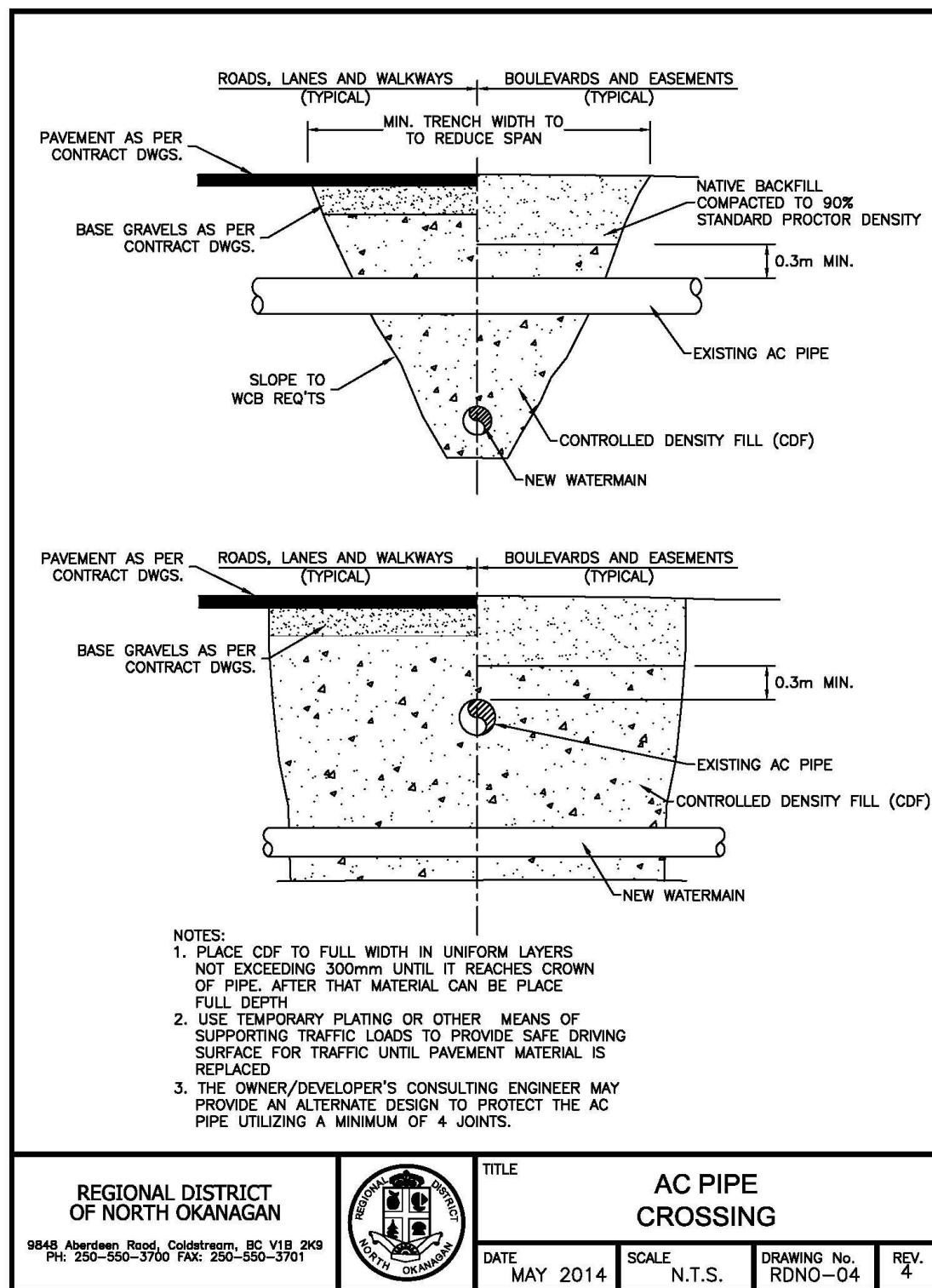
RDNO-02 – Highway/Railway Crossing



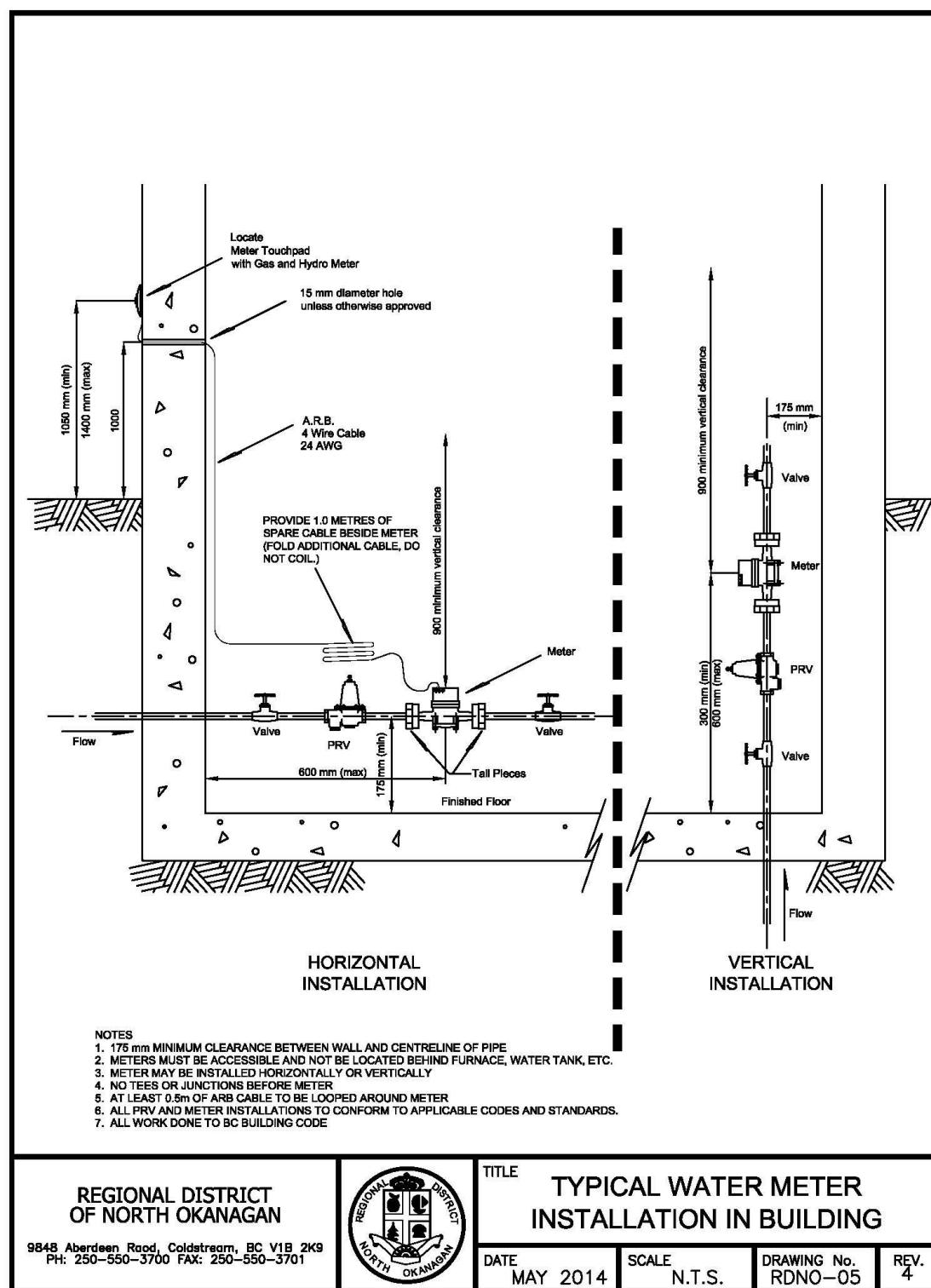
RDNO-03 – U-Bend Detail



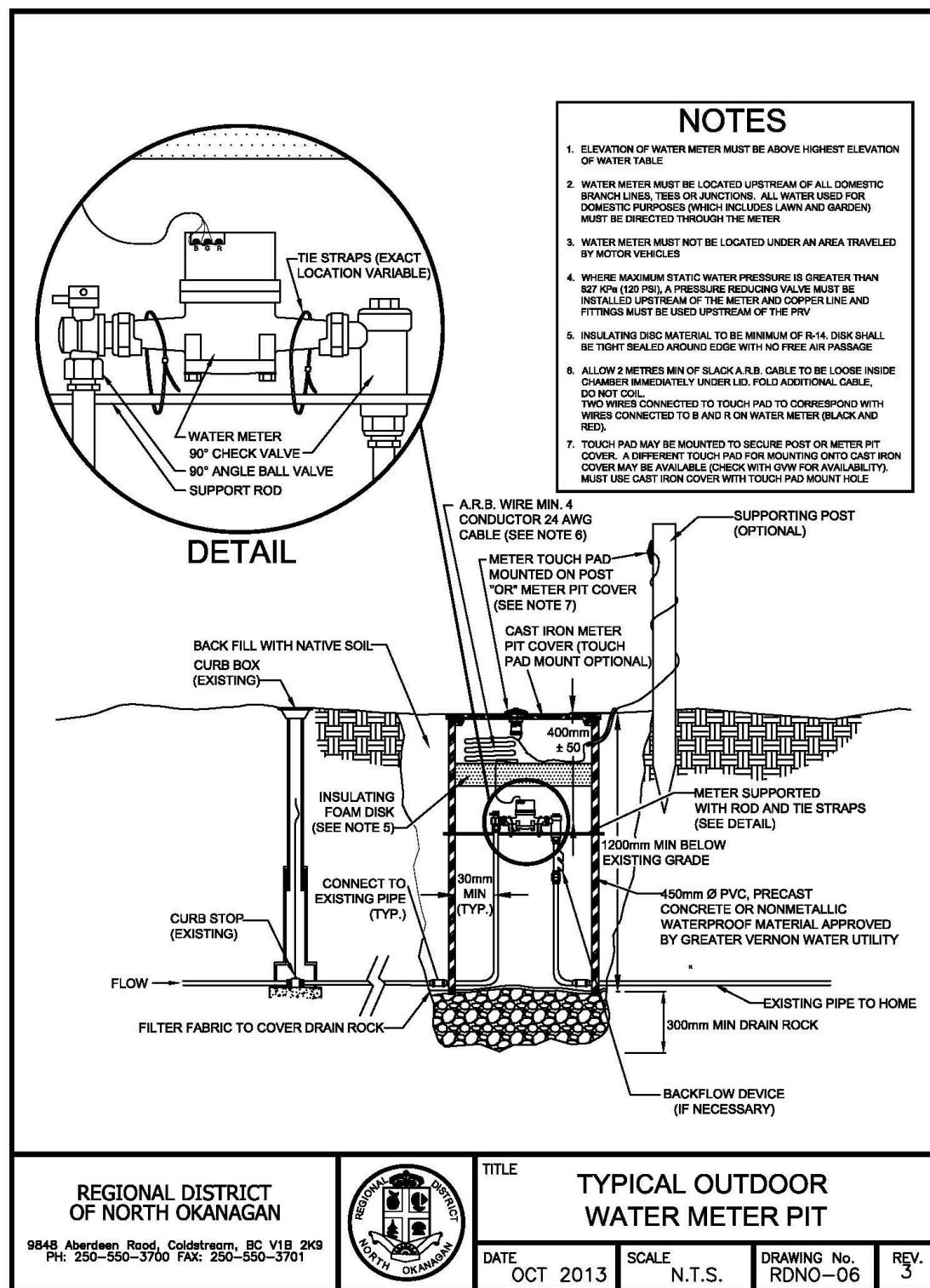
RDNO-04 – AC Pipe Crossing



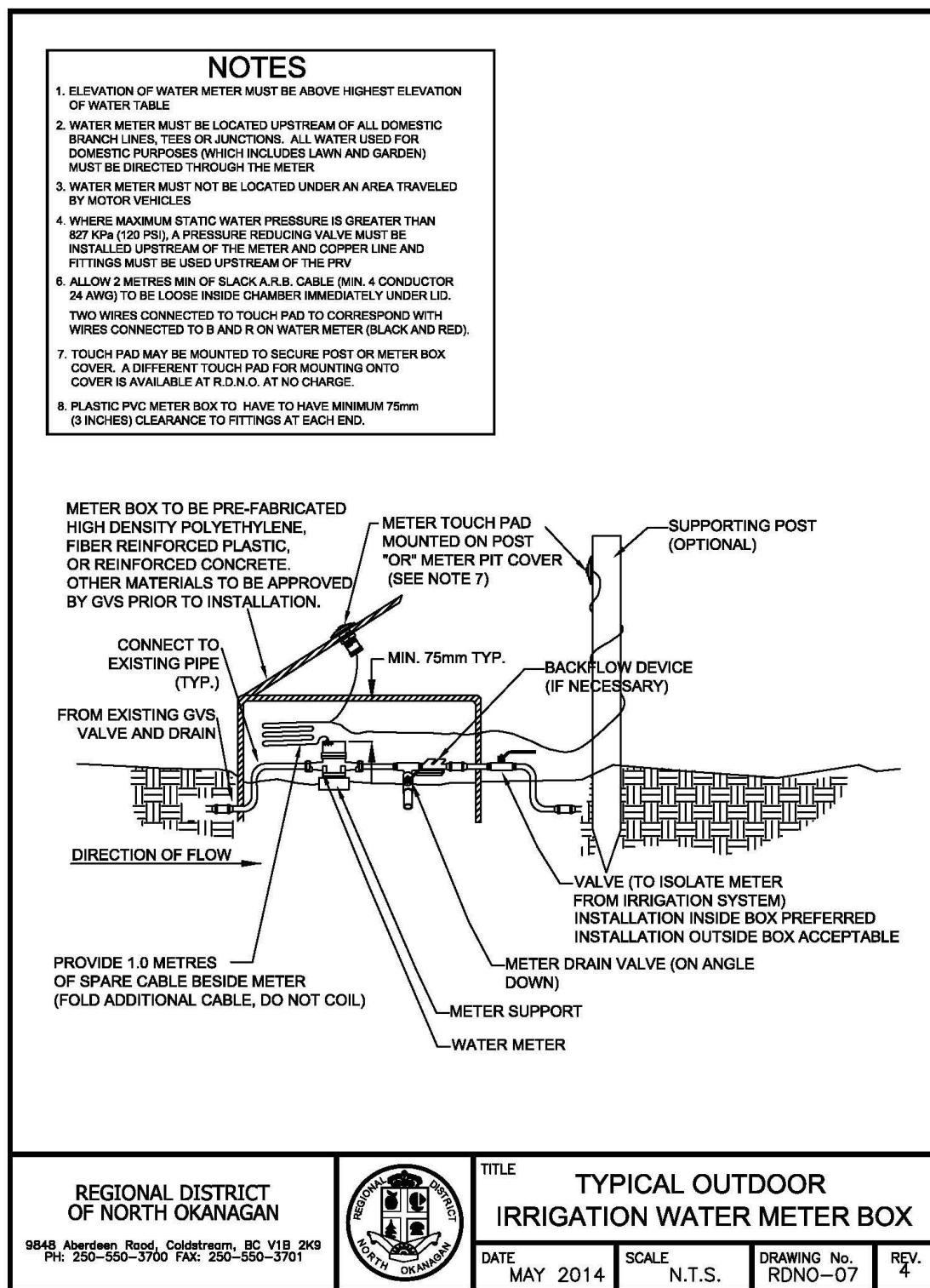
RDNO-05 Typical Water Meter Installation in Building



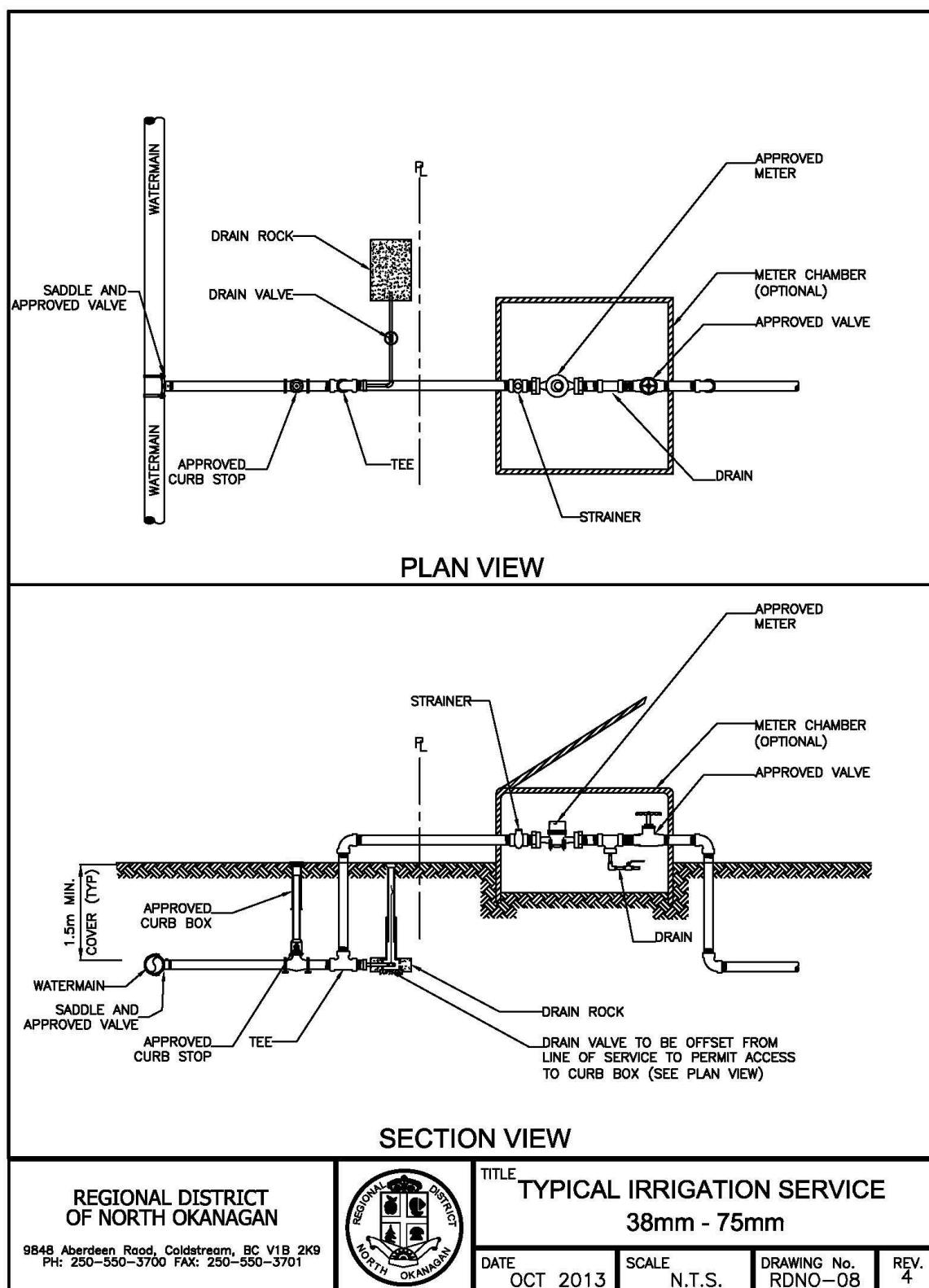
RDNO-06 Typical Outdoor Water Meter Pit



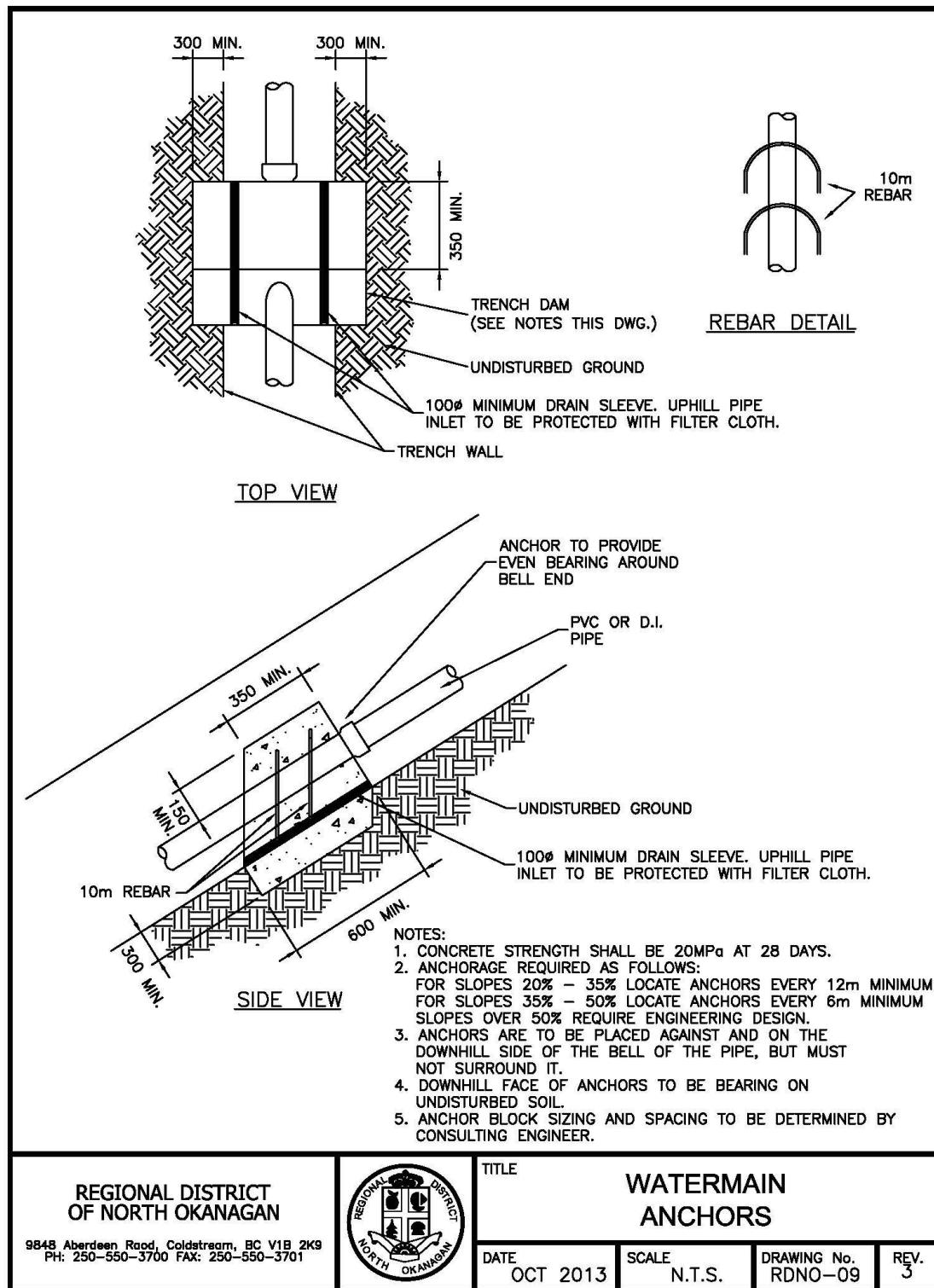
RDNO-07 - Typical Outdoor Water Meter Box



RDNO-08 – Typical Irrigation Service – 38mm – 75mm



RDNO-09 – Watermain Anchors



SCHEDULE C - SERVICING AGREEMENT

SCHEDULE C

SERVICING AGREEMENT

NO.

between

THE REGIONAL DISTRICT OF NORTH OKANAGAN

and

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Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

THIS SERVICING AGREEMENT made this _____ day of _____, 20____.

BETWEEN:

REGIONAL DISTRICT OF NORTH OKANAGAN, a regional district, duly incorporated by Letters Patent under the Municipal Act of the Province of British Columbia, and having its offices at 9848 Aberdeen Road, Coldstream, BC, V1B 2K9

(Regional District)
OF THE FIRST PART

AND:

NAME
ADDRESS

(the Owner)
OF THE SECOND PART

WHEREAS:

A. The Owner holds an interest in lands and premises within the Regional District of North Okanagan (Regional District), in the province of British Columbia, more particularly known and described as follows:

| Parcel Identifier | Legal Description |
|-------------------|-------------------|
| | |
| | |

(referred to as the Lands)

B. The Owner wishes to develop / subdivide the Lands in the manner shown on the proposed plan of subdivision or an application for a building permit which has been submitted by the Owner/Developer.

C. The Regional District has agreed to provide consent to approve the plan of subdivision or development through issuance of a building permit subject to the terms and conditions contained in this Contract, and the posting with the Regional District of the security deposit described herein.

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the promises, covenants and agreements hereinafter set forth, the parties hereto covenant, agree, represent and promise as follows:

DEFINITIONS

"Approved Engineering Plans" shall mean the engineering drawings described in this Agreement.

"City" shall mean the Corporation of the City of Vernon or Vernon.

"Complete" or "Completion" or any variation of these words, when used with respect to the Regional District Works referred to herein, shall mean completion of the Regional District Works, or a part thereof as the context requires, in accordance with the Approved Engineering Plans, and the provisions of this Agreement and to the satisfaction of the Municipal Engineer.

"Contractor" shall include contractors and subcontractors employed by the Owner, directly or indirectly, in construction and installation of the Regional District Works.

"District" means the Corporation of the District of Coldstream or Coldstream.

"GVW" or "GVWU" shall mean the Greater Vernon Water Service as established by Regional District of North Okanagan – Greater Vernon Regional Water Supply Local Service Establishment Bylaw No. 1262, 1994 and amendments thereto.

"General Manager Engineering", shall mean the General Manager of Engineering of the Regional District of North Okanagan, or his designate.

"General Manager Parks" shall mean the General Manager of Parks, Recreation and Culture of the Regional District of North Okanagan or his designate.

"Municipal Engineer" means either of the District of Coldstream Director of Engineering Services, City of Vernon Manager of Engineering & GIS or the RDNO General Manager - Engineering.

"Subdivision Bylaw" shall mean the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013 as amended.

"Regional District" or "RDNO" shall mean the Regional District of North Okanagan.

"Regional District Works" shall mean and include all works, services, and any other improvements that fall under the jurisdiction of the Regional District that are required to be provided, constructed and erected or installed, both on and off the Land, by the Owner under the provisions of this Agreement.

SCHEMES

1. The following Schedules attached will form part of this Servicing Agreement.

Schedule A - A copy of the subdivision plan of the Lands;

Schedule B - A list of the Waterworks and an estimate of their respective

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between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

construction costs.

Schedule C - Construction drawings to be used for the construction of the Waterworks.

**OWNER TO
DO WORK**

2. The Owner covenants and agrees to construct and provide all the Waterworks listed and shown on Schedules A, B and C hereto, as approved by the Municipal Engineer, in accordance with Regional District bylaws, including the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013, the GVWU Water Development Cost Charge Bylaw No. 1983, 2004, and all amendments thereto; and all other applicable laws, bylaws, regulations, rules and guidelines.

**TRANSFER
OF INTEREST
IN WORKS**

3. The Owner covenants and agrees with the Regional District to assign, transfer and convey to the Regional District all of its right, title and interest in the water works and services, upon their completion, (as witnessed by the issuance of a Certificate of Substantial Completion). The Owner will from time to time and at all times so long as it exercises any rights of ownership in the Lands upon the request of the Regional District, make, do and execute or cause or procure to be made, done and executed, all such further acts, deeds, right(s)-of-way, easements and assurances for the more effectual carrying out of this Agreement.

**PERMISSION
TO DO
WORK**

4. The Regional District covenants and agrees to permit the Owner to construct the Waterworks, including that portion of the Waterworks to be constructed on dedicated highways and other right(s)-of-way that have been granted access to the Regional District; on the terms and conditions herein, and in the manner required by and at the places specified herein and Specifications contained in and forming part of Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013; provided that nothing in this Agreement shall be construed as an undertaking, promise or covenant on the part of the Regional District to make available the use of or access to the Waterworks for any purpose, and without limiting the foregoing, for the purpose of serving the Lands or any other real property whatsoever either owned or that has been granted access to the Owner or its associates or otherwise, but rather the Regional District reserves the right in its sole and absolute discretion to make available, operate, alter, use, extend, diminish, discontinue, tear up, sell, rent or otherwise dispose of the Waterworks as its Board of Directors from time to time deems fit. Furthermore, the Contractor shall schedule works such that interruption of normal traffic, and inconvenience to residents, in the working area is kept to a minimum. The Contractor shall provide all certified flag persons, cones, barricades, lights, signs, etc., required to maintain safe and adequate traffic flow at each construction site. Every effort shall be made to maintain the movement of traffic at all times, with

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

minimum delays, and provision shall at all times be made for emergency vehicles. All traffic control signs and barricades must be at least to the standard set out in the Traffic Control Manual for Work on Roadways published by the B.C. Ministry of Transportation and Infrastructure. Where specified on the drawings, construction advisory signs, to the requirements of the authority having jurisdiction, shall be posted at each end of the construction site. Proposed road closure must be reviewed by the authority having jurisdiction over road closures prior to construction commencing, and approval from the authority having jurisdiction over road closures is required. Any additional closures will require written permission from the authority having jurisdiction over road closures.

| | |
|--|---|
| CHANGES TO BYLAWS | 5. The Owner covenants and agrees to comply with any changes in subdivision requirements or standards enacted by the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013 prior to the actual commencement of the Waterworks construction contemplated by the Agreement. |
| START OF WORK | 6. The Owner covenants and agrees not to commence work until the Municipal Engineer provides the Owner with written permission to proceed with construction. |
| COMPLETION OF WORK | 7. The Owner shall complete the construction of the Waterworks, specified in Schedule C as Project No. _____ of the Regional District to the satisfaction of the Regional District, within one (1) year from the date of this Agreement. |
| OWNER TO GRANT RIGHT(S)-OF-WAY | 8. The Owner to grant to the local authority all necessary road dedications and to the Regional District all necessary statutory right(s)-of-way and easements over the Lands to accommodate the said Waterworks and, where the said Waterworks are located upon or under privately owned lands other than the said Lands, to obtain at the Owner's expense, all necessary road dedications, statutory right(s)-of-way and easements over such lands, in favour of the Regional District where applicable, to accommodate the Waterworks. |
| DESIGN BY PROFESSIONAL ENGINEER | 9. The Owner covenants and agrees that all Plans, Specifications and Waterworks required herein shall be prepared, designed and sealed by a Professional Engineer, who shall be registered with the Association of Professional Engineers and Geoscientists of British Columbia and retained by the Owner as the Consulting Engineer. Plans and specifications for the Waterworks shall be prepared by or under the direct supervision of the Consulting Engineer and all plans shall bear the Consulting Engineer's professional seal and signature. |

The Owner covenants and agrees to ensure that the Consulting Engineer maintains professional liability, errors and omissions

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insurance to a value of \$2,000,000 per occurrence during the term of his/her engagement.

The Owner covenants and agrees to retain the Consulting Engineer during the construction period for the purposes of inspection to ensure compliance with the approved design and to provide certification of the as-built records.

**ENGINEERING
DRAWINGS**

10. The Owner covenants and agrees that the intent of this Agreement is that the Owner shall construct fully completed Waterworks, and grant all necessary statutory rights of way as shown in the plans and specifications prepared by:

Under Drawing Nos.

and as approved for the purposes of this Agreement by the Municipal Engineer on the _____ day of _____, 20____.

**CHANGES TO
DESIGN BY
REGIONAL DISTRICT**

11. The Municipal Engineer may alter the plans, because of conditions at the site, so that the Waterworks operate in a manner satisfactory to the Municipal Engineer. Should the Waterworks, as provided herein, prove to be in any way defective or should they not operate to the satisfaction of the Municipal Engineer, then the Owner shall, at his/her own expense modify and reconstruct the Waterworks so that the Waterworks shall be fully operative and function to the satisfaction of the Municipal Engineer.

**SUBSTANTIAL
COMPLETION**

12. A Certificate of Substantial Completion shall be provided by the Municipal Engineer on the completion of the construction of the Waterworks, listing all the deficiencies. This Certificate of Substantial Completion shall not be construed as acceptance of the Waterworks. Approval to connect to the Regional District waterworks system will be subject to the conditions outlined in the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013. The Municipal Engineer may, at his/her discretion, extend the warranty period for works that were repaired in the deficiency list for one (1) year from the date of the repair.

**CERTIFICATE OF
COMPLETION**

13. A Certificate of Completion shall be provided by the Municipal Engineer on the completion of the construction and correction of all the deficiencies.

**“AS-BUILT”
SUBMISSION**

14. The Owner covenants and agrees to submit to the Regional District the final “as built” drawings and records of construction, and test results, as

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

required by the Municipal Engineer, pursuant to Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013, within 60 days of the date of the Certificate of Substantial Completion.

**MAINTENANCE
PERIOD AND
RESPONSIBILITY**

15. The Owner covenants and agrees to maintain every part of the Waterworks in perfect order and in complete repair for a period of one year from the date shown on the Certificate of Substantial Completion in accordance with the requirements of the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013.

Should the Owner, for any reason, fail to maintain when ordered, then the Municipal Engineer, at his/her discretion, after giving the Owner seven days written notice (or without notice if an emergency or danger to the Works or public exists), may do so, and the whole costs, charges and expenses so incurred by the Regional District will be payable by the Owner, as provided for herein. The decision of the Municipal Engineer will be final with respect to the necessity for repairs, or the adequacy of any work done.

Once any water mains covered by this Agreement are connected to the GVW system, only municipal crews or contractors under the direct supervision of the Regional District may undertake work on such water mains unless the Municipal Engineer specifically authorizes the Owner to correct any defects. As such, municipal crews or contractors retained by the Regional District will correct any defects, imperfections, acts of vandalism, settlements and/or rechlorination and flushing on such water mains deemed by the Municipal Engineer to be necessary during the one year period from the date shown on the Certificate of Completion and the whole of such costs, charges and expenses so incurred by the Regional District in undertaking such work including but not limited to contractor costs will be payable by the Owner as provided for herein. Any re-chlorination and flushing work on any water main will be considered to be "emergency" work and as such the Owner may not receive prior notice that such work is being undertaken by the Regional District.

Prior to the release of the security for the Waterworks, the Owner will deliver to the Regional District a maintenance security in accordance with Clause 27.

**CERTIFICATE OF
FINAL ACCEPTANCE**

16. The Regional District covenants and agrees that upon satisfactory completion by the Owner of all of the covenants and conditions in this Agreement, including the maintenance of the Waterworks in complete repair for a period of one (1) year, to provide the Owner with a Certificate of Final Acceptance of the Waterworks, signed by the Municipal Engineer. Notice of final acceptance of the Waterworks will be issued by the Municipal Engineer when all deficiencies have been corrected, as-built drawings received, and the One (1) Year Maintenance period outlined herein has expired.

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
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All such Waterworks remain at the risk of the Owner until the Certificate of Final Acceptance for the Waterworks has been issued.

**FINAL BUILDING
INSPECTION
WITHHELD**

17. The Owner acknowledges and agrees that granting of a Final Inspection for the use of any building or part thereof, constructed upon the Lands will be withheld until all the Waterworks required herein have been completed to the satisfaction of the Municipal Engineer.

**OWNER
INDEMNIFICATION**

18. The Owner covenants and agrees to save harmless and indemnify the Regional District, City of Vernon and/or District of Coldstream against:

- (a) all actions and proceedings, costs, damages, expenses, claims, and demands whatsoever and by whomsoever brought by reason of the construction, installation, maintenance or repair of the Waterworks;
- (b) all expenses and costs which may be incurred by reason of the construction, installation, maintenance or repair of the Waterworks resulting in damage to any property owned in whole or in part by the Regional District for which the Regional District by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, install, maintain or repair;
- (c) all expenses and costs which may be incurred by reason of liens for non-payment of labour or materials, Workers' Compensation, Employment Insurance, Federal or Provincial tax, check-off or encroachments owing to mistakes in survey;
- (d) all expenses and costs which may be incurred by the Regional District as a result of faulty workmanship and defective material in any of the Waterworks installed by the Owner.

The above sub-clauses shall not be construed as to extinguish any rights which the Regional District would have were it not for the inclusion of this Clause 18 (eighteen) of this Development Agreement.

**INSURANCE BY
OWNER**

19. The Owner will at his/her sole expense throughout the duration of this Servicing Agreement carry the following policies of insurance:

- i. Comprehensive Liability Insurance acceptable to the Regional District in the amount of at least five million dollars (\$5,000,000.00) with insurance companies licensed to carry on business in the Province of British Columbia.

**INSURANCE
COVERAGE**

20. The Owner covenants and agrees to provide the following insurance coverage, and to provide the Regional District with a copy of the insurance policy prior to the commencement of any construction of the Waterworks;

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

- (a) To protect the Owner and the Regional District against all claims arising out of:
 - (i) Death or injury to persons; and
 - (iii) Damage to or loss of any Regional District or Municipal buildings, structures, stores, equipment and materials included in or required for the carrying out of the "Waterworks".
- (b) Every policy of insurance required shall:
 - (i) Name the Regional District of North Okanagan, District of Coldstream, City of Vernon and Ministry of Transportation and Infrastructure as "Additional Insured"; and
 - (ii) State that the policy applies to each insured in the same manner and to the same extent as if a separate policy had been issued to each insured; and
 - (iii) State that the policy cannot be cancelled, lapsed or materially changed without at least thirty (30) days written notice to the Regional District, delivered to the Regional District's Chief Administrative Officer.

PERFORMANCE SECURITY

21. As security for the due performance of all of the covenants and promises contained in this Agreement, the Owner will on signing this Agreement deposit with the Regional District a security deposit in the amount of \$ _____, being 125% of the estimated project cost, in the form of cash or an Irrevocable Letter of Credit acceptable to the Regional District (herein called the Performance Security).

FORFEIT OF PERFORMANCE SECURITY

22. In the event that the Owner fails to construct and install the Waterworks prescribed herein within the time specified in Clause 7 (seven), the said Performance Security of \$ _____ will be forfeited to the Regional District.

CONSENT TO FORFEITURE OF PERFORMANCE SECURITY

23. The Owner acknowledges that construction of the following Waterworks are premature and/or may give rise to risk of public safety and agrees therefore to forfeit the amount of the Performance Security indicated. The Regional District will retain this amount and will use it to construct the said Waterworks at a future time of its choosing. The Regional District will not claim any further compensation from the Owner and the Owner will have no entitlement to return of any part of the forfeited amount.

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

| | Postponed Works And Services | Security Amount Forfeited |
|---|---|---------------------------|
| DESIGN SECURITY | | |
| 24. | Where the security is provided <i>in lieu</i> of approved working drawings, (hereinafter called a Design Security), the Owner agrees to have the working drawings completed to the satisfaction of the Municipal Engineer within 90 days of the date of this Agreement. Failure to do so will result in forfeiture of the Design Security in the amount of \$1,000 per drawing (\$_____) which shall be used by the Regional District to complete the design. Once forfeited the Design Security becomes non-refundable in whole or in part. | |
| USE OF PERFORMANCE SECURITY | | |
| 25. | The Owner agrees that if all the Waterworks or obligations are not completed, installed or performed pursuant to this Agreement, the Regional District may complete or fulfill the Waterworks or obligations at the cost of the Owner and deduct from the Performance Security held by the Regional District the cost of such completion, and the balance of the deposit shall be returned to the Owner, less any additional administration fees or cost incurred. If there is insufficient money on deposit with the Regional District, then the Owner will pay such deficiency to the Regional District immediately upon receipt of the Regional District's invoice for completion. It is understood that the Regional District may do such Waterworks either by itself or by contractors employed by the Regional District. If the Waterworks are completed as herein provided, then the deposit shall be returned to the depositor. | |
| | The Owner must apply in writing for the release of the Performance Security. | |
| APPLICATION FOR RELEASE OF SECURITIES | | |
| 26. | The Owners Consulting Engineer must apply in writing for the release of all Securities and the Municipal Engineer may release the Securities as described in Clauses 27, 28 and 29 below. | |
| RELEASE OF SECURITY AND PROVISION OF ONE YEAR MAINTENANCE SECURITY | | |
| 27. | If the Municipal Engineer is of the opinion that the Waterworks or any portion thereof have been adequately completed, and the Owner's covenants performed in compliance with this Agreement, and if there is no litigation pending or threatened by any third party against the Regional District as a result of, or arising from, the construction of the Waterworks, the Municipal Engineer may return all, or any portion of the Performance Security to the Owner at such times and in such amounts as he/she may deem proper (normally retaining 125% of the value of the remaining works and two (2) times the value of any deficiencies). The RDNO will retain an amount equal to 10% of the Performance Security Deposit (minimum of \$1,000) for 30 days after substantial completion. | |

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
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The RDNO will also retain 10% of the Performance Security to secure the performance of the maintenance required of the Owner for one year commencing on the date of substantial completion (hereinafter called the One (1) Year Maintenance Security). During the One (1) Year Maintenance period, the RDNO may expend any portion of the One (1) Year Maintenance Security to repair deficiencies in the work.

**RETURN OF
MAINTENANCE
SECURITY**

28. At the end of the One (1) Year Maintenance period, if the Municipal Engineer is satisfied that the Owner has complied with the covenants contained in this Agreement and if there is no litigation pending or threatened by any third party against the Regional District as a result of, or arising from, the construction of the Waterworks, the Municipal Engineer may issue a Final Acceptance Certificate and direct that the One (1) Year Maintenance Security or any portion thereof, be returned to the Owner and thereafter the Owner's responsibility for the Waterworks shall cease.

**PLAN REVIEW AND
INSPECTION FEE**

29. The Owner covenants and agrees to pay to the Regional District a non-refundable fee in the amount of \$ _____ to cover Regional District administration and processing costs as set out in the Rates and Fees Bylaw. These fees are payable prior to the signing of this Agreement or the commencement of construction of the Waterworks.

**NO OTHER
REPRESENTATIONS**

30. It is understood and agreed that the Regional District has made no representations, covenants, warranties, guarantees, promises or agreements (verbal or otherwise) with the Owner other than those in this Agreement.

**COMPLIANCE WITH
BYLAWS**

31. Subject to this Agreement, the proposed Waterworks and the development herein shall comply with all of the Bylaws of the Regional District of North Okanagan.

NO WAIVER

32. The Owner covenants and agrees that nothing contained or implied herein shall prejudice or affect the rights and powers of the Regional District in the exercise of its functions under any public and private statutes, bylaws, orders and regulations, all of which may be fully and effectively exercised in relation to the said Lands as if the Agreement had not been executed and delivered by the Owner.

No party shall be liable for failure to perform obligations under this Agreement if prevented from doing so by a cause or causes which could not with reasonable diligence be controlled or prevented by the party including, but not limited to an Act of God, fire, flooding, labour disturbances or governmental action.

Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

The parties agree and consent to the disclosure of this agreement as a matter of public record and acknowledge that applicable laws may require disclosure of information provided by one party to the other party pursuant to, or in connection with, this agreement.

WHENEVER the singular or the masculine is used in the Agreement it will be construed as meaning the plural, feminine, corporate body or politic where the context or the parties hereto so require.

WHENEVER the word "will" is used in this Agreement it will be construed as imperative (mandatory).

THIS SERVICING AGREEMENT and the terms, covenants and conditions herein contained shall ensue to the benefit of and be binding upon the parties hereto, their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF the parties hereto have executed this contract the day and year first above written.

| | | |
|--------------------------|---|---|
| FOR CORPORATE BODY | SIGNED, AND DELIVERED The Corporation of _____ Corporate Authorized Signatory: _____ |))))) SEAL (OPTIONAL) |
| | Signature _____ Name(Print) _____ Title _____ |))) |

| | | |
|------------------------------|--|--|
| FOR PRIVATE INDIVIDUAL | SIGNED, AND DELIVERED By the above named in the presence Of (witness): _____ Signature _____ Name(Print) _____ Occupation _____ Address _____ _____) |))))) Owner's Signature _____ Owner's Signature _____) |
|------------------------------|--|--|

| | | |
|---|---|-------------------------------|
| FOR THE REGIONAL DISTRICT OF NORTH OKANAGAN | SIGNED, SEALED AND DELIVERED The Corporate Seal of the Regional District of North Okanagan was hereunto affixed in The presence of: _____ _____ _____ _____) |)))) SEAL) |
|---|---|-------------------------------|

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Servicing Agreement
between the Regional District of North Okanagan – and – NAME
For PROJECT NAME

Appendix " A "
Subdivision Plan of Lands

Appendix " B "
Waterworks /
Estimate of Construction Costs

Appendix " C "
Design Drawings - Approved for Construction

SCHEDULE D - STANDARD FORMS

- D.1 – Form of Letter of Credit
- D.2 – Agreement to Pay Non-Refundable Deposit
- D.3 – Cost Sharing Agreement
- D.4 – Certificate of Substantial Performance
- D.5 – Certificate of Total Performance
- D.6 – Professional Assurance Certificate
- D.7 – Insurance Certificate
- D.8 – Certificate of Inspection / Field Reviews
- D.9 – Flushing/Testing/Disinfection Report
- D.10 – Hydrant Flow Test
- D.10a – Hydrant Flow Test Report
- D.11 – Certificate of Completion
- D.12 – Utility Service Card

D.1 – Form of Letter of Credit

FORM OF LETTER OF CREDIT
<<TO BE ON BANK LETTERHEAD>>

Letter of Credit No.: _____

Amount \$_____

Initial Expiry Date: _____

REGIONAL DISTRICT OF NORTH OKANAGAN
9848 ABERDEEN ROAD
COLDSTREAM, BC V1B 2K9

WE HEREBY AUTHORIZE YOU TO DRAW ON THE <<name and address of bank>> for the account of <<name of Developer/Contractor>> UP TO AN AGGREGATE AMOUNT OF <<dollars in writing and in numbers>> available on demand.

PURSUANT TO THE REQUEST OF our customer, <<name of Developer/Contractor>>, we the <<name of bank>> hereby establish and give you an Irrevocable Letter of Credit in your favour in the above amount which may be drawn on by you at any time and from time to time, upon written demand for payment made upon us by you, which demand we shall honour without enquiring whether you have the right as between yourself and the said customer to make such demand, and without recognizing any claim or our said customer, or objection by it to payment by us.

THE LETTER OF CREDIT we understand relates to those services and financial obligations set out in an agreement between the customer and the REGIONAL DISTRICT OF NORTH OKANAGAN and referred to as <<description of agreement and works covered and application file #>>.

THIS LETTER OF CREDIT will continue in force for a period of one year, but shall be subject to the condition hereinafter set forth.

IT IS A CONDITION of this Letter of Credit that it shall be deemed to be automatically extended without amendment from year to year from the present or any future expiration date hereof, unless at least 30 days prior to the present or any future expiration date, we notify you in writing by registered mail that we elect not to consider this Letter of Credit to be renewable for any additional period.

DATED at _____, British Columbia this _____ day of _____, _____

COUNTERSIGNED BY:

per:

D.2 – Agreement to Pay Non-Refundable Deposit



AGREEMENT TO PAY NON-REFUNDABLE DEPOSIT

I, NAME _____

ADDRESS: _____
(Owner/Developer)

Agree to pay the amount of \$ _____ as a non-refundable deposit towards the installation described as:

This payment is made pursuant to Clause 112.1.c. of Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013, and is made in lieu of construction of the Waterworks as itemized on the attached form identified as "Estimate of Non-Refundable Deposit".

This payment is made as full compensation for the itemized works and services and fulfills all the requirements of Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013.

| | | |
|--|---|--------------------------|
| FOR CORPORATE BODY | SIGNED, SEALED AND DELIVERED The Corporation Seal of |)))) |
| | Was hereunto affixed in the presence of: |)))) |
| | Signature: _____ |))) |
| | Title: _____ |)) |
| | | SEAL |
| FOR PRIVATE INDIVIDUAL | SIGNED, SEALED AND DELIVERED By the above named in the presence Of (witness) |)))) |
| | Signature: _____ |)) |
| | Name: _____ |) |
| | Address: _____ _____ _____ |))) |
| | | Owner's Signature |
| FOR THE REGIONAL DISTRICT OF NORTH OKANAGAN | SIGNED, SEALED AND DELIVERED The Corporate Seal of the Regional District of North Okanagan was hereunto affixed in the presence of: |)))) |
| | Chair _____ |)) |
| | Corporate Officer _____ |)) |
| | | SEAL |

D.3 – Cost Sharing Agreement



COST SHARING AGREEMENT

Between: **THE REGIONAL DISTRICT OF NORTH OKANAGAN (RDNO)** and

NAME _____

ADDRESS: _____
(Owner/Developer)

The RDNO agrees to pay up to the amount of \$ _____ towards the installation described as:

1. It is agreed between the parties to this agreement that the above amount paid shall be full compensation for the excess or extended services under Section 939 of the Local Government Act required by the RDNO and that all costs associated in any way whatsoever with this installation which are in excess of the above amount shall be the full responsibility of the Owner/Developer to pay.
2. It is further agreed that the above amount will be paid as follows:

| | |
|---|----------|
| (a) Upon issuance of substantial completion | \$ _____ |
| (b) Upon receipt of all "Record Drawings" | \$ _____ |
3. It is agreed that it is the sole responsibility of the Owner/Developer to arrange for the design and installation of the works according to Municipal requirements.

FOR
CORPORATE
BODY SIGNED, SEALED AND DELIVERED
The Corporation Seal of

Was hereunto affixed in the presence of:
Signature:

SEAL

FOR
PRIVATE
INDIVIDUAL

By the above named in the presence
Of (witness)

FOR SIGNED, SEALED AND DELIVERED)
PRIVATE By the above named in the presence)
INDIVIDUAL Of (whomsoever))

Signature:

Owner's Signature

**FOR THE REGIONAL
DISTRICT OF NORTH
OKANAGAN**

SIGNED, SEALED AND DELIVERED
The Corporate Seal of the Regional District of
North Okanagan was hereunto affixed in
The presence of:

Chai

Corporate Officer

SEAL

D.4 – Certificate of Substantial Performance

**CERTIFICATE OF SUBSTANTIAL
PERFORMANCE****DEVELOPER:** _____**CONTRACTOR:** _____**PROJECT NO:** _____**FILE NO:** _____**SERVICING AGREEMENT NO:** _____**DATE:** _____

This certificate is issued pursuant to Schedule "B", Section B.6.2 of the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013 and applies to the Waterworks:

The **MAINTENANCE PERIOD** for the Works & Services will begin on _____.

The **MAINTENANCE PERIOD** for the Works & Services will end on _____.

The Certificate of Completion will be issued when all deficiencies have been corrected. The Certificate of Total Performance will be issued when the maintenance period expires and all deficiencies that have arisen over the year have been corrected, and the Municipal Engineer has been satisfied all conditions of the Servicing Agreement have been fulfilled.

This Certificate has been made to the best of the Municipal Engineer's knowledge, information and belief. It does not constitute acceptance of any work not in accordance with the requirements of the Subdivision and Development Servicing Bylaw, and not listed as a deficiency herein, whether or not such defect(s) could have been observed or discovered during construction.

The following is a **LIST OF DEFICIENCIES** related to the Work:

Municipal Engineer

c.c. Contractor/Engineer/Owner/Developer

D.5 – Certificate of Total Performance

**CERTIFICATE OF TOTAL PERFORMANCE****DEVELOPER:** _____**CONTRACTOR:** _____**PROJECT NO.:** _____**FILE NO.:** _____**SERVICING AGREEMENT NO.:** _____**COMPLETION DATE:** _____

This Certificate of Total Performance will confirm that all work completed under the above referenced contract has performed satisfactorily throughout the one (1) year maintenance period.

This certificate permits the release of your \$ _____ Maintenance security on _____.

Municipal Engineer

Date

c.c. Contractor/Engineer/Owner/Developer

D.6 – Professional Assurance Certificate

PROFESSIONAL ASSURANCE CERTIFICATE

<<TO BE ON COMPANY LETTERHEAD>>

Regional District of North Okanagan
9848 Aberdeen Road
Coldstream, BC V1B 2K9

Attention: Municipal Engineer

<<DATE>>

Dear Sir/Madam:

RE: NAME OF SUBDIVISION OR DEVELOPMENT AND ADDRESS

I, <<Owner's Name>> have retained <<Consultant's Name>> as my/our Professional Engineer (Consultant), to undertake and/or co-ordinate and review all associated design criteria and field reviews required for this project.

Field review shall mean such reviews of the work at the project site, or at the fabrication locations, where applicable, as the Consultant, in his/her professional discretion, considers necessary in order to ascertain that the work substantially conforms in all material respects to the plans and supporting documents accepted by the Municipal Engineer. This will include keeping records of all site visits and any corrective actions taken as a result thereof.

It is understood that my Consultant will take all such steps as regulated under the Provincial Statute for his/her profession and by the definition of field reviews as defined above, to ascertain that the design will comply and construction of the project will substantially conform in all material respects with the provisions of the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013, all other amendments thereof, and other applicable permits, Bylaws, Acts and regulations which apply to this project. The Consultant will also ensure that all work is completed in accordance with the construction drawings approved by the Municipal Engineer. The consultant will ascertain that only qualified personnel are retained to carry out tests, inspect or carry out design work and detailing field reviews.

The undersigned has given a contractual mandate to the Consultant to review reports of other testing and inspection agencies and disciplines where necessary, comment on their acceptability, determine the corrective action to take if unacceptable, and maintain a detailed record of every such report and comments thereof. The Consultant will submit monthly summary progress report(s) (including all field reports and change orders) and requests for Security Releases/Reductions to the Municipal Engineer.

Professional Assurance Certificate

Page 2 of 3

Note:

The Owner will notify the Municipal Engineer in writing thirty (30) days prior to the intended termination of or by the Consultant. It is understood that the work on the above-project will cease as of the effective date of termination, until such time as a new appointment is made.

The Consultant will, upon completion of the work, provide a "CERTIFICATE OF INSPECTION" (Form D-8). The Consultant will further provide upon completion all supporting documentation required by the Municipal Engineer to verify conformance of the work.

Witness Name (Print)

Owner's Name (Print)

Witness Signature

(Owner or Owner's Appointed Agents Signature)

Address (Print)

Date

Occupation

Title of Agent (if applicable)

Address (Print)

The Corporate Seal of

was hereunto affixed in the presence of:

The above must be signed by the Owner or his/her appointed Agent. The signature must be witnessed. If the Owner is a company, the corporate seal of the company must be affixed to the document in the presence of its duly authorized officers. The officers must also sign, setting forth their positions in the company.

Professional Assurance Certificate

Page 3 of 3

The Consultant acknowledges that he/she has been retained to ascertain that the design will comply and construction of the project will substantially conform in all material respects with the Bylaws as set out above and will submit a letter of Professional Design Assurances from others, as needed, for the approval of the subdivision or development. Furthermore, the Consultant hereby covenants that their firm presently carries liability insurance in the amount of \$.

Name of Professional (Print)

Signature of Professional

Company Name

Date

Mailing Address (Print)

Phone

D.7 – Insurance Certificate

**INSURANCE CERTIFICATE****DEVELOPER:** _____**PROJECT NO.:** _____**INSURANCE POLICY NO.:** _____**DATE:** _____

PURSUANT TO SCHEDULE "C" of the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013, the Developer is required to obtain and maintain in force during the term of the Servicing Agreement, an insurance policy acceptable to the Regional District of North Okanagan (RDNO).

I hereby certify that the attached insurance policy provides insurance coverage as required pursuant to Clauses 19 and 20 of the Servicing Agreement between the **RDNO** and the Developer and that the attached insurance policy remains valid for the duration of the Servicing Agreement.

Certified by:

**AUTHORIZED
INSURANCE AGENT:** _____**COMPANY:** _____**ADDRESS:** _____

See insurance requirements pursuant to Clauses 19 and 20 of the Servicing Agreement on the reverse of this Certificate.

Clauses 19 and 20 as abstracted from the Servicing Agreement

| | |
|---------------------------|--|
| INSURANCE BY OWNER | 19. The Owner will at his/her sole expense throughout the duration of this Servicing Agreement carry the following policies of insurance: i. Comprehensive Liability Insurance acceptable to the Regional District in the amount of at least five million dollars (\$5,000,000.00) with insurance companies licensed to carry on business in the Province of British Columbia. |
| INSURANCE COVERAGE | 20. The Owner covenants and agrees to provide the following insurance coverage, and to provide the Regional District with a copy of the insurance policy prior to the commencement of any construction of the Waterworks; (a) To protect the Owner and the Regional District against all claims arising out of: (i) Death or injury to persons; and (iii) Damage to or loss of any Regional District or Municipal buildings, structures, stores, equipment and materials included in or required for the carrying out of the "Waterworks". (b) Every policy of insurance required shall: (i) Name the "REGIONAL DISTRICT OF NORTH OKANAGAN" as an additional insured; and (ii) State that the policy applies to each insured in the same manner and to the same extent as if a separate policy had been issued to each insured; and (iii) State that the policy cannot be cancelled, lapsed or materially changed without at least thirty (30) days written notice to the Regional District, delivered to the Regional District's Chief Administrative Officer. |

D.8 – Certificate of Inspection / Field Review



CERTIFICATE OF INSPECTION / FIELD REVIEW

I hereby certify that all engineering and construction services, required under the Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013 for the subdivision of:

LEGAL DESCRIPTION:

PROJECT NO.: _____

Which services were designed by:

NAME OF FIRM: _____

ADDRESS: _____

And approved for construction on drawing numbers:

| | | | |
|------------|------|------------|------|
| Drawing No | Date | Drawing No | Date |
|------------|------|------------|------|

| Drawing No. | Date | Drawing No. | Date |
|-------------|------|-------------|------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Have been inspected by or under the direction of:

NAME: _____

ADDRESS: _____

I further certify that the "Record Drawings" hereby submitted represent the works and serv

be installed for the aforementioned subscriber.



Engineer's Seal

Signature and name of the Professional
Engineer responsible for Design

D.9 – Flushing/Testing/Disinfection Report

**FLUSHING/TESTING/DISINFECTION REPORT****PROJECT NO.:** _____**DATE:** _____**LOCATION:** _____**FILE NO.:** _____**DESCRIPTION:** _____****Attach drawing with Watermain highlighted in Yellow****FLUSHING:**

Water source: _____ Minimum flushing volume (Pipe volume x 3) _____

Estimated flow rate: _____ Estimated flow time required: _____ Flushing completed: _____

PRESSURE TEST:Allowable leakage = $NDP^{1/2}/(65000)(2Hr)$

N = Number of pipe joints = _____ D = Nominal diameter of pipe (mm) = _____

Static Pressure: _____ P = Average test pressure during leakage test = _____
(Minimum 1,380 kPa (200 psi))

Allowable leakage calculated: _____ Start time: _____ End time: _____

Test leakage recorded: _____ Pass: _____ Fail: _____

DISINFECTION:

Chlorine source: _____ Calculated dosage: _____ Background residual: _____

Start time _____ Starting residual: _____ End time: _____ End residual: _____

Chlorine flushed: _____ 24 Hour stand time Start: _____ End: _____

FLUSHING/TESTING/DISINFECTION REPORT

PROJECT NO.:

Page 2 of 2

BACTERIOLOGICAL TEST:

Sample: Date: _____ Time: _____ Testing Lab: _____

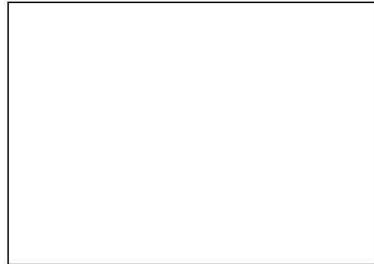
Number of samples required: _____ Sample(s) collected by: _____

Test results: Pass: _____ Fail: _____ (Copy of lab results attached)

Testing/flushing points removed: _____

CONSULTING ENGINEER'S CERTIFICATION

I hereby certify that all flushing, disinfection and testing has been completed in accordance with the requirements of Greater Vernon Water Subdivision and Development Servicing Bylaw No. 2650, 2013.



Engineer's Seal

Signature and name of the Consulting
Engineer responsible for Design**CONNECTION APPROVAL:**

Date

Municipal Engineer

Jurisdiction

D.10 – Fire Hydrant Flow Test

**FIRE HYDRANT FLOW TEST FORM**

| | | |
|-----------------------------|----------------|--|
| Location: | | |
| Date: | Time: | |
| 1. Tested by: | Pressure Zone | |
| 2. Map Reference # | | |
| 3. Flow Hydrant: | Location | |
| Hydrant Number | Make & Model | |
| Main Size | Valve Location | |
| 4. Gauge Hydrant #1: | Location | |
| Hydrant Number | Make & Model | |
| Main Size | Valve Location | |
| 5. Gauge Hydrant #2: | Location | |
| Hydrant Number | Make & Model | |
| Main Size | Valve Location | |
| 6. Gauge Hydrant #3: | Location | |
| Hydrant Number | Make & Model | |
| Main Size | Valve Location | |

FLOW TEST RESULTS

| Date & Time: | One Port Open | | | | Two Ports Open | | | |
|--|----------------------|-------------------------|-------------------------|-------------------------|-----------------------|-------------------------|-------------------------|-------------------------|
| | Flow Hydrant | Gauge Hydrant# 1 | Gauge Hydrant# 2 | Gauge Hydrant# 3 | Flow Hydrant | Gauge Hydrant# 1 | Gauge Hydrant# 2 | Gauge Hydrant# 3 |
| System static pressure prior to start of flow test (PSI) | | | | | | | | |
| Pitot Pressure (PPSI) | | | | | | | | |
| Residual pressure after Flow Hydrant opened (PSI) | | | | | | | | |
| Flow Recorded @ Flow Hydrant (USGPM) | | | | | | | | |
| Discharge Port Diameter (in) | | | | | | | | |
| Discharge Coefficient | | | | | | | | |
| Mainline W/M diameter @ Flow Hydrant (in) | | | | | | | | |

The flow hydrant must be located downstream of the gauge hydrant, so that the source water is running past the gauge hydrant to the flow hydrant.

Note: A pressure drop of 25 % from the static pressure at the gauge hydrant is required to obtain a valid hydrant flow test. This may necessitate flowing several hydrants to achieve the required flow.

Note: All flow tests shall be undertaken in general conformance with the Fire Underwriters Survey recommended test procedures and NFPA 291 [1995 Edition].

c.c. **CoV/DoC Fire Chief**

REGIONAL DISTRICT OF NORTH OKANAGAN - FORM D-10
Adopted by the Board of Directors: July 16, 2014

D.10a – Hydrant Flow Test Report

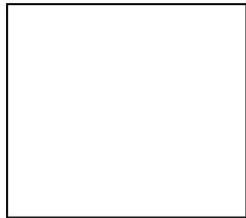
| | | | | | | |
|---|--|---|---------------|---------------|---------------|--------|
|  | | REGIONAL DISTRICT OF NORTH OKANAGAN ENGINEERING DEPARTMENT HYDRANT FLOW TEST | | | | |
| | | TEST DATE: | TEST TIME: | | | |
| GAUGE HYDRANT: | | HYDRANT NUMBER: | Flow Test # 1 | Flow Test # 2 | | |
| | | HYDRANT LOCATION: | | | | |
| | | STATIC PRESSURE: | psi | 0 | psi | |
| | | RESIDUAL PRESSURE: | psi | 0 | psi | |
| FLOW HYDRANT: | | HYDRANT NUMBER: | | | | |
| | | HYDRANT LOCATION: | | | | |
| | | STATIC PRESSURE: | psi | 0 | psi | |
| | | PITOT GAUGE READING (PRESSURE): | psi | 0 | psi | |
| | | FLOW OPENING DIAMETER: | 2.5 | inches | 2.5 | inches |
| | | NUMBER OF PORTS OPEN: | 1 | ports | 2 | ports |
| NFPA Section 2.3 : | | DROP IN PRESSURE >25% FOR VALID TEST | | #DIV/0! | 0% | |
| FLOW CALCULATIONS | | | | | | |
| G = 24.84*D^2*C*P^5 | | G = FLOW IN igpm | | | | |
| | | D = NOZZLE DIAMETER IN inches | | | | |
| | | P = PITOT GAUGE READING IN psi | | | | |
| | | C = COEFFICIENT (USUALLY 0.9 FOR FULL FLOW) | | | | |
| Q(r)=Q(t)^(H(r)/H(t)) ^{0.54} | | Q(r) = COMPUTED DISCHARGE AT THE SPECIFIED | | | | |
| | | RESIDUAL PRESSURE IN igpm. | | | | |
| | | Q(t) = TOTAL DISCHARGE DURING TEST IN igpm. | | | | |
| | | H(r) = DROP IN PRESSURE FROM ORIGINAL VALUE | | | | |
| | | (STATIC PRESSURE AT GAUGE HYDRANT) TO | | | | |
| | | SPECIFIED RESIDUAL IN psi. | | | | |
| | | H(t) = PRESSURE DROP DURING TEST IN psi. | | | | |
| | | | | Flow Test # 1 | Flow Test # 2 | |
| CALCULATED FLOW AT FLOW HYDRANT | | 0 | = | 0 | igpm | |
| THEORETICAL FLOW AT HYDRANT | | 0 | | | | |
| AT A DESIRED RESIDUAL PRESSURE: | | 20 | psi | #DIV/0! | igpm. | |
| #DIV/0! | | | | #DIV/0! | igpm. | |
| Based on this hydrant flow test, and background demand at time of the test, the theoretical flow at Hydrant 0 is 0 igpm at a residual pressure of 20 psi. | | | | | | |

D.11 – Certificate of Completion

**CERTIFICATE OF COMPLETION****DEVELOPER:** _____**CONTRACTOR:** _____**PROJECT NO:** _____**FILE NO:** _____**SERVICING AGREEMENT NO:** _____**DATE:** _____

The final construction inspection was held on _____ and all deficient items have been addressed to the Municipal Engineer's satisfaction.

I _____, Consulting Engineer of _____ hereby certify that all works reflect GVW standards and specifications, and that all works have been completed in accordance with the approved construction plans.



SEAL

Consulting Engineer

The Municipal Engineer's acknowledgement of this certificate does not represent acceptance of the work, nor shall this act by the Municipal Engineer prejudice any requirements of the agreement with the contractor, nor operate to relieve the contractor of any of his/her responsibilities thereunder.

Municipal Engineer

c.c. Contractor/Engineer/Owner/Developer

D.12 – Utility Service Card



UTILITY SERVICE CARD

| | | |
|--|--|---|
| NAME: | DATE: | |
| ADDRESS: | ONE CALL / LOCATES: <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| TYPE OF FAILURE: <input type="checkbox"/> Circumferential Crack <input type="checkbox"/> Longitudinal Crack <input type="checkbox"/> Pin Holes <input type="checkbox"/> Bell | | |
| TYPE OF REPAIR: <input type="checkbox"/> Repair Clamp <input type="checkbox"/> Sectional Replacement | | |
| REPAIR FLUSHED: <input type="checkbox"/> Yes <input type="checkbox"/> No | REPAIR DISINFECTED: <input type="checkbox"/> Yes <input type="checkbox"/> No | HYDRANTS OUT OF SERVICE: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| OFFICE NOTIFIED: <input type="checkbox"/> Yes <input type="checkbox"/> No | RESIDENTS OUT OF WATER: <input type="checkbox"/> Yes <input type="checkbox"/> No | RESIDENTS NOTIFIED: <input type="checkbox"/> Yes <input type="checkbox"/> No |

| WATER SOURCE | | LOCATION SKETCH | |
|--|---|-----------------|--------|
| <input type="checkbox"/> Duteau <input type="checkbox"/> Kal/Antwerp <input type="checkbox"/> Kal <input type="checkbox"/> Other _____ | | | |
| Service Connections | | | Staff: |
| Equipment: | | | |
| Size: _____ mm | Type: | | |
| Length: | Depth: | | |
| SERVICE: <input type="checkbox"/> New <input type="checkbox"/> Repair | MAINS: <input type="checkbox"/> New <input type="checkbox"/> Repair | | |
| LOCATION: _____ m _____, _____ m _____ of _____ or _____ m _____ of _____ I.P. | | | |

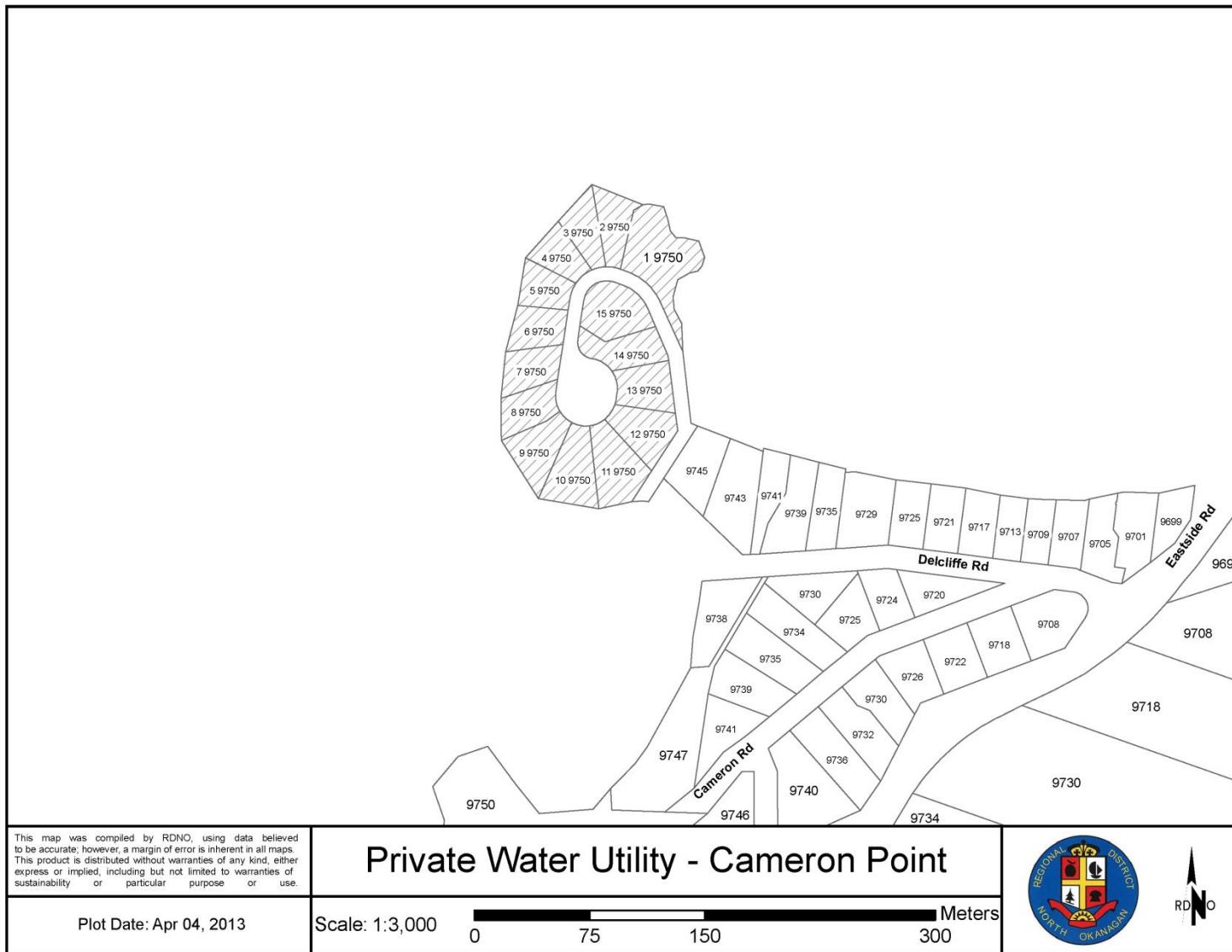
| |
|---------------------------|
| Parts Used: |
| Additional Work Required: |
| Comments: |

SCHEDULE E – PRIVATE UTILITIES NOT PERMITTED TO CONNECT

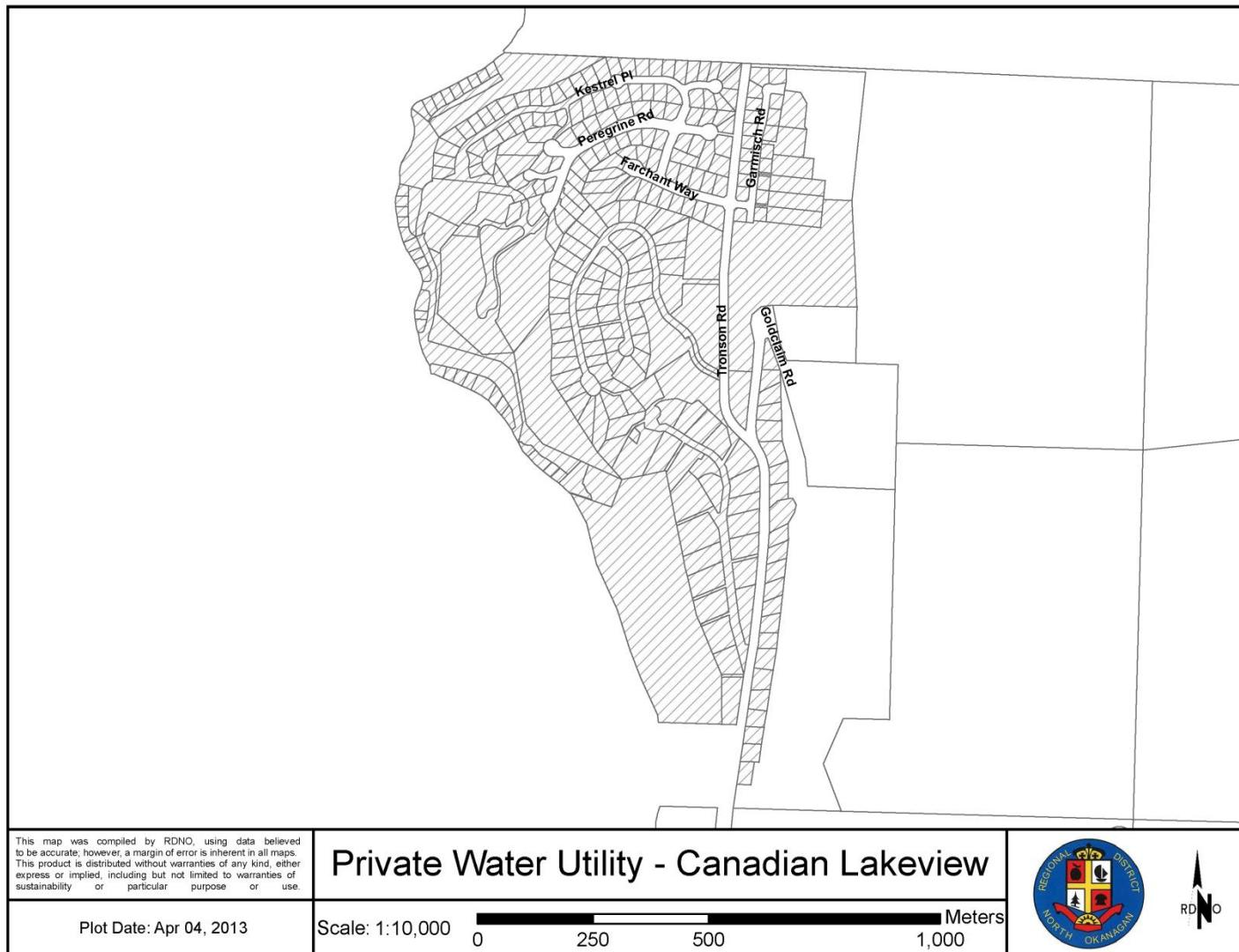
Private water utilities are not permitted to connect to the Greater Vernon Water System without approval by the Board of Directors. The following is a listing of the known private water utilities within the Greater Vernon Water Service Area. Greater Vernon Water acknowledges that there may be additional unknown private water utilities within the service area. Any private utility that requests connection to GVW will be required to follow the Utility Acquisition Policy No. ENG-WTR-002.

- E.1 – Cameron Point Water Utility
- E.2 – Canadian Lakeview Water Utility
- E.3 – Klim Brook Water Utility
- E.4 – Rolling Hills Water Utility
- E.5 – Whitewood Water Utility
- E.6 – Indian Reserve No. 6
- ~~E.7 – Claremont Water Utility~~

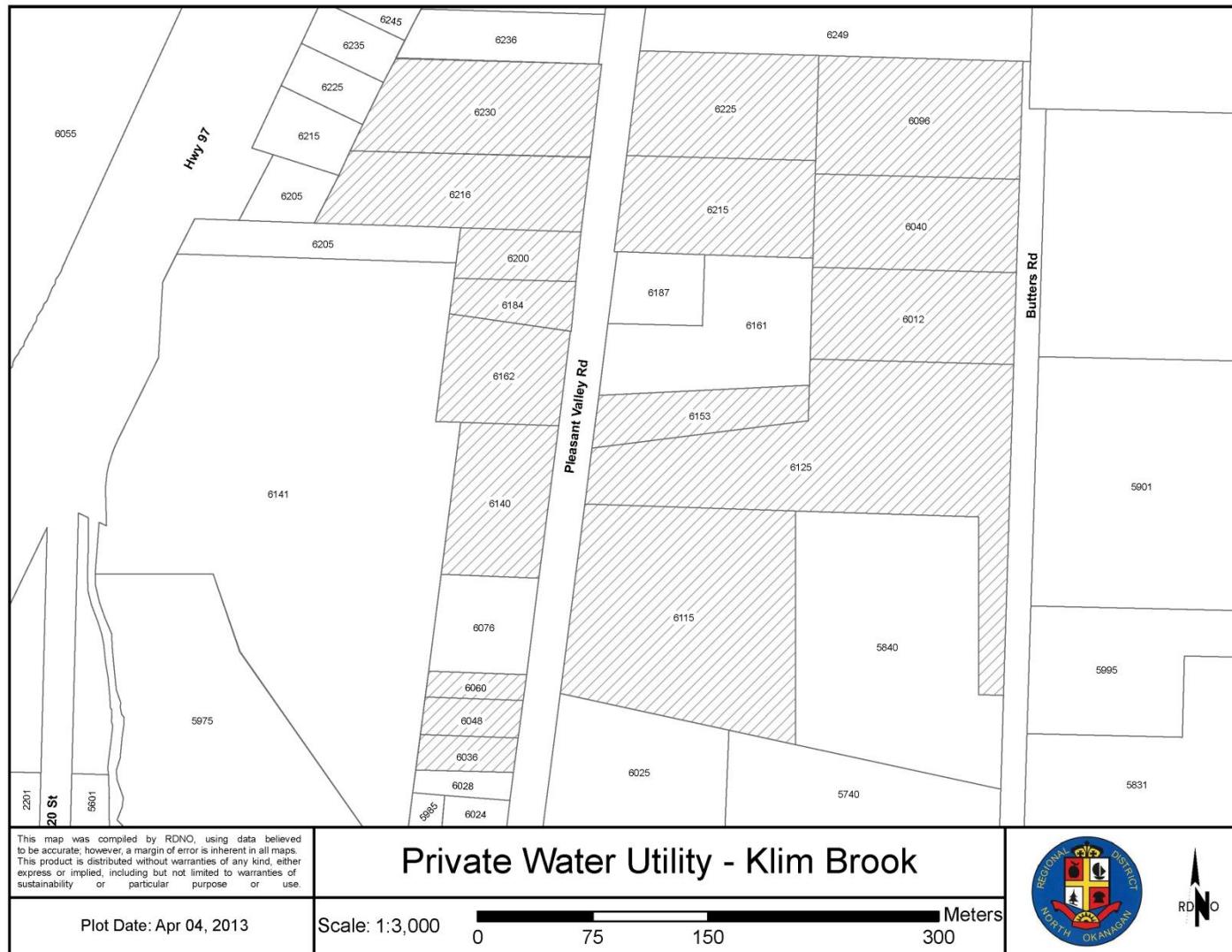
E.1 – Cameron Point Water Utility



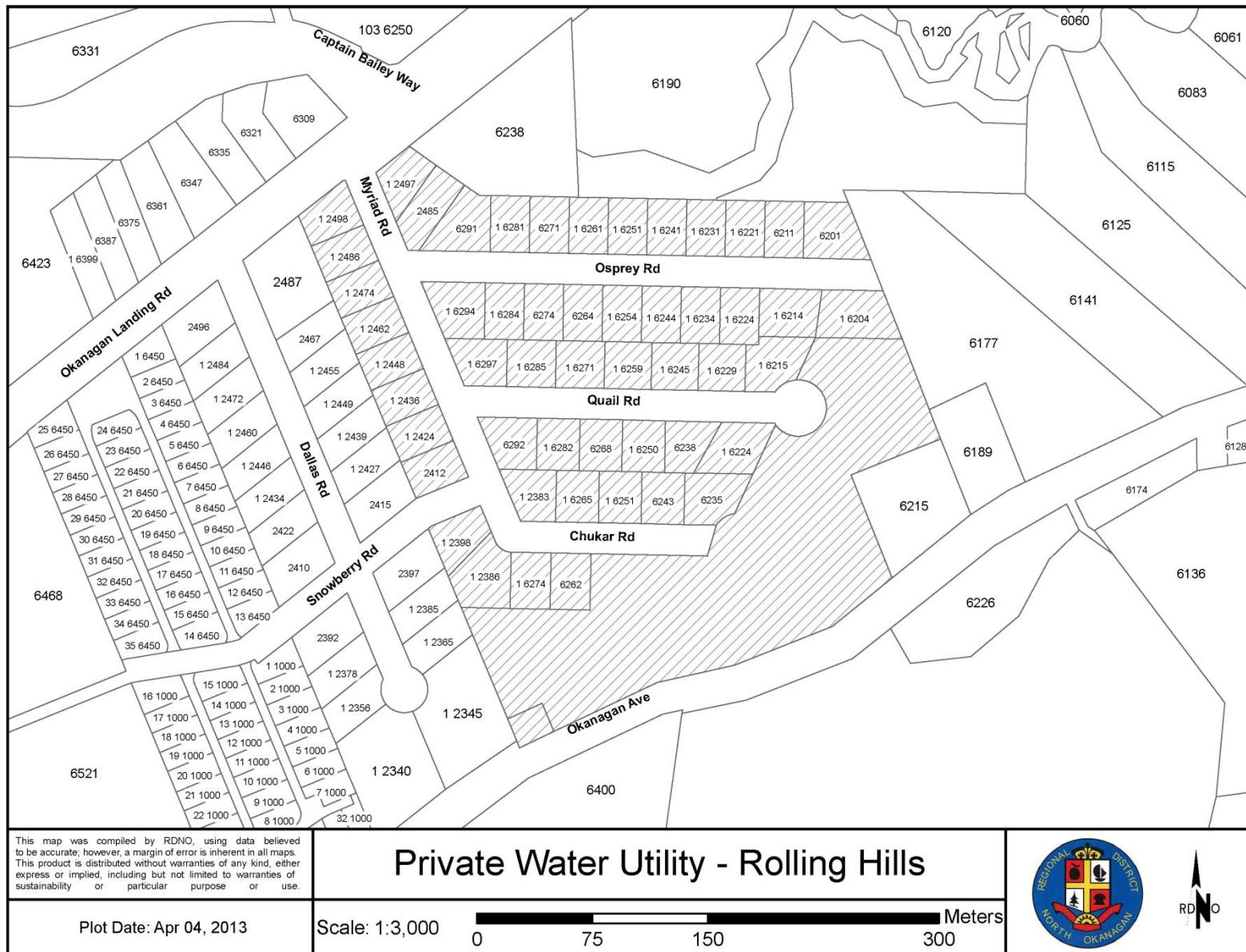
E.2 – Canadian Lakeview Water Utility



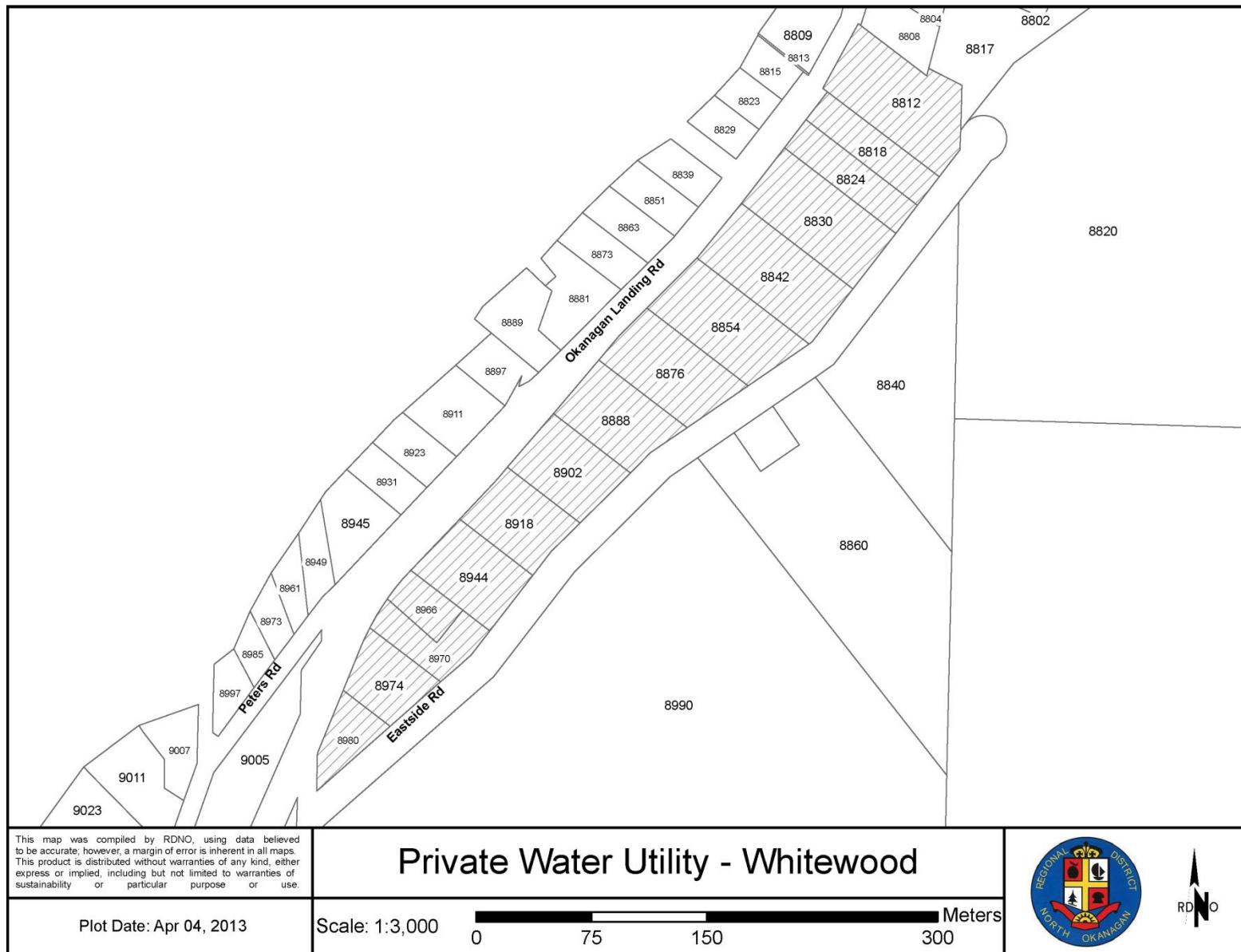
E.3 – Klim Brook Water Utility



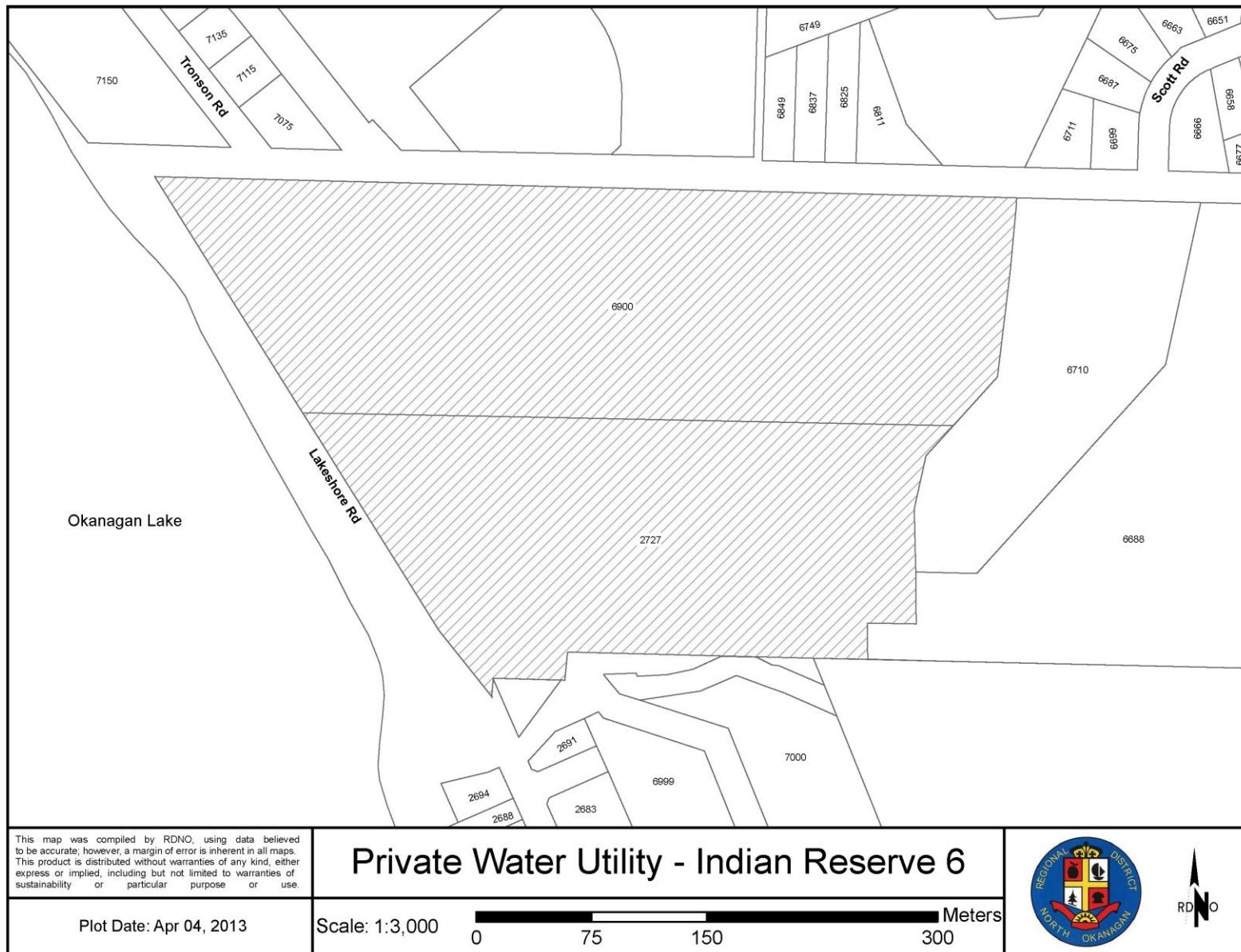
E.4 – Rolling Hills Water Utility



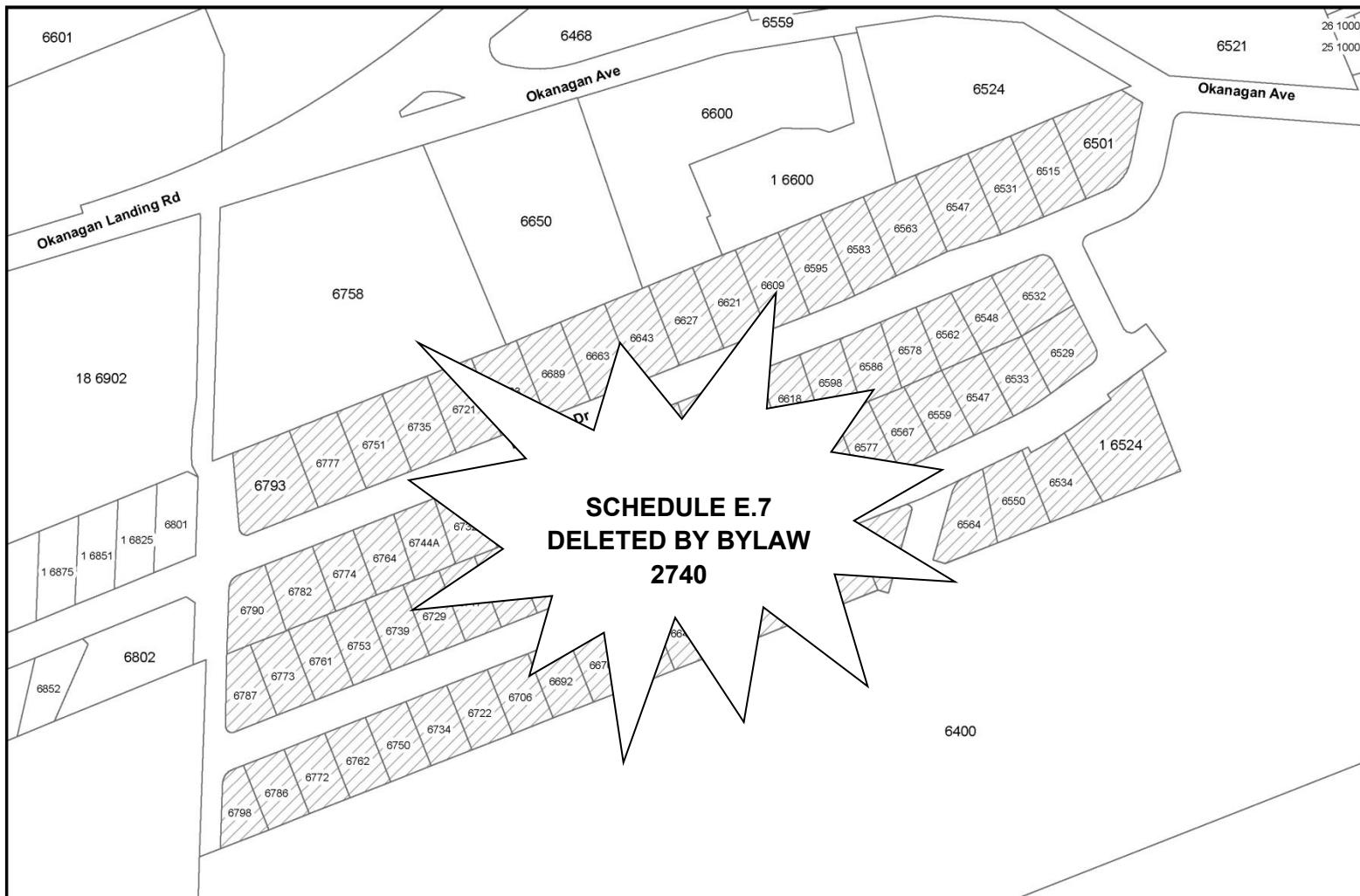
E.5 – Whitewood Water Utility



E.6 – Indian Reserve No. 6



E.7 Claremont Water Utility



This map was compiled by RDNO, using data believed to be accurate; however, a margin of error is inherent in all maps. This product is distributed without warranties of any kind, either express or implied, including but not limited to warranties of sustainability or particular purpose or use.

Private Water Utility - Claremont

Plot Date: Apr 04, 2013

Scale: 1:3,000



A horizontal scale bar with a black segment on the left, a white segment in the middle, and numerical labels 0, 75, and 150 at the ends.

■ Meters
300



RD
No