

Belcarra's Municipal Water System — A Journey That Spanned More Than A Century

Researched and written by Ralph Drew, Belcarra, BC, December, 2012.

Belcarra's journey toward construction of a municipal water system has spanned more than a century of pursuing that most basic domestic need — potable water.

The first decade of the 20th-century was a period of explosive growth and prosperity in British Columbia. From 1900 to 1910, the population of Vancouver quadrupled from 25,000 to over 100,000 people, and it seemed like everybody was involved in property speculation and other money-making ventures. It was during that boom cycle that it became fashionable for newly moneyed Vancouverites to have a summer home on the spectacularly beautiful fjord of Indian Arm.

In 1906, a syndicate of prominent Vancouver businessmen purchased District Lot 229 in Belcarra, also known as "Bole's Ranch", ⁽¹⁾ and in 1908 the 'Bidwell Bay and Belcarra Company Limited' created the subdivision (Plan 1095, DL 229) we have today around the shores of Belcarra Bay, Turtlehead Peninsula and Whiskey Cove. When the properties went to market, the domestic water source was supposed to be 'Deer Lake' (today known as 'Sasamat Lake'), but that water source was not pursued.

In 1909, when sale of properties in the new subdivision at Belcarra began, newspaper advertisements indicated that a "water service" was planned: "A fine spring of the purest water bubbles out of the rocks by the beach [Medicine Man Spring]. Tenders are now being obtained for a water service, which will be installed almost immediately." ⁽²⁾

By 1912, water was being supplied to the property owners in the new subdivision by the 'Belcarra Water Company' owned and operated by Arthur Charles (A.C.) Ray, manager of the 'Bidwell Bay and Belcarra Company Ltd.'. ⁽³⁾ The company constructed a concrete dam on 'Ray Creek' (named after A.C. Ray), with three 1500-gallon wood-stave storage tanks on the adjacent slopes, and over 8,000 feet (2,500 metres) of above-ground wood distribution pipe (wood-stave pipe bound with wire wrapping and tarred on the outside) to service the area. ⁽⁴⁾

The earliest mention of a water supply for the Bedwell Bay area was in 1908 when the Dominion Government initiated creation of the 'Woodhaven Subdivision' (Plan 3014). Water rights for the proposed subdivision were secured on 'Windermere Lake' (today known as 'Sasamat Lake') and 'Upper Windermere Creek' (today known as 'Woodhaven Creek') in anticipation of significant future growth.

In 1914, the 'Imperial Oil Company' applied to obtain a water licence to utilize up to 200,000 IG per day from 'Deer Lake' (then known as 'Windermere Lake') as the water supply for their new oil refinery and the loco townsite. ⁽⁵⁾ This readily accessible source of gravity-fed water was a key attribute of the proposed refinery site. In response, the Dominion Government forwarded a protest to the Provincial authorities against the granting of the water rights, pending an investigation of the effect on the 'Woodhaven Townsite' [i.e. 'Woodhaven Subdivision']. ⁽⁶⁾⁽⁷⁾

In 1926, in his capacity as manager of the 'Belcarra Water Company', A.C. Ray made application to purchase an area of 60± acres that was formerly Timber Berth 463 at Bedwell Bay, to protect the watershed of the Ray Creek water supply. ⁽⁸⁾ However, the lands in question were within the Dominion Government's 'Woodhaven Subdivision' and therefore unavailable for purchase.

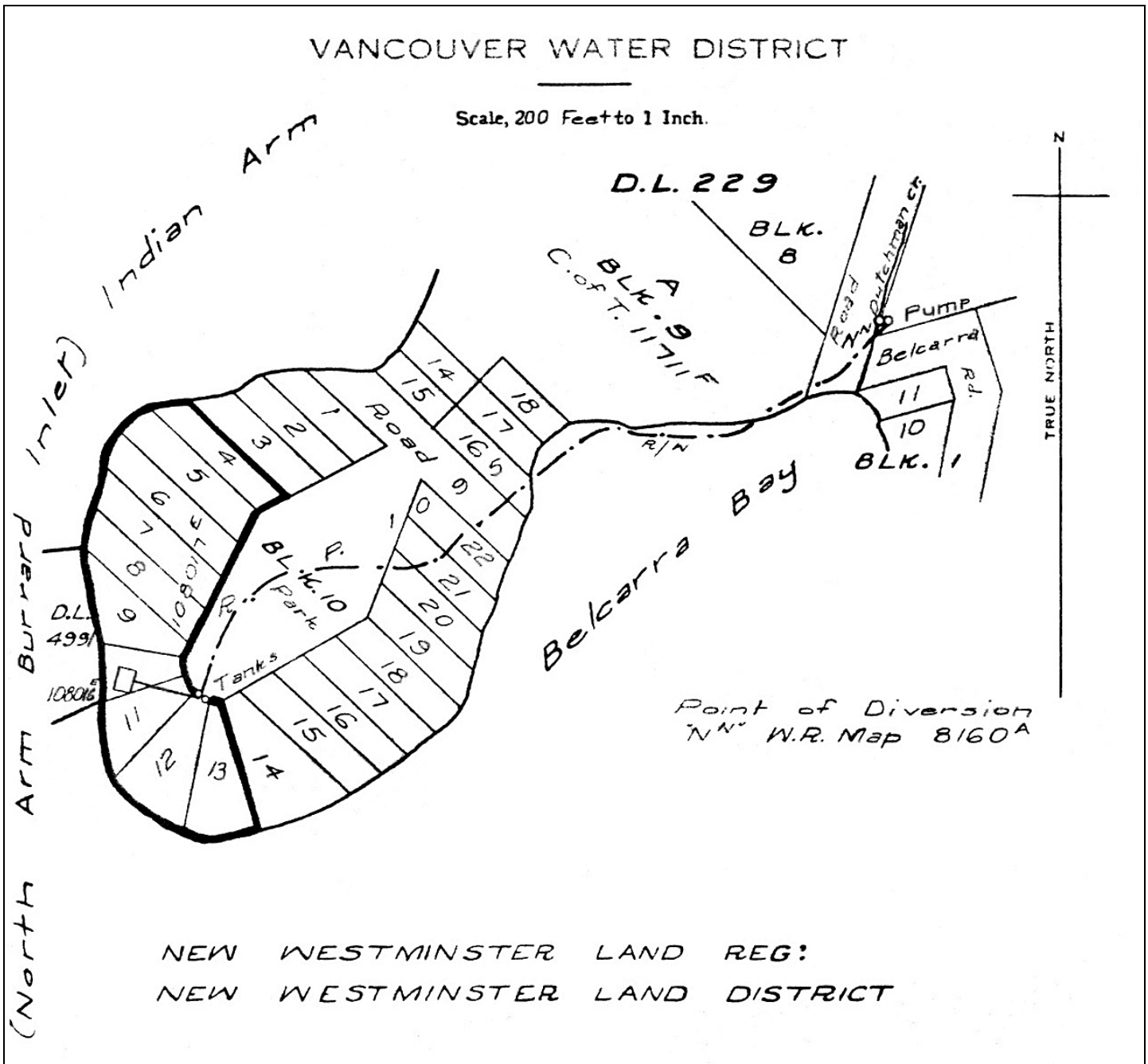
In 1934, Eric Hamber, who owned lots 4 to 16 on 'Turtlehead Peninsula' applied for the first water licence on 'Dutchman Creek' to service his properties. Hamber applied for the water licence in the name of the 'Hastings Sawmill Company Limited', of which he was President, and in the amount 1,000 gallons (4,500 Litres) per day to supply his properties. Hamber built an earth and wood collection reservoir on 'Dutchman Creek'. The system consisted of two water tanks located at the Lot 12 property line (the height-of-land on 'Turtlehead'), a pump on the north side of the road allowance where 'Dutchman Creek' crosses to the head of Belcarra Bay, and approximately 1,400 feet (427 metres) of water pipe between the two locations. ⁽⁹⁾

In 1942, two additional property owners on 'Turtlehead Peninsula' obtained water licences on 'Dutchman Creek', and by 1962 an additional 18 water licences had been registered on the creek which created an obvious need to formally manage the extraction of water from the creek. To address the problem, the holders of water licences on 'Dutchman Creek' incorporated under the Water Act as the 'Belcarra Water Users Community' (BWUC) on April 15th, 1964. The first manager of the BWUC was Wallace Crawford who held that position for 11 years until his death in 1976.

After 'Turtlehead Peninsula' became accessible by road in late 1973, a number of property owners on 'Turtlehead' drilled deep wells in an attempt to provide a more dependable source of water than 'Dutchman Creek', which often dried-up in late summer. But by the late 1970s, many of the wells on 'Turtlehead' were experiencing salt water intrusion.

In 1979, a deep well was drilled across from Lot 4, Block 2, on Belcarra Bay Road right-of-way, and by 1982 the water supply was further diversified by drilling two more wells on road right-of-way, and adding a 45,000-liter storage tank to the system. A concrete dam and reservoir were also constructed to provide added storage of creek water. Initially, the system's wells were manually controlled, which meant that a volunteer had to physically monitor the tank and reservoir levels on a regular basis, and manually turn power to the pumps 'on' or 'off'. During summer, this could require more than one trip around the water system facilities each day. This procedure also resulted in numerous outages of water. By the mid-1990s, automatic timer controls had been installed on all well pumps, and an overflow switch installed at the storage tank making life much easier for the volunteers charged with operating the system. An ultraviolet water disinfection system was also installed to treat the creek water before it was pumped to the storage tank. A number of "old timers" were quite happy with drinking untreated water from the creek — complete with organic matter and coliform bacteria — and it was a struggle to obtain agreement for even this minimal type of treatment!

In as much as some BWUC users did not have water licences on 'Dutchman Creek', and since most of the water was subsequently sourced from drilled wells, it was recognized that the "Belcarra Water Users' Community" incorporated organization was no longer the appropriate administrative mechanism for the water system. As a consequence, in 2002 the BWUC was dissolved and the water system users incorporated as the 'Belcarra Water Users' Society' (BWUS). The BWUS was the largest of the group water systems in Belcarra, and ultimately served 38 properties on Turtlehead Road, Bell's Mountain and blocks 4600 to 4800 on Belcarra Bay Road. A few of the more significant names involved with the volunteer work of operating, maintaining and improving the water system since 1980 were Dan Brain, Jack Daley, Jim Eshom, Dave Reed, Don Reid, Fred Sherman, Paul Teichroeb and Kay Watson.

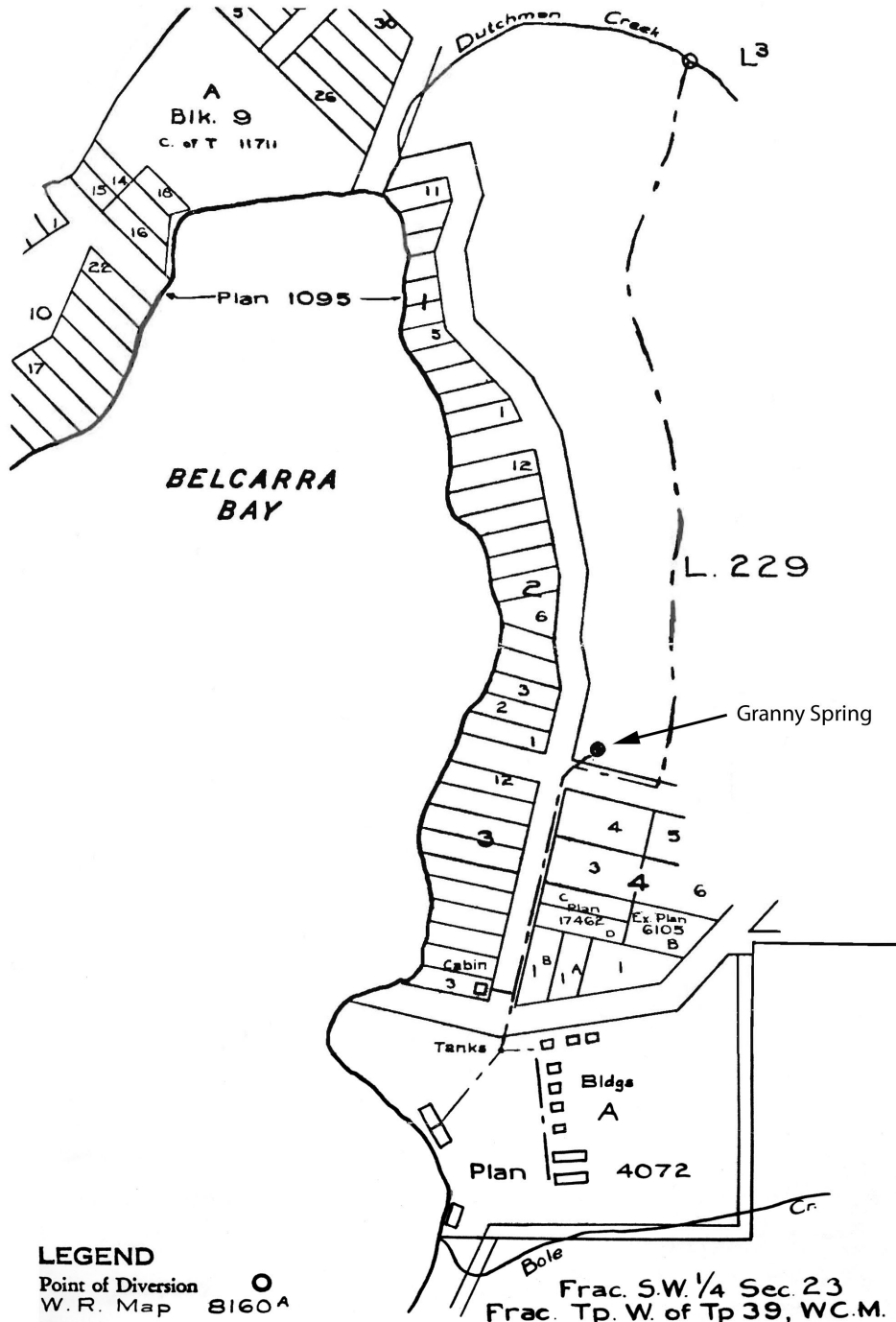


Source: Belcarra Water Users' Community.

1934 map of Eric Hamber's 'Dutchman Creek' water distribution system.


VANCOUVER WATER DISTRICT
G.1. NEW WESTMINSTER DISTRICT

Scale: 300 Feet... to 1 Inch




LEGEND

Point of Diversion 
W. R. Map 8160A
Pipe 

The boundaries of the land to which this licence is appurtenant are shown thus: 

Frac. S.W. 1/4 Sec. 23
Frac. Tp. W. of Tp 39, WC.M.

Signature: 

Date 3 Aug. 1964
CL 29052
File 0243989

EXHIBIT "A"

Source: Map courtesy of Sherry Chisholm.

1962 location map for the 'Dutchman Creek' and 'Granny Spring' water licenses held by 'Belcarra Park Resort Limited'.

Over the 50 years between 1914 and 1964, there was only limited development due to the two world wars and the Great Depression which were interspersed by economic downturns. As a result, the transition from summer cottages to permanent residences did not begin until the 1960s. Prior to the 1970s, domestic water was supplied by shallow wells, naturally occurring springs and surface water licences on local streams. In the 1970s, builders of some permanent homes began to drill deep wells to supply domestic water, and this became the option of choice — if it was a viable option. Several small to medium private water systems, ranging from 2 to 38 residences, were also created during the latter decades of the 20th-century in order to obtain a reliable supply of domestic water in some locales.

In wasn't until 1964 that a formal study of water sources was undertaken by the 'Woodhaven–Bedwell Bay Property Owners' Association', together with the 'Belcarra Ratepayers' Association' and 'Belcarra Park Resort Ltd.', when those organizations engaged an engineering consultant to prepare a report:

“...to delineate the area to be served with a public water supply, to establish design criteria for water use and demand, to compare alternative methods of providing a primary water supply, to design and estimate the cost for the internal distribution system, to investigate the economic feasibility of the entire scheme, and to recommend a future course of action.” – **Martin J.J. Dayton, Consulting Engineer** ⁽¹⁰⁾

At the time there were only 28 developed properties at Bedwell Bay, and another 18 at Belcarra Bay, with a combined year-round population of only 150 people. 'Belcarra Park Resort Limited', which owned the picnic grounds (Lots A & B, Plan 4072 — 12 acres) and District Lot 229 (114 acres) on 'Belcarra Peninsula', was included in the study as contributing a potential 100 properties, if its large acreage could be subdivided. Of the water sources considered in the study, 'Sasamat Lake' was the “only one that is remotely feasible from an immediate financial point of view”, and the conclusion of the report was that “a water system was not economically feasible without the participation of the many undeveloped properties within the Woodhaven and Turtlehead areas”. ⁽¹⁰⁾

In 1967, both the 'Woodhaven–Bedwell Bay Property Owners' Association' and the 'Belcarra Ratepayers' Association' wrote to the 'City of Port Moody' expressing interest to be included within Port Moody's municipal boundaries if a water system could be provided to the two communities. ⁽¹¹⁾ The 'City of Port Moody' authorized a feasibility study to be undertaken with emphasis on the provision of domestic water service.

In 1969, Mayor Al Howe responded to the associations advising that Port Moody Council had passed a resolution to make application to the Minister of Municipal Affairs for extension of Port Moody's boundaries to include the lands within 'Community Planning Area 13' (Ioco, Anmore, Bedwell Bay and Belcarra):

“Members of Council are anxious to discuss this matter with your organization and, in particular, to provide you with details of the [water] services contemplated for your area, and explain why it was considered vitally necessary to proceed with this action.”
– **Mayor Al Howe, City of Port Moody** ⁽¹²⁾

There was urgency in Mayor Howe's letter of response inasmuch as the resolution also stated that “the Council for the 'District of Coquitlam' has precipitated the need for immediate action”, which most likely meant that the 'District of Coquitlam' was also looking at extending its municipal boundaries into the unincorporated areas to the north of Port Moody's boundary. The Port Moody Council resolution instructed their City Engineer to update the 1967 study for the provision of domestic water service to the

area “preparatory to the tendering of a contract for the installation of a water distribution system for Community Planning Area 13”, and also instructed the City Treasurer to arrange temporary financing in the amount of one million dollars (about \$9 million today) to permit commencement of construction of the water distribution system. Although Port Moody retained ‘Associated Engineering’ to undertake a water supply study for Port Moody’s north shore and adjacent areas, nothing further came from these actions. (The cost to construct the water distribution system would have been quite large relative to the small number of residential properties to be serviced.)

In 1980, Planning Consultant Doug Halverson undertook a survey of Belcarra’s water sources on behalf of the ‘Advisory Planning Commission’ for the newly incorporated ‘Village of Belcarra’. ⁽¹³⁾ Halverson’s report summarized information from two studies of water in Belcarra. The first study concerned Belcarra’s ground water that was conducted by Hugh Liebscher, Hydrology Research Division of ‘Environment Canada’. Liebscher was studying the salt water intrusion into the drilled wells on ‘Turtlehead Peninsula’, and provided a great deal of insight into the workings of Belcarra’s ground water aquifers. The second study was based on the survey of Belcarra’s residents during the summer of 1980. Together, these reports provided a good indication of the status of water supplies in Belcarra, along with an indication of present and future trouble spots. A direct outcome of these reports was designation of watershed areas within Belcarra’s first ‘Official Community Plan’ adopted in 1983, coupled with establishing protective zoning for the watershed areas.

In 1988, Council requested the ‘Advisory Planning Commission’ to undertake a survey of water users regarding the status of present water supplies in Belcarra. ⁽¹⁴⁾ Eighty-two (82) replies were received which represented about 33% of the homes in Belcarra. Of those that responded, 24 (31%) indicated that they experienced some degree of water supply problems during a “typical year”. ⁽¹⁵⁾

In 1989, Belcarra received a Provincial grant to undertake a “Water Supply Planning Study” to investigate the options and costs of providing a community water supply and assess the feasibility of a water system. The consulting engineering firm of ‘Dayton & Knight Ltd.’ was selected to undertake the study, and their report was to examine six possible water sources: neighbourhood creeks, groundwater wells, Sasamat Lake, Buntzen Lake, GVWD via Port Moody, and GVWD via ‘North Vancouver District’. ⁽¹⁶⁾

In 1990, ‘Dayton & Knight Ltd.’ presented their “Water Supply Study” which considered a number of options for the development of a community water system, along with an estimate of the costs associated with the options. The primary focus of the study was a domestic potable water supply as opposed to alternatives specifically for enhanced fire protection. The estimated cost of a potable water system was \$3.5 million in 1990 (about \$7.2 million today), which equated to approximately \$15,000 per household (about \$30,000 today). ⁽¹⁷⁾

In 1992, ‘P.S. Turje & Associates Ltd.’ was retained to study a series of water system storage and distribution designs for fire protection. The concepts examined ranged from two storage tanks with a distribution network, at an estimated cost of \$1.4 million (about \$2.9 million today), to a system of 11 water tanks at strategic locations throughout the village such that every home would be within 1000 feet of a storage tank. Unfortunately, none of the options meant a reduction of fire insurance premiums for home owners. Thus, with no financial incentive to pursuing any one of the systems, consideration of a water storage system had to be solely on the basis of enhanced fire protection. ⁽¹⁷⁾

In 1993, Belcarra experienced its first serious house fire in more than 25 years; and only six months later, in June 1994, there was another house fire across from the Belcarra Fire Hall. ⁽¹⁸⁾ These events prompted Belcarra Council to establish a system of fire hydrants connected to water storage tanks to enhance fire protection for the community, and from 1993 to 1998 a series of such works were pursued. ⁽¹⁹⁾

In 1998, Belcarra acquired a Crown Land lease located at the top-end of Tatlow Road, a very strategic location since the Tatlow Road allowance runs from Main Avenue down-slope to Marine Avenue. A water reservoir located at the top-end of Tatlow Road could supply fire hydrants located at Main Avenue, Bedwell Bay Road, and Marine Avenue, and could also accommodate subsequent extensions of the watermain along Main Avenue, Marine Avenue, and Bedwell Bay Road. The second strategic site identified for location of a water storage reservoir was next to the 'Belcarra Water Users' Community' water tanks on 'Dutchman Creek', and discussions were initiated to acquire a lease for the site from the GVRD Parks Department. ⁽¹⁹⁾

A key decision in planning the fire protection system was to design and construct the watermain to both fire protection and potable water municipal standards. With this decision, Council augmented its investment to accommodate future commitments, and arguably this decision was the beginning of Belcarra's future municipal water distribution system.

In 2000, the 'B.C. Ministry of Environment, Lands & Parks' (MELP) installed an observation well for the purpose of monitoring groundwater level fluctuations and water quality of the 'Belcarra Aquifer' as part of the provincial aquifer monitoring program. The 'Belcarra Aquifer' was one of only 17 (out of 421) designated with a "Category 1A" rating. This rating reflects both the high concentration of wells in the area and the vulnerability of the aquifer to potential contamination. In other words, the 'Belcarra Aquifer' was of "high importance" given the number of residential wells and the potential for contamination due to the geology (fractured bedrock) and number of septic fields. ⁽²⁰⁾

In 2002, Belcarra's Environmental Affairs Committee hosted a "Belcarra Aquifer Forum" to raise awareness about groundwater, and Mark Zube, Regional Hydrogeologist for 'Water Management Branch' of the 'B.C. Ministry of Water, Land and Air Protection', presented an overview of the "workings" of groundwater movement and wells. The Environmental Affairs Committee also hosted a second forum to discuss the development of a potable water supply strategy for Belcarra. The first part of the strategy was studying the hydrological aspects of the groundwater supply in Belcarra, which Council funded, and the study was conducted under the direction of Dr. Diana Allen, SFU Professor of Hydrogeology. ⁽²¹⁾

The Walkerton, Ontario, water contamination incident in May 2000 was a defining moment for drinking water regulations in Canada. As a consequence, the province of British Columbia brought in new provincial "Drinking Water Protection Regulations" in 2003, which provided a comprehensive legal framework for drinking water protection, and which necessitated compliance by all water systems that provide drinking water to more than one single-family residence. As a consequence, Council hosted an information meeting for the community to review the key requirements of the new legislation. ⁽²²⁾

In 2004, new provincial "Ground Water Protection Regulations" were enacted to protect BC's ground water resource. These regulations meant that owners of all new and existing wells had new responsibilities that included the requirement for on-going

maintenance of the well and the well head while the well is in use, capping or covering the well, and properly closing the well at the end of its useful life. Water suppliers using community wells also had new requirements for well identification and for flood-proofing wells. ⁽²³⁾ Taken together with the new provincial drinking water regulations, Belcarra's small community water systems, now living in the shadow of the Walkerton incident, had to contend with significant new regulatory requirements.

In early 2005, during discussion of the municipal financial plan, the cost of bringing "GVRD water" into Belcarra was raised which under-scored the need for an updated study of the options and costs. Since a comprehensive study of the water distribution options and associated costs was a costly engineering project, Council proposed that a "Community Opinion Question" be included during the November municipal elections seeking the views of Belcarra's property owners regarding the requisite study: ⁽²⁴⁾

"Are you in favour of the 'Village of Belcarra' applying for provincial or federal infrastructure grants with the expectation of establishing and operating a municipal water system, within all but the Cosy Cove, Twin Islands and Farrer Cove areas of the municipality?"

In May 2005, the overall study was broken-down into three parts due to project size and anticipated cost, and Belcarra made application to the province for three studies valued at \$15,000 each (about \$22,000 today), and the province contributed up to \$10,000 per study. The municipality also prepared a "Request for Proposals" (RFP) for each of the three studies to better define the study costs and timelines, and that July the RFPs were sent to 'Dayton & Knight Ltd.' who had previously undertaken a water study in 1990. ⁽²⁵⁾ In September 2005, Belcarra retained 'Dayton & Knight Ltd.' to update the 1990 water supply study and revise the design, existing infrastructure assumptions, feasibility of development options, and capital cost estimates not referenced in the 1990 study.

In November 2005, Jack Lee (Project Manager) and Walt Bayless (Project Engineer) of 'Dayton & Knight Ltd.' attended an information meeting in Belcarra to provide the study findings. This enabled Belcarra's residents to consider the "Community Opinion Question" with updated information, which yielded a 69% affirmative response. The message was clear — a majority of Belcarra residents wanted Council to pursue infrastructure funding for a municipal water system at the first opportunity. ⁽²⁶⁾

In 2006, an analysis of the water source options affirmed the preferred option as a submarine watermain crossing of Indian Arm to the 'District of North Vancouver' (DNV). Accordingly, an RFP for a follow-up study to pre-design the preferred option was prepared and distributed to five engineering firms. The objective of the "Preferred Option Pre-Design Study" was to enhance consideration by senior governments of an application for funding grants given that the study would provide both design details and quantified costing. Two proposals were received and, in May 2006, Council awarded the project to 'Dayton & Knight Ltd.' at a cost of \$46,000 (about \$67,000 today); and again, applied to the province for a funding grant. ⁽²⁷⁾

In October 2006, Jack Lee (Project Manager) and Walt Bayless (Project Engineer) attended an information meeting in Belcarra to provide an overview of the pre-design study findings. The preferred alignment of the submarine crossing was identified as originating from Strathcona Road, at Cove Cliff in North Vancouver, and terminating at Midden Road in Belcarra. The distance of this crossing was only 1.4 km, and the cost of a twinned 200mm HDPE pipe crossing at that alignment was estimated at \$2.6 million (about \$3.8 million today). Additional new water main construction within Belcarra was

estimated to cost \$2.2 million (about \$3.2 million today), with an additional \$1.1 million (about \$1.6 million today) required for residential service connections. ⁽²⁸⁾

In December 2006, Council made application for funding under the 'Canada–British Columbia Municipal Rural Infrastructure Fund' (MRIF) which required the inclusion of a significant amount of back-up documentation and previous studies. ⁽²⁹⁾

In January 2007, 'Foreshore Technologies Inc.' submitted their "Environmental Assessment Report" for the submarine crossing of Indian Arm which concluded: ⁽²⁹⁾

"The selected route for the pipeline crossing has inherent environmental merit in that it represents the shortest route thereby minimizing the footprint of the project. Materials identified in the pre-design are inert and will provide opportunities for habitat enhancement beyond their impacts. Based on the results of this survey, and the pre-design information provided, there are no environmental impacts associated with the Belcarra Watermain Crossing for which mitigation or compensation cannot be designed."

In March 2007, Council held an information meeting at which the results for both the "Environmental Assessment Study" and the "Water Use Efficiency Study" were presented and discussed by the professionals who prepared the reports. ⁽²⁹⁾ Throughout 2007, considerable work was undertaken by staff to satisfy the requirements of various agencies such as the 'Vancouver–Fraser Port Authority' (VFPA) and 'Burrard Environmental Review Committee' (BERC), and to obtain required approvals. ⁽³⁰⁾

In January 2008, the Federal and Provincial governments advised Belcarra that the municipality would receive funding under the MRIF program to a maximum federal/provincial contribution of \$4,035,266 (about \$5.6 million today) towards a potable water supply and distribution project; and on January 18th, MP James Moore and MLA Iain Black formally announced the funding. Under the MRIF grant guidelines, the remainder of the project was to be funded by the municipality. ⁽³¹⁾

In February 2008, 'Western Economic Diversification Canada' (WED) provided a detailed overview of the "Canadian Environmental Assessment Act (CEAA) requirements that were pre-requisite to receiving infrastructure funds under the MRIF program. These requirements included formal consultation with affected First Nations as well as consultation with the following federal agencies: Fisheries and Oceans Canada (DFO), Transport Canada, Vancouver–Fraser Port Authority (VFPA), Environment Canada. ⁽³²⁾

The CEAA requirement for First Nations consultation was ultimately quite onerous and resulted in a two-year delay to the start of the project. Belcarra had kept the 'Tsleil-Waututh Nation' (TWN) fully informed regarding the project, including advising TWN representatives in the fall of 2006 that Belcarra planned to make application for MRIF funding, and again advising the TWN when the MRIF funding was announced in January 2008. Belcarra staff met with the TWN in April 2008 and provided the TWN with the 'Environmental Assessment Document' (EAD) and all other information related to the project to that date. At that meeting, the TWN representatives stated that the TWN would not look at the information provided as it was the federal agencies that had the "duty to consult" as part of the CEAA process, not Belcarra. TWN informed Belcarra staff that they would only consult "government-to-government" with the responsible federal agencies, and only when the federal agencies provided them with a referral request for Belcarra's project. Belcarra relayed this information to WED and the federal agencies.

In August 2008, Belcarra staff provided to the TWN an “EAD Addendum”, prepared in response to questions which subsequently arose from the various federal agencies, and continued attempts, without success, to engage the TWN. Belcarra understood from WED in September 2008 that all environmental matters had been identified with satisfactory mitigations acceptable to the federal agencies, with the exception of the First Nations consultation. The position of WED was that WED had delegated the “responsibility to consult” to Belcarra, the project proponent. Thus, Belcarra found itself as an uncomfortable pawn in the political positioning between First Nations and the federal government and its agencies. This positioning had nothing to do with the specific project in question, and everything to do with their respective interpretations of key court rulings regarding “the duty to consult”. Meanwhile the clock was ticking on costs. Even if one assumed a modest 3% increase in construction costs per annum, Belcarra’s estimated \$6 million project could be expected to increase in cost by some \$15,000 every month. For Belcarra, time was of the essence. For the TWN and WED, the matter of who would consult whom, and under what presumed conditions, was paramount for this project and, perhaps even more critically, was a precedent.

Throughout 2008, the WED representative and other federal agency representatives indicated they needed to be satisfied that Belcarra had provided “sufficient opportunity” for the TWN to engage in the process regarding their interests in the project. Staff sought clarification from WED in December 2008, regarding the extent of the consultation process to satisfy the federal agencies and was informed that WED was “not going to comment on the process for these types of reviews [Environmental Assessment screening review] ... as the project was not an exclusion under the CEAA and the project does not trigger a comprehensive study review”. The WED representative was particularly unhelpful to Belcarra in negotiating through the rigorous and complex federal grant process.

After many attempts by Belcarra to communicate with the TWN throughout 2008, the TWN finally agreed to meet with Belcarra representatives in January 2009. This meeting proved to be critical. At that meeting, attended by a representative from Environment Canada, the TWN representatives acknowledged that Belcarra had previously provided the TWN with numerous project documents, and Belcarra again indicated that it would work with the TWN to address any concerns that may arise in respect of the project.

At the meeting, the TWN representatives reiterated it was the Federal Crown that had the “duty to consult”, but because of the positive working relationship between the TWN and Belcarra, they would make an exception in Belcarra’s case, and the TWN would open a project file and prepare a task, time and cost estimate for the project review once initiated by receipt of the \$250 filing fee. On that basis, the TWN gave “approval-in-principle” to the project in a letter to WED, subject to the following conditions:

- Tsleil-Waututh would review all project related baseline studies and environmental impact and mitigation material;
- Tsleil-Waututh would review all project related cultural and heritage resource information and would undertake a traditional use study to compare Tsleil-Waututh data and assessments with those of the proponent and their consultants; and
- Tsleil-Waututh costs associated with the activities described above, if not considered a responsibility of the “Federal Responsible Agencies”, would be paid by the ‘Village of Belcarra’ in accordance with the fee structure set-out in the TWN’s “Stewardship Policy” and an agreed to work plan and budget.

The TWN also presented a copy of their newly adopted, and not previously distributed, Stewardship Policy “to provide guidance to governments and others on appropriate processes and procedures through which to undertake consultation on policies, plans and projects in the Tsleil-Waututh Traditional Territory”.

The municipality was placed in an awkward position. While the TWN doubtless felt it was being accommodating in this special case to help its neighbour, Belcarra had its own precedents to consider. As a matter of principle, governments do not charge other governments “consultation fees”. However, having little choice, and very conscious that costs would only increase, Belcarra submitted the requested \$250 “filing fee” to TWN in order to obtain a “task, time and cost estimate” for the project review. In their letter dated March 11th, 2009, the TWN provided an “estimate only” amounting to \$36,000 for consultation costs. Important to note was that the TWN estimated costs included what appeared to Belcarra as arbitrary and unsubstantiated quotation with “fixed price” fees amounting to \$33,000 (about \$46,000 today). WED’s position was: “If First Nations identify any concerns with the proposed project, those concerns need to be included in the EAD, along with details on how the First Nations concerns will be mitigated.” For all intents, WED’s position provided the TWN with *de facto* “approval authority” or “veto power” which was not Belcarra’s understanding of First Nation consultation responsibilities.

Belcarra believed that, in good faith, it had made every effort to consult with the TWN as required by the MRIF project approval process. Unfortunately, the municipality found itself in the position of having to pay what it felt was an excessive and unwarranted amount of money to the TWN as a prerequisite for the TWN to even review the project information and to identify concerns, if any, it might have in order to satisfy WED’s requirements. If Belcarra did not pay, there was no clear path forward. Costs could be expected to rise while there was no certainty that the deadline associated with federal and provincial cost sharing would be extended. After all, the MRIF funding program was intended as a stimulus program — it sought “shovel-ready” infrastructure works to immediately provide employment.

For the duration of what WED considered the “consultation period”, the province would not advance funds to pay for any work on the project, including the prerequisite engineering design. The timeline was critical in that the engineering design work had to be completed in order to meet DFO’s seasonal “fisheries window”. DFO would only allow work to occur in Indian Arm during specific months in order to minimize impacts on migrating salmon.

In July 2009, the signed MRIF contribution agreement was received from the province. The agreement completed the EA process and formalized all requirements of Belcarra resulting from the EA and, at that point, Belcarra could incur costs eligible for MRIF grant reimbursement. Work on completing the engineering design could finally start.

In August 2010, a major milestone was reached in the project when a \$2.1 million (about \$2,9 million today) contract was awarded to ‘Vancouver Pile Driving Ltd.’ for the first phase of construction — the watermain crossing under Indian Arm. Council also approved entering into a 60-year lease with ‘Port Metro Vancouver’ (PMV) for the seabed under the watermain. ⁽³³⁾

In September 2010, Council awarded a \$1.9 million (about \$2.6 million today) contract to ‘Mission Contractors Ltd.’ for the second phase of construction — the water system ‘backbone’ from the valve chamber at Midden Road, along Bedwell Bay Road and Main

Avenue to the Tatlow Reservoir, and beyond to the eastern end of Main Avenue — which included the fibre-optic communications cables between the Midden Road Valve Chamber and the Tatlow Road Valve Chamber. ⁽³⁴⁾

In October 2010, a ground breaking ceremony was held at Midden Road to celebrate the start of construction of the municipal water system project which was attended by MP James Moore and MLA Iain Black, two politicians who had been extraordinarily helpful in supporting Belcarra's application for infrastructure funding. ⁽³⁵⁾ It now had been over 2½ years since the funding grant had been announced, but the completion date for construction remained fixed at March 31st, 2012. (As for receiving MRIF grant funds, costs for reimbursement had to be submitted by March 31st, 2013.) This left only 18 months for actual construction, and considerable remaining engineering design and survey work still could not be undertaken due to restrictions on the availability of MRIF grant funds while the consultation process with the Tsleil-Waututh was stalled.

One consequence of the restrictions on the use of MRIF funds for completing the engineering design was the inability to establish a revised estimate of the overall project cost. When the final engineering design identified the need for a pressure zone not contemplated as part of the original water system design — with associated standby emergency electrical generator and high-capacity pump for the fire hydrants in the pressure zone — the original project cost estimates immediately became out-dated.

In March 2011, 'Vancouver Pile Driving Ltd.' completed construction of the watermain crossing under Indian Arm. In April, detailed design was finalized for construction of the Valve Chambers, chlorine monitoring, emergency fire pump, distribution pumps and back-up generator at Midden Road and Tatlow Road. ⁽³⁶⁾

In May 2011, a \$380,000 (about \$504,000 today) contract was awarded to 'Merletti Construction Ltd.' for construction of the Valve Chamber at Strathcona Road in North Vancouver and upgrading of the 'Dean Place' pressure reducing valve station, and in June a \$840,000 (about \$1.2 million today) contract was awarded to 'Merletti Construction Ltd.' to construct the valve chambers, chlorine monitoring, emergency fire pump, distribution pumps, and back-up generator at Midden Road and Tatlow Road Reservoir Building. ⁽³⁷⁾

In August 2011, a \$1.6 million (about \$2.2 million today) contract was awarded to 'Sandpiper Contracting Ltd.' to install watermains and service connections along Belcarra Bay Road from Midden Road to Bedwell Bay Road, Turtlehead Road, Robson Road, Salish Road, Whiskey Cove Lane and Coombe Lane. ⁽³⁷⁾

In October 2011, a \$1.4 million (about \$1.9 million today) contract was awarded to 'Sandpiper Contracting Ltd.' to install watermains and service connections along Senkler Road, Watson Road, Kelly Road, West Road and the southern portion of Marine Avenue. ⁽³⁷⁾

In a report to Council dated October 11th, 2011, the consulting engineers ('Opus DaytonKnight Consultants Ltd.') estimated the final cost to complete the water infrastructure project to be \$8.9 million (about \$11.8 million today), which was \$1.9 million (about \$2.5 million) more than originally anticipated. ⁽³⁸⁾ This meant additional debt financing, and Belcarra had to apply to increase the authorized amount to be borrowed. In December 2011, the 'Inspector of Municipalities' approved increasing Belcarra's borrowing to \$4,967,032 (about \$6.6 million today) based on the revised total project cost.

In May 2012, Council held a special information meeting to answer resident's questions regarding the final estimated costs of the municipal water system. Belcarra's consulting engineers, Ron Beesley ('Beesley Engineering Ltd. '), Jack Lee and Walt Bayless ('Opus DaytonKnight Consultants Ltd. ') prepared detailed responses to resident's questions. ⁽³⁹⁾ The degree of resident interest and concern was evident in that the meeting, originally planned for 3 hours, ran for over 4½ hours.

The October 2011, 'Opus DaytonKnight' final cost estimates proved to be accurate, and Belcarra was thus able to determine the final cost per property of the new municipal water system.

By the end of May 2012, a total of 29 property owners representing 11% of those in the water system specified area had paid the up-front commuted cost per property (\$18,127 or about \$23,678 today) meaning that the municipality did not need to borrow the \$525,702 (about \$687,000 today) that would have been needed to cover their share. Consequently, the municipality only had to borrow \$4,441,330 (about \$5.8 million today). ⁽⁴⁰⁾

In early October 2012, the 'Municipal Finance Authority' (MFA) announced that the 2012 fall debenture was successfully issued in the 10-year municipal bond market at a record low interest rate of 2.90% (a fixed rate for 10 years). This announcement was good news for the financing of the water system in that it reduced the parcel tax levy to \$973 (about \$1270 today) per year for those residents who did not commute their share of the capital costs. ⁽⁴¹⁾

In late October 2012, after careful review of multiple water quality tests, the 'Fraser Health Authority' authorized Belcarra to commence operating its new municipal water system, on October 25th municipal staff connected the first property located at 4950 Robson Road, and on December 7th a ribbon cutting ceremony was held to celebrate the formal operational start-up of the system and to recognize Belcarra's naming of its Midden Road water receiving building after its much admired and long-serving planning consultant, Michael Rosen. ⁽⁴²⁾

As a final note, the Indian Arm submarine watermain crossing segment of Belcarra's municipal water system was nominated by "OPUS DaytonKnight for the 2013 "Award of Excellence" from the 'Association of Consulting Engineering Companies' (ACEC).

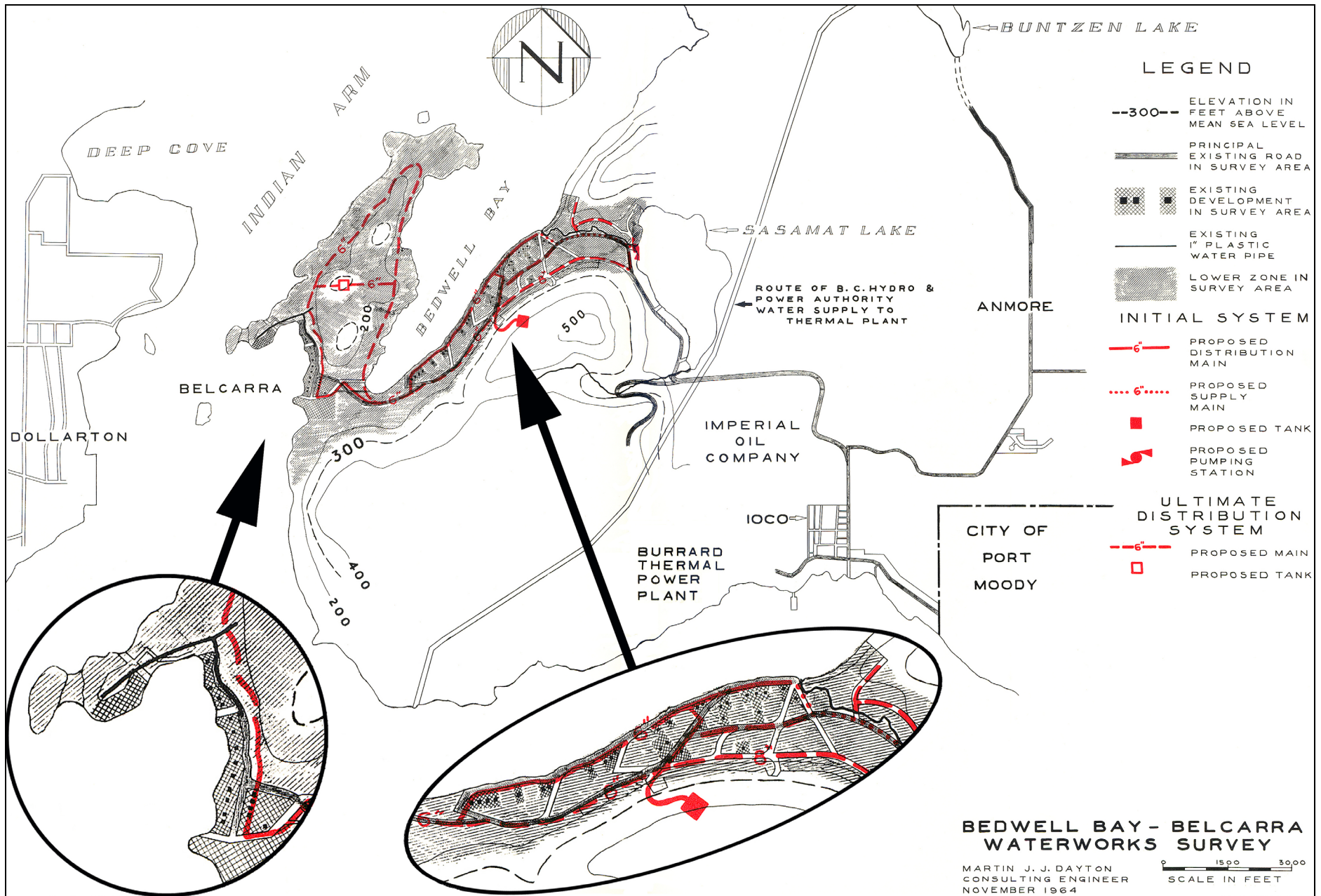
Thus, over a century after the syndicate of Vancouver businessmen had developed their plans for supplying water to the envisioned Belcarra community, a municipal water system was finally operating.

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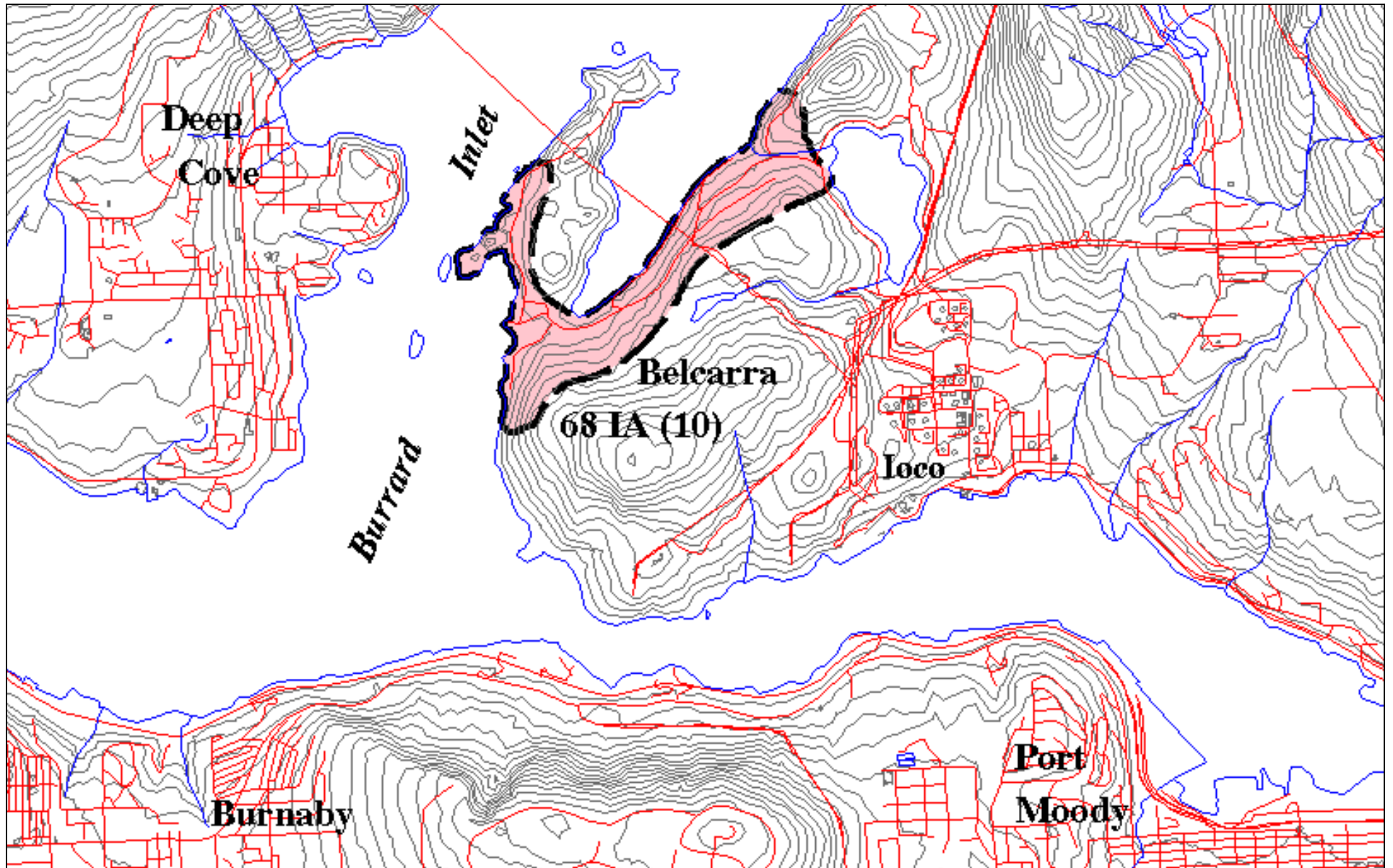
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- (7) *ibid.*, Letter from F.L. Gwillim; Gwillim, Crisp & Mackay, Barristers & Solicitors, Vancouver, to W.D. Magee, Agent of Dominion Lands, New Westminster, B.C., dated June 5th, 1914.
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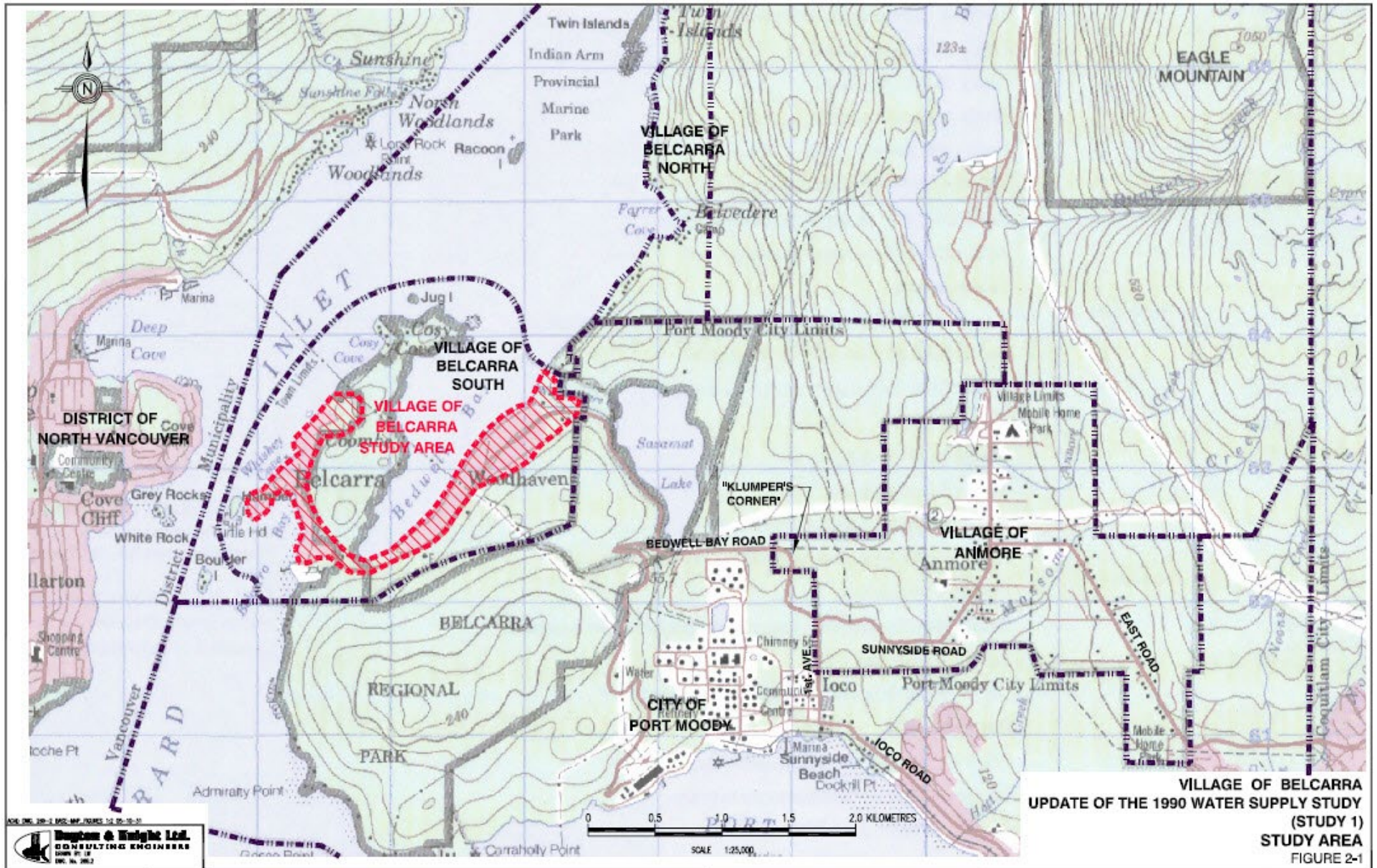


Water supply system proposed in 1964 for Bedwell Bay and Belcarra by Consulting Engineer Martin J.J. Dayton — Note the small number of developed properties revealed in the insets: 18 at Belcarra Bay and 28 at Bedwell Bay.

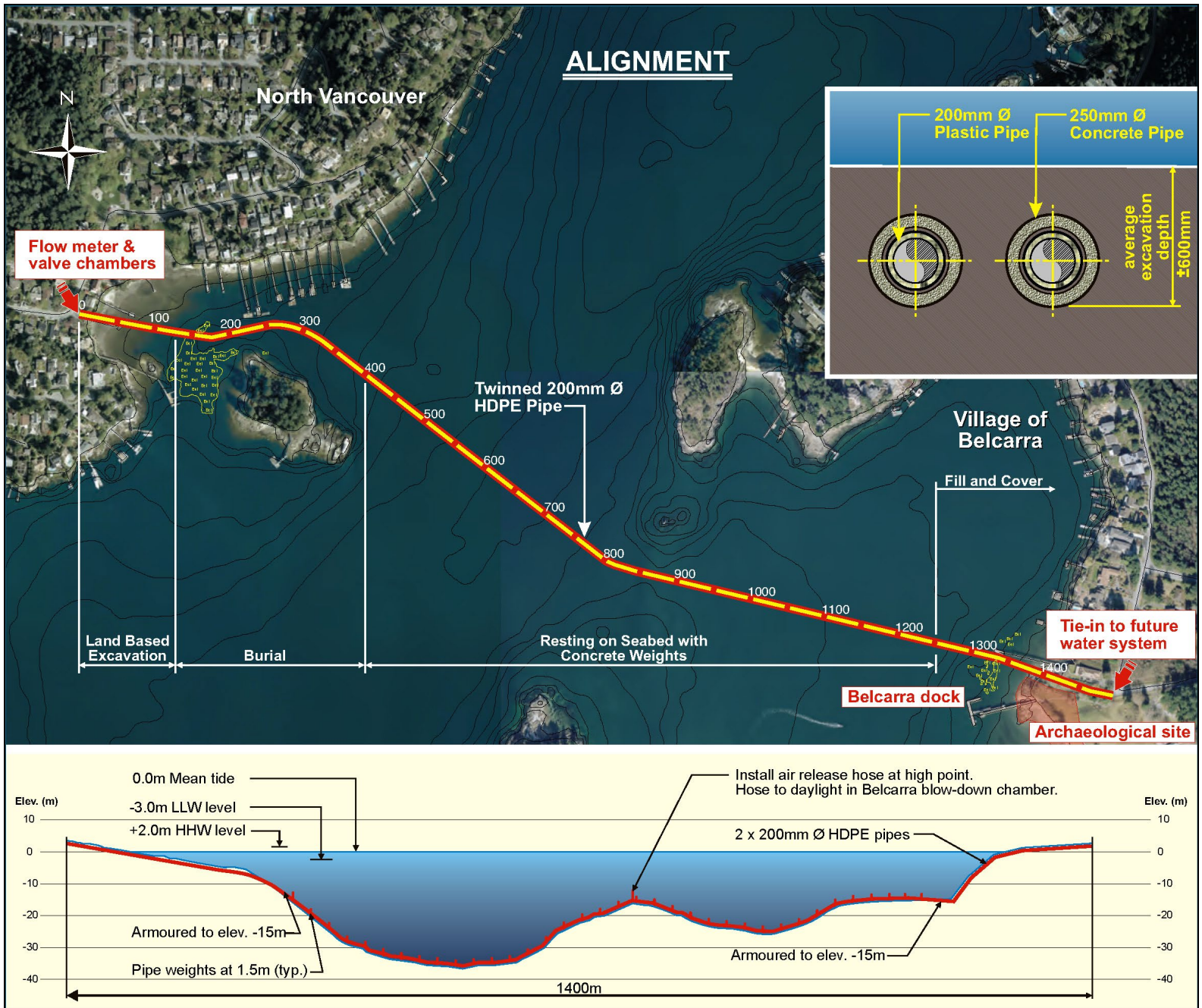


Source: Aquifer Portfolio, B.C. Environment, Lands and Parks.

Map showing the location of the 'Belcarra Aquifer'.



Study area for the Belcarra water supply study conducted by 'Dayton & Knight Ltd.' in 1990.



Alignment of the watermain under Indian Arm between Strathcona Road in North Vancouver and Midden Road in Belcarra.

