

DATE: October 11, 2017

FILE: 5610-04

TO: Chair and Directors
Comox Valley Water Committee

FROM: Russell Dyson
Chief Administrative Officer

Supported by Russell Dyson
Chief Administrative Officer

R. Dyson

**RE: Comox Valley Water Treatment Project -
Implementation Decisions**

Purpose

To confirm the path forward for the Comox Valley Water Treatment Project (CVWTP) and receive approval for the following five recommendations pertaining to project implementation:

1. Endorse the implementation strategy for the project;
2. Pursue advanced funding opportunities to accelerate the project schedule;
3. Install temporary ultraviolet (UV) treatment at the existing chlorination station;
4. Endorse the public assent process for the borrowing of \$29 million for the project in March 2018; and
5. Award the communications contract to Zinc Strategies Inc. to support the project.

Recommendations from the Chief Administrative Officer

Recommendation 1: THAT the Comox Valley Water Treatment Project implementation strategy as noted in the staff report dated October 11, 2017 is fully endorsed including:

1. The scope of the infrastructure, which includes a deep water intake, raw water pump station, raw water pipeline, water treatment plant, and treated water pipeline;
2. The revised schedule, specifically to obtain public assent in March 2018 and complete the project in mid-2021;
3. The revised capital cost estimate of \$110.6 million; and
4. The funding model and proposed future grant applications, aiming to maximise grant funding and borrow funds in line with a minimum of 50 per cent grant funding.

Recommendation 2: THAT the Comox Valley Water Committee pursue all opportunities available to them in order to receive funding in advance of the next round of infrastructure grants to accelerate the project schedule, including authority for directors and staff to meet with Ministers and Treasury Board members to achieve this goal.

Recommendation 3: THAT with regard to the installation of temporary UV treatment at the Comox Valley Water System Chlorination Station:

1. Subject to the completion of the open procurement process for the supply of UV reactors and associated equipment, a contract be awarded up to a maximum amount not to exceed \$400,000 excluding applicable taxes at the November 7, 2017 Comox Valley Regional District Board meeting; and
2. The Board approve proceeding with detailed design, procurement of construction services, and installation.
3. The Chair and Corporate Legislative Officer be authorized to execute the contract.

Recommendation 4: THAT with regard to the related maximum borrowing requirements of \$29 million:

1. A loan authorization bylaw be submitted to the electors for approval by way of the alternative approval process to be conducted for the Comox Valley Water System service area being the Town of Comox, City of Courtenay, Electoral Area A (Baynes Sound / Denman-Hornby Islands), Electoral Area B and Electoral Area C;
2. The following be presented to the Comox Valley Regional District Board of Directors at its November 7, 2017 meeting:
 - o A loan authorization bylaw for three readings;
 - o The notice to electors for approval;
 - o The elector response form for alternative approval process for approval;
3. The deadline for receiving the elector response forms be set at 4:30 pm on Friday, March 16, 2018; and
4. The total number of electors within the service area to which the alternative approval process applies is determined to be 47,845 of which ten per cent or 4,785 must submit elector response forms to prevent the Comox Valley Regional District from adopting the Comox Valley Water Treatment Plant loan authorization bylaw without first obtaining the assent of the electors by way of referendum.

Recommendation 5: THAT with regard to the contract award for Capital Projects Communications Consultant:

1. As a result of a competitive process, the contract for the communications consultant for water capital projects for year one be awarded to Zinc Strategies Inc. in the amount of \$92,325 excluding GST and disbursements;
2. Subsequent years work be awarded to Zinc Strategies Inc. at the Comox Valley Regional District's discretion for a total overall cost not to exceed \$350,000 excluding GST and disbursements for water and wastewater capital projects over five years;
3. The Chair and Corporate Legislative Officer be authorized to execute the contract.

Executive Summary

Due to the large amount of information necessary to support the recommendations presented above a different format has been chosen for this report. Each topic identified below has an accompanying appendix with additional schedules to further support the topic. Please reference the attachments section at the end of this document for a full summary of appendices and schedules.

Background and Current Status (Appendix A)

- This project is mandated by regulations, will bring the Comox Valley Regional District (CVRD) in line with other jurisdictions across BC, and is vital to provide safe, secure water to the Comox Valley. The regulations are not focussed on turbidity alone, the CVRD is the only community of its size in BC that doesn't have a second form of treatment.
- While erosion of the No. 2 Dam spillway to Perseverance Creek is a significant source of turbidity into the lake, it is not the only contributor to turbidity in Comox Lake. Resolving it will not remove the requirement for filtration but is important for reducing the operating and maintenance costs of our planned filtration plant.
- Cumberland is taking steps to develop a plan for remediating the spillway and has agreed to work with the CVRD on this matter.
- Moving to the deep water intake from the current intake on the penstock is crucial for ensuring water security and independence from BC Hydro operational limitations and maintenance shutdowns.

- Opus International Consultants (Opus) have submitted their Indicative Design Report which is the final deliverable of phase one of the CVWTP. The Indicative Design Report is attached as Schedule B.1 and further refines the details of the scope of infrastructure, which is clearly identified in Appendix A.
- The Comox Lake Watershed Protection Plan (WPP) is being implemented in parallel with the CVWTP to mitigate risks to drinking water from human activity in the watershed, and further minimize water treatment operational costs by reducing the amount of sediment carried into the lake.
- Staff continue to work with the K'ómoks First Nation to work towards a memorandum of understanding for the project and their future participation in the water system.

Design Phase Two, Schedule and Project Cost

- Opus are ready to commence phase two of the project. Including technical specifications for the project infrastructure, project agreements for the procurement of the design-build contractor, permits and approvals, and undertaking a two phase procurement process to select a design-build team.
- The owner's engineer contract is under budget for phase one and Opus is forecast to remain under budget for phase two, both of which are funded by the Clean Water Wastewater Fund Grant (83 per cent funding from federal and provincial sources).
- The next awards of major infrastructure grant funding is currently expected in early 2019. The project schedule has been adjusted to maximize the probability of receiving sufficient grant funding. Project completion is now scheduled for mid-2021, as per Schedule B.3.
- Ministry of Municipal Affairs and Housing staff have encouraged the CVRD to pursue opportunities to receive advanced funding for the project to improve this schedule. All efforts to inform the Provincial Treasury Board about the urgency of our project should be taken by the Directors to work towards a special treasury allocation.
- With the revised schedule pushing mid-point of construction to 2020, the capital cost for this project has been refined to a Class B estimate of \$110.6 million (Schedule B.1). The \$4.8 million increase in capital cost is attributable to escalation in construction costs arising from the delay. This escalation is offset by the increased accumulation of reserves during the delay, resulting in no additional borrowing required as compared to the previous estimate, as per the analysis provided for public assent in Appendix D.
- Increases in operational and maintenance costs have been calculated, allowing for three additional full time employees to run the new facilities. These costs have been incorporated into the financial plan, which also conserves significant reserves to fund the upcoming asset management program.
- Value planning, a process to evaluate the project scope, schedule and methodology, is planned for phase two, with the aim of reducing the capital cost of the project and maximising the CVRD's chance at grant funding.
- Project agreements are to be designed to evaluate project options based on lifecycle cost, ensuring the best value project is realised from a holistic perspective.

Managing Water Quality in the Interim

- The delay of the project is significant compared to our Permit to Operate deadline of September 2019. This delay is unacceptable to Island Health, and will result in additional hardship to users of the Comox Valley Water System who will now have to endure two additional winters of Boil Water Notices (BWN) (four in total between now and commissioning). In collaboration with Island Health, advanced purchase and temporary installation of UV treatment on the existing system has been investigated and is confirmed to be feasible and cost effective. This option would give the Comox Valley Water System two forms of water treatment, increase the NTU threshold for BWNs, and subsequently decrease the days on BWNs significantly.
- The cost for temporary installation of UV treatment is estimated at \$1 million, of which \$400,000 is expected to be recoverable for the future CVWTP. The unrecoverable costs (remaining \$600,000) of the project are small, given the large impact of BWNs to the community. For full details of the UV treatment installation and cost analysis please reference Appendix C.
- Island Health have also confirmed that as long as the project is progressing on the revised schedule, installation of temporary UV treatment shall avoid Island Health issuing penalties. Otherwise, potential penalties include fines to the CVRD and the suspension of development permits for the portions of the Comox Valley connected to the system. Additionally, Municipal Affairs and Housing staff have indicated that interim measures such as this show collaboration with Island Health and increase the CVRD's chances of grant funding.

Public Assent

- Public assent is required to borrow funds for this project, Municipal Affairs and Housing staff have indicated that a successful result will increase our chance of obtaining grant funding. Therefore, a public assent process is proposed for March 2018, prior to grant applications. Staff have completed a thorough analysis of the options for public assent and have determined a financial strategy of borrowing in line with a minimum 50 per cent grant funding. Required borrowing is calculated at \$29 million, as per Appendix D. This level of funding is in line with the existing bulk water rates forecast and will result in an average incremental cost per residence of \$86 per year at project completion, compared to projected costs at the current bulk water rate.
- It is recognized that concerns exist around using alternative approval processes (AAP) to obtain elector approval. Therefore, the Comox Valley Water Committee and CVRD Board may opt to proceed with a referendum for this project, in which case the process and timing shown in Table No.1 of the elector approval process (Appendix D) would be followed. That said, staff have spent considerable time reflecting on the importance of this project to the Comox Valley, the importance of obtaining elector approval for borrowing and elected officials' and publics' concerns relating to the AAP.
- Given all of these considerations, staff recommend that an AAP be used to obtain elector approval for the following reasons:
 1. The CVWTP is a critically important project to the Comox Valley and relates to public health.
 2. Clean and safe water is required by Island Health and the public expects to have clean and safe water when they open their faucets; implications of non-compliance could bring a halt to development and construction projects, financial penalties and on-going boil water requirements.

3. Referendums are notoriously difficult in obtaining a high enough voter turnout to gauge the broad public opinion.
4. AAPs are a legitimate and democratic process while allowing for a full referendum should the Board choose (and if 10 per cent of the voters submit forms).
5. This process will be open to all eligible voters within the CVRD except Cumberland.

Communications

- The parameters surrounding the CVWTP are complex, and effective communication with the community is vital for project success. The significant increase in communications work required for the CVWTP requires a consultant to generate the materials and assist in the roll out of the communications campaign. Immediate scope includes communication on the project implementation strategy and project delay, and specifically the upcoming assent process, which will require significant effort to ensure project success.
- As per the feedback given from Directors who insisted on a high level of communication through the Civic Centre AAP, communications support is required immediately for the assent process.
- A competitive process for the procurement of a communications consultant was undertaken over the summer and Zinc Strategies Inc. has been selected as the preferred proponent for this contract. For full details of the contract and scope please reference Appendix E.

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Stakeholder Distribution (Upon Agenda Publication)

Island Health	
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- Attachments: Appendix A – “Background of the Comox Valley Water Treatment Project”
 Appendix B – “Design Phase 2”
 Appendix C – “Temporary UV Installation at Chlorination Station”
 Appendix D – “Elector Approval Process for Comox Valley Water Treatment Project”
 Appendix E – “Contract Award for Capital Projects Communications Consultant”

The following schedules are included on the October 17, 2017 Water Committee agenda package:

Schedule A.1 – “TM 6 – Comparison of Drinking Water Regulation and Compliance for Surface Water”

Schedule B.1 – “CVWTP Indicative Design Report_Issued for Review”

Schedule B.2 – “CVWTP Indicative Design Report Drawings_Issued for Review”

Schedule B.3 – “CVWTP Updated Schedule”

Schedule C.1 – “Temporary UV Installation – Concept Drawings”

Schedule C.2 – “Temporary UV Installation – Cost Breakdown”

Schedule E.1 – “Communications Plan”

History

In January 2015, during an extended Boil Water Notice (BWN) triggered by an extreme rain event in December 2014, Island Health withdrew filtration deferral for the Comox Valley Water System (CVWS). The following chronology lays out the timeline before and after that noteworthy event:

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|------|---|
| 2005 | Island Health issued an Order to the Comox Valley Regional District (CVRD) to complete a Watershed Risk Assessment which identified risks to the Comox Lake water source. |
| 2007 | The Ministry of Health first released regulations pertaining to surface water treatment objectives. The CVWS, which relies solely on chlorination for treatment, was not compliant. |
| 2010 | Island Health began working with the CVRD to implement of the new provincial regulation. |
| 2011 | The CVRD installed a deep water sample station with the aim of demonstrating the water quality required to achieve filtration deferral from Island Health. |
| 2013 | Based on marginal results, CVRD were granted filtration deferral from Island Health. |
| 2013 | CVRD began planning works for deep water intake and ultraviolet (UV) filtration plant to comply with the Island Health Permit to Operate. |
| 2014 | An extreme rain event resulted in an extended BWN. |
| 2015 | Island Health retraction of filtration deferral. CVRD Permit to Operate was revised with a deadline set for installation of water filtration by September 2019. |
| 2015 | CVRD began planning for the water treatment project including filtration. |
| 2016 | CVRD completed the study of water treatment options, culminating in the Project Definition Report (PDR) to select the most appropriate technology. |
| 2017 | CVRD completed the indicative design based on the selected technology from the PDR. |

Regulations

Surface Water Treatment Objectives

The regulations define five objectives for water treatment that can be summarized as follows:

1. Inactivation of viruses;
2. Inactivation of *Giardia* and *Cryptosporidium*;
3. Two treatment processes for surface water (one of which must be filtration unless deferral has been achieved);
4. Less than or equal to one nephelometric turbidity unit (NTU); and
5. No detectable *E. Coli*, fecal coliform and total coliform.

The CVWS, which uses chlorine as the only form of treatment, complies with objectives one and five as described above. Chlorine has no effect on *Cryptosporidium* (objective 2), objective three

cannot be met without UV treatment or filtration, and our system consistently violates objective four during winter storms.

Technical Memo 6, included as Schedule A.1, evaluates how Island Health enforces the objectives compared to other health authorities in BC, and regulations across Canada, North America and other first world countries. Highlights from this memo include:

1. The Comox Valley is the largest community in BC that does not have a secondary treatment process.
2. The objectives are applied consistently across BC. All other operators who exceed 1 NTU are put on BWNs unless they have UV treatment and/or filtration.
3. The turbidity limit of 1 NTU is consistent across Canada and all countries studied, except for Australia whose limit is 0.2 (more stringent).

Filtration Deferral

The Island Health policy includes a provision termed “filtration deferral”, for water systems with access to high quality source water, whereby a system may be permitted to operate without filtration provided certain requirements can be met. These requirements include meeting source water criteria for turbidity and E. coli, as well as the development and implementation of a watershed protection plan. Island Health reserves the right to rescind this deferral at any time if conditions change.

The CVRD recognised the advantages of gaining filtration deferral and installed a deep water sample station in 2011 to build a case for obtaining it. CVRD proposed that if the sampling proved the water quality met the requirements, a deep water intake and UV treatment could be installed to meet regulations. In 2013, after two years of sampling, Island Health approved this plan, despite the sampling data showing that our water did not quite meet all criteria for deferral.

After to two major turbidity events over the 2014/2015 winter, Island Health rescinded CVRD’s filtration deferral in early 2015. The CVRD Permit to Operate was revised to include a deadline for the completion of a filtration plant by September 2019.

The collapse of the bank of Perseverance Creek in winter 2014 is widely blamed for the CVRD losing filtration deferral. Although this event almost certainly contributed to the loss of deferral, important items must be noted:

1. With criteria for filtration deferral not quite met from the start, the situation was already tenuous. The likelihood of maintaining filtration deferral for long under these circumstances was likely low.
2. Resolving the erosion along the dam two spillway to Perseverance Creek will not bring back filtration deferral. Perseverance Creek is not the only contributor to turbidity in Comox Lake, studies show that the Cruikshank River appears to be responsible for some of our BWNs.
3. Fixing Perseverance Creek is important not for filtration deferral but for reducing the operating and maintenance costs of our planned filtration plant. The cleaner the supply water is, the longer the equipment lasts and the cheaper it is to maintain and operate.

Water Treatment Project Scope

The CVWS Permit to Operate states that the CVRD must have completed “construction and commissioning of the water filtration plant and all works necessary to meet the BC Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies in British Columbia” by

September 30, 2019. In 2015, the CVRD commenced the process of complying with this requirement, with notable milestones listed below:

- The Water Treatment Options Study commenced in 2015. This included three workshops with the public and a detailed analysis of different treatment technologies, infrastructure locations, and conveyance options. In September 2016 it defined direct sand filtration as the chosen filtration technology. This report also identified the location of the deep water intake, raw water pumping station and treatment plant, as well as routing for raw and treated water pipelines.
- In August 2016 an analysis was completed regarding the necessity of the deep water intake as part of the scope of the project. This work showed clear rationale for maintaining the deep water intake as part of the project, with the advantages including water security in drought years, independence from the BC Hydro penstock which is experiencing increasing frequency and durations of maintenance shutdowns, and the significant pumping requirements of a filtration plant at lower elevation.
- In late 2016 a procurement options analysis concluded that the project would best be delivered as a single design-build (DB) contract in order to minimize capital costs and deliver the project on time.
- In February 2017, as a result of a competitive request for proposals process, Opus International was awarded the owner's engineer role primarily to develop performance based specifications that the DB bid teams must adhere to for the project.
- In early 2017 Opus identified several opportunities for lowering cost by reducing the sizing of the water treatment and conveyance infrastructure that would not impact the design horizon of the system. However at their [April 11, 2017 meeting](#) the Comox Valley Water Committee opted to maintain the capacity of all infrastructure as identified in the PDR to ensure adequate capacity well into the future.
- The selected DB process provided the opportunity to open up the filtration technology. Membrane filtration, both pressurized and submerged, have been added to direct sand filtration as acceptable technologies for the filtration plant. This shall allow the latest technological advances to be considered at time of procurement, and the best value to be defined by the market based on lifecycle costs of each option.
- In late 2016 it was determined that significant operational and financial efficiencies could be gained by co-locating the water department with the treatment plant.

Comox Valley Water Treatment Project Indicative Design

The Comox Valley Water Treatment Project Indicative Design Report (Schedule B.1) was completed in September 2017, which further details the project parameters and scope. The final scope of infrastructure can be summarized by the following:

- Deep water intake approximately 1km offshore in Comox Lake at a depth of 30m.
- Marine pipeline connecting the deep water intake and the shoreline of the lake.
- Raw water pump station on the shore of Comox Lake.
- Raw water pipeline from the raw water pump station to the water treatment facility following Comox Logging, Colake, Bevan and Lake Trail roads.
- Water treatment facility adjacent the old Bevan town site including either direct sand filtration or membrane filtration.

- CVRD Water Department office and operations facility incorporated into the water treatment facility.
- Treated water pipeline from the water treatment facility to the existing chlorination station, running adjacent to the BC Hydro penstock.
- Tie-in to the existing system adjacent the existing chlorination station.
- Decommissioning of the existing chlorination station and pump house on the Puntledge River.

Watershed Protection Plan

Another requirement of the CVWS Permit to Operate is the development and implementation of a watershed protection plan (WPP) for Comox Lake. The resulting WPP was accepted by the Comox Valley Water Committee in April 2016 and implementation is currently underway. The WPP includes a multi-pronged approach to understanding and improving source water quality in Comox Lake. For example, water quality monitoring is underway to gain a better understanding of turbidity sources and other physical, chemical and biological parameters; a hydrodynamic study is scheduled for this year to understand circulation patterns and optimize the location of a deep water intake; and outreach and education is ongoing with the CVRD and community partners including the Comox Valley Conservation Strategy and the Comox Lake Wilderness Society. Successful implementation of the WPP is required to mitigate risks to drinking water from human activity in the watershed and minimize water treatment operational costs by reducing the amount of sediment carried into the lake.

Attachments: Schedule A.1 – “TM 6 – Comparison of Drinking Water Regulation and Compliance for Surface Water”

Background/Current Situation

Phase one of the Comox Valley Water Treatment Project (CVWTP) is now complete, with the Indicative Design Report (IDR) submitted by Opus International Consultants (Opus) (Schedule B.1). The IDR includes a detailed analysis of each piece of the scope of the project, refined project drawings (Schedule B.2) and a revised cost estimate. A revised project schedule has been completed by staff to complement the IDR and reflect the recent changes in implementation strategy (see Schedule B.3).

Important changes to the scope of the IDR from the Project Design Report (PDR) include:

- Project implementation: this project is now being delivered under a design-build (DB) model;
- Treatment Technology: pressure and submerged membranes have been included as viable filtration technologies, along with direct sand filtration which was selected in the PDR. This shall allow the CVWTP to access the most up to date technology on the market and choose the most cost effective option over a 30 year life-span; and
- Water Operations: The Comox Valley Regional District (CVRD) Water Department will be relocated to the treatment plant including a central facility for offices, material storage, and a maintenance workshop.

Phase two of the CVWTP includes the following high level scope items:

1. Technical specifications for all equipment and infrastructure;
2. Draft project agreements for the DB contract;
3. Continued work obtaining permits required for the project;
4. A Request For Qualification (RFQ) process to shortlist preferred DB teams; and
5. A Request For Proposals (RFP) process to select the preferred DB team.

As per the revised schedule, only items one, two and three can be completed/continued in the short term. In March 2018, once the Federal Government and Provincial Government announce the details surrounding the next phase of grant funding, the scheduling of items four and five can be confirmed. The RFP cannot be released until public assent and funding are secured, and the RFQ should be completed no more than six months prior to the release of the RFP. The Opus design team are prepared to commence phase two as soon as approval is granted.

Value Planning

During discussions with the Ministry of Municipal Affairs and Housing (Ministry), staff have been advised about the importance of value planning for projects seeking significant amounts of grant funding. In fact, they have advised that projects of this size are required to go through a value planning process prior to receiving grant funding. Value planning is a process that is similar to value engineering, but which is executed prior to 30 per cent engineering design, to evaluate the scope, schedule and cost of the project to find efficiencies prior to detailed engineering design. A group of subject matter experts are brought together for a one week workshop where they deconstruct the project and use their experience to challenge project decisions and assumptions with the goal of identifying opportunities for cost savings. The Ministry have found that this process has provided a minimum savings of 10 per cent on the capital cost of previous projects, providing them a higher level of confidence that the grant funding will be efficiently spent.

Due to the urgency to complete the CVWTP, and the fact that the grant funding announcement is delaying the project, staff discussed the merits of completing value planning in parallel with phase two of the design. If the CVRD were to wait until grant funding were received then this mandatory value planning process would delay the project by at least another two months. The Ministry agreed that completing the value planning prior to grant application was a preferable option and indicated that it would increase the likelihood of grant funding.

Should the Comox Valley Water Committee endorse the implementation strategy of the project, staff shall proceed with initiating phase two with Opus and procuring services for a value planning process.

Policy Analysis

At the February 21, 2017 meeting of the Comox Valley Water Committee the following motion was approved:

THAT as a result of a competitive process, the contract for the owners engineer services for the pre-implementation phase of the Comox Valley Water Treatment Project be awarded to Opus International Consultants (Canada) Ltd. in the amount of \$829,145 excluding GST;

AND FURTHER THAT subsequent phases of the work including the implementation, construction and post-construction phases be awarded to Opus International Consultants (Canada) Ltd. at the Comox Valley Regional Districts discretion for a total overall cost of \$2,602,062 excluding GST;

AND FINALLY THAT the Chair and Corporate Legislative Officer be authorized to execute the contract.

Options

This report is provided for information only. There are no recommendations and therefore no options.

Financial Factors

All phase one and phase two costs for the CVWTP incurred prior to March 31, 2019 are 83 per cent funded through the Clean Water and Wastewater Fund (CWWF). The budget for these phases is \$5,253,000 which includes design, procurement, geotechnical and survey investigations, environmental assessment, permit applications, K'ómoks First Nation consultation, and BC Hydro service extension works.

An analysis of design costs incurred to date on the CVWTP, and those forecast to be incurred during phase two prior to March 31, 2019, was performed to determine the status of the design budget assigned. The results of this analysis are summarized in Table No.1.

This analysis shows that the project is under budget for phase one and is forecast to remain under budget for phase two. In addition to this, the estimated cost for value planning fits well within this budget, allowing for it to be 83 per cent funded by the CWWF grant.

Table No.1: CWWF Spent to Date and Estimated Costs for CWWF Funding

CWWF Cost Description	Budgeted Cost	Spent to Date (less GST)	Estimated Cost to Complete	Total Estimated Cost
Owner's Engineer Design Budget	2,000,000	683,870	1,332,404	2,016,274
Pilot Plant		224,449	30,446	254,895
Opus Phase One (including amendments 1-4)		459,421	374,330	833,751
Opus Phase Two		0	611,578	611,578
Communications		0	116,050	116,050
Value Planning			200,000	200,000
Geotechnical Budget	850,000	152,061	220,884	372,945
Survey Budget	150,000	67,627	0	67,627
Project Definition Report	130,000	127,953	0	127,953
Environmental Assessment	60,000	20,002	65,000	85,002
Water License	70,000	32,294	37,706	70,000
KFN Consultation	50,000	2,059	47,941	50,000
BC Hydro Service Extension and Communication	1,750,000	4,395	1,745,605	1,750,000
Contingency	193,000	0	0	0
Total Eligible Costs	5,253,000	1,090,261	3,449,540	4,539,801

Legal Factors

Bylaw No.284, being the “Comox Valley Regional District Delegation of Purchasing Authority Bylaw No.284, 2013” requires that the Board approve award of all contracts in excess of \$100,000. In February 2017 the contract award to Opus for phase one of owners engineer services was approved by the Comox Valley Water Committee, as was a motion supporting award of all subsequent phases at the CVRD’s discretion.

Citizen/ Public Relations

Significant public engagement to inform and receive community feedback in regards to the CVWTP is planned as part of phase two. Procurement of the communications consultant to assist in the development and implementation of the communications strategy will be key in ensuring clear and consistent communications surrounding the project.

Attachments: Schedule B.1 – “CVWTP Indicative Design Report_Issued for Review”
Schedule B.2 – “CVWTP Indicative Design Report Drawings_Issued for Review”
Schedule B.3 – “CVWTP Updated Schedule”

Background/Current Situation

Staff met with Island Health and the Ministry of Municipal Affairs and Housing on July 27, 2017 to present a revised schedule for the Comox Valley Water Treatment Project (CVWTP), including a two year delay arising from longer than expected grant funding timelines. This delay results in the project completion date being shifted to mid-2021, and an additional two winters past the deadline of September 2019 in our Permit to Operate.

Island Health did not accept this delay and presented the penalties they may enforce on Comox Valley Regional District (CVRD) if the September 2019 deadline is not met. These included:

- The suspension of development approvals for all areas connected to the Comox Valley Water System, including the City of Courtenay and the Town of Comox;
- Daily tickets of up to approximately \$3,600 per day; and
- If Island Health issue an order to complete the project, daily fines of up to \$200,000 if the order's deadlines are not met.

During this meeting, interim measures to reduce Boil Water Notices (BWNs) and the likelihood of Island Health penalties were discussed. Island Health indicated that installation of temporary ultraviolet (UV) treatment on the existing system could significantly reduce the number of BWN days until the project was completed, and as long as the project was on track for completion per the revised schedule, allow the CVRD to avoid penalties in the interim.

At the same meeting, staff from the Ministry of Municipal Affairs and Housing (Ministry) highlighted the importance of being seen to be working collaboratively with Island Health to improve the probability of receiving grants. The Ministry informed staff that specific policies had been implemented to ensure that “bad behaviour is no longer rewarded”. CVRD staff have concluded that collaboration with Island Health on the installation of temporary UV treatment will increase the likelihood of receiving the level of grant funding needed to make this project affordable for the users of the Comox Valley Water System.

Staff immediately initiated a study into the feasibility of purchasing the UV reactors for the CVWTP in advance of the design-build contract and installing them at the existing chlorination station. Staff engaged Opus International Consultants (Opus), the owners engineer for the CVWTP, and Koers and Associates (Koers), who run the water model for our system, to work together to determine concept designs and budget estimates. Working with our water operators, they investigated options for retrofitting the UV reactors and associated equipment into the chlorination station building.

After evaluating several options, the design team identified a preferred option with minimal required modifications to the existing structure. The UV reactors shall be installed in the current locations of the magnetic flow meters, which shall be replaced by ultrasonic flow meters. Small modifications will be required to the piping to make the UV reactors fit, but no large structural modifications will be required. See drawings included as Schedule C.1 for details.

Options

The Comox Valley Water Committee has the following options:

1. To proceed with the installation of UV equipment at the existing chlorination station;
2. To not proceed with the installation of UV equipment at the existing chlorination station at this time.

The Ministry has indicated that collaboration with Island Health on the temporary installation of UV treatment will increase our chances of significant grant funding. The unrecoverable cost of installing UV equipment at the existing chlorination station is estimated at \$600,000. Island Health has indicated that they will allow an increase in the turbidity threshold for BWNs with the installation of UV equipment at the existing chlorination station. An increase to the turbidity threshold to two NTU would result in an approximate savings of \$448,000 per year for residents alone in the Comox Valley, thus greatly offsetting the unrecoverable costs related to the installation of UV treatment. As such, only option No.1 above is recommended.

Financial Factors

Opus has developed a cost estimate of \$1,000,000 for temporary installation of UV treatment at the chlorination station, of which \$400,000 is recoverable when the UV equipment is moved to the new facility. This prices the temporary works at \$600,000. See Schedule C.2 for a detailed cost breakdown.

To analyse the merit of this work, staff hoped to compare the unrecoverable cost of the project to the cost of BWNs to the residents and businesses in the area. Unfortunately, the survey recently issued by the Comox Valley Economic Development Society which attempted to quantify the impact to businesses was not complete and results were not available for staff. However, meetings with business owners, one from a prominent fast food chain and another from a large local supermarket, have shown that this cost is dwarfed by the impacts to our local businesses.

Analysing this issue from a triple bottom line perspective (social, environmental and financial) the implementation of temporary UV is clearly justified. This project will restore confidence in the CVRD, provide safe drinking water for our population, and is conservatively estimated to result in a financial net positive if the costs of BWNs are taken into account for all commercial sectors and the residential users.

Legal Factors

None.

Intergovernmental Factors

The Comox Valley Water System is governed by the Comox Valley Water Committee whose membership includes representatives from the City of Courtenay, the Town of Comox and the CVRD Electoral Areas “A”, “B” and “C”.

Citizen/Public Relations

Clear and consistent public messaging on the installation of UV equipment at the existing chlorination station and potential changes to BWN notices is very important. Development of clear public messaging to minimize public confusion on the UV project, BWN's and the upcoming CVWTP will be essential to a successful project delivery. Development of a communications strategy will be complete with the new Capital Projects Communications Consultant.

Attachments: Schedule C.1 – “Temporary UV Installation – Concept Drawings”
Schedule C.2 – “Temporary UV Installation – Cost Breakdown”

Background/Current Situation

The Comox Valley Water Treatment Project proposes the following funding model:

<u>Proposed Funding Model</u>		<u>Previous Estimate Funding Model</u>	
Reserves	\$26.3 Million	Reserves	\$23.9 Million
Grants	\$55.3 Million	Grants	\$52.9 Million
<u>Borrowing</u>	<u>\$29.0 Million</u>	<u>Borrowing</u>	<u>\$29.0 Million</u>
Total	\$110.6 Million	Total	\$105.8 Million

In order to authorize the borrowing amount, the Comox Valley Regional District (CVRD) must adopt a loan authorization bylaw, which requires elector approval.

Policy Analysis

Section 407 of the *Local Government Act* (RSBC, 2015, c. 1) (LGA) authorizes the CVRD to borrow funds through a loan authorization bylaw, which must be approved by assent voting (referendum) or an alternative approval process (AAP).

Options

The process requirements and timing associated with the referendum and an alternative approval process (AAP) are noted in Table No.1. The recommendation presented to the Comox Valley Water Committee in October 2017 supports an AAP.

Table No.1 - Referendum and AAP Process and Timing

Alternative Approval Process (AAP)	Referendum
October 2017 – decision to proceed with an AAP or referendum	
November 7, 2017: - Board gives three readings to loan authorization bylaw November 8, 2017: - Bylaw submitted to inspector for approval January 2018 Board meeting: - Upon inspector approval, Board sets close for AAP (proposed to be March 16, 2018) and approves public notice and estimate of voters January and February 2018: - Open houses and community meetings with stakeholders and neighbourhood associations to promote awareness of project and voting opportunities February 2018: - Two newspaper advertisements initiate AAP and elector response forms available	November 7, 2017: - Board gives three readings to loan authorization bylaw - Board sets referendum date (March 17, 2018) November 8, 2017: - Bylaw submitted to inspector for approval February and March 2018: - Open houses and community meetings with stakeholders and neighbourhood associations to promote awareness of project and voting opportunities - Public notices of referendum and voting opportunities March 7 and 14, 2018: - Advance voting opportunities March 17, 2018: - Voting day at various locations around Comox Valley

<p>March 16, 2018:</p> <ul style="list-style-type: none"> - Close of AAP; valid response forms are certified <p>March 2018 Board meeting:</p> <ul style="list-style-type: none"> - AAP results considered by Board, proceed with loan authorization bylaw if fewer than ten per cent of electors submit forms - If more than ten per cent of electors submit forms, then Board may choose to conduct referendum for elector approval – voting day must be within 80 days of March 16 or on May 2 at latest 	<p>March 2018 Board meeting:</p> <ul style="list-style-type: none"> - Referendum results considered by Board; proceed with loan authorization bylaw only if electors support
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The Comox Valley Water Committee and CVRD Board may choose the method of obtaining elector approval and some process details for each approach are noted in Table No.2.

Table No.2 – Process Details for an AAP or Referendum

	Alternative Approval Process	Referendum
Who can participate	All voters including residential property owners and renters in City of Courtenay, Town of Comox and all of Electoral Areas A, B and C (being participants in Bylaw No. 1783) – NOTE: only those who purchase bulk water from the system will repay borrowed funds	
Cost to conduct	\$5,000 – paid by water supply service (function 300)	\$40,000 to \$60,000 depending on number of voting places – paid by water supply service (function 300)
Mandate / purpose for borrowing funds	Water treatment, required by Island Health through Certificate to Operate, is mandated and promotes public health. Not complying with Island Health certificate increases public health risks, thereby suggesting most appropriate process is used to obtain funding, which supports the AAP. Further, the LGA enables local governments to use an AAP to obtain elector approval where resulting taxes are minimal or public health conditions exist (for water, sewer and solid waste matters).	
Ways to participate	Voters can access forms in person at local government offices for more than 30 days before AAP close	Mail ballot voting, advance voting on two Wednesdays before voting day and voting day itself

Financial Factors

The project costs are detailed in the Indicative Design Report (Schedule B.1). The revised budget accounts for the increase in operations and maintenance costs of the new facilities, while ensuring significant reserves are maintained to fund the upcoming asset management program.

In order to repay the borrowed amount, funds will be recovered from all customers who purchase water from the Comox Valley Water System in bulk and through the standpipe. Customers include

property owners in the City of Courtenay, Town of Comox and the Comox Valley Water Local Service Areas being Marsden/Camco, Arden, Greaves Crescent, Comox Valley, England Road and Sandwick. A map showing the areas that purchase bulk water and will be responsible for repaying the borrowed funds will be included with the project and communications materials.

The average impact on the residents for the borrowing of the project can be calculated by comparing the expected municipal rates calculated by the municipalities for the existing bulk water rates and those forecast at project completion, as per the revised budget. The impact is summarized in the below Table No.3.

Table No.3

	Current Rates	Expected Municipal Rates for 2021*	
		\$0.71/m3	\$0.85/m3
<i>Courtenay</i>			
Flat rate	\$425	\$520	\$622
<i>Comox</i>			
Flat rate	\$351	\$351	\$420
<i>Electoral Service Areas</i>			
Per average use	\$345	\$345	\$381
		Average increase**	\$86 / year

* Expected rates are estimates only and are not finalised

** Average is calculated by accounting for number of connections in each area

Legal Factors

The processes for conducting an AAP or a referendum are shown in Table No.1 and follow the requirements under the LGA. Should the Comox Valley Water Committee approve an AAP or referendum, the associated materials (loan authorization bylaw, public notice, etc) will be presented to the next available CVRD Board meeting to initiate the legislative components for the process.

Should the Comox Valley Water Committee choose to hold a referendum to seek elector approval, the ballot question must be simple and unencumbered, meaning it cannot include language regarding contingencies or conditional requirements. The LGA does not require the Comox Valley Water Committee or the CVRD Board to approve the wording of the ballot question, however for illustrative purposes the following wording would likely be used on a ballot:

Do you support the Comox Valley Regional District adopting Bylaw No. XXX, which would authorize borrowing of up to \$29 million for the Comox Valley Water Treatment Project?

YES | NO

The loan authorization bylaw for this project must address a variety of topics, including:

- The total amount to be borrowed:
 - Maximum of \$29 million;

- The purposes for which the debt is to be incurred:
 - Constructing a Comox Valley Water Treatment Facility; and
- The length of term for borrowing:
 - No more than 25 years.

The bylaw requires the approval of the electors and the inspector of municipalities. Staff are recommending that elector approval be sought via an alternative approval process.

One further legal consideration relates to the determination of eligible electors in the service area. The LGA requires the CVRD Board to determine the total number of electors in the service area. During the most recent local government election in November 2014, the number of eligible electors (including non-resident property electors) in each jurisdiction was:

- Area A (Baynes Sound – Denman / Hornby Islands): 5,381
- Area B (Lazo North): 5,608
- Area C (Puntledge – Black Creek): 6,494
- City of Courtenay: 19,853
- Town of Comox: 10,509

A total of 47,845 eligible electors. If fewer than ten percent (or 4,785) of the eligible electors submit a response form through the AAP, the CVRD Board may adopt the loan authorization bylaw for this project.

Intergovernmental Factors

The elector approval process for the Comox Valley Water Treatment Project was considered by the Comox Valley Water Advisory Committee at its October 4, 2017 meeting.

Citizen/Public Relations

The legislatively required advertising and engagement will be provided for whichever elector approval process the Comox Valley Water Committee selects. In addition, extensive communications are proposed for the overall project, some of which will speak to the elector approval process that is chosen.

Background/Current Situation

The Comox Valley Regional District (CVRD) is undergoing a period of significant capital spending for water and wastewater capital projects over the next five years. The primary drivers for these projects are to increase system capacity and comply with changing regulations. In June 2017, the CVRD released a Request for Proposal (RFP) for communications consulting services to develop communications strategies and public engagement programs for water and wastewater capital projects.

The role of the communications consultant will be to develop communications strategies, work plans, collateral material and provide media relations support, to assist the CVRD with informing and engaging the public in varying capacities for each of the below listed capital projects:

- Comox Valley Water Treatment Project
- Comox Valley Water Pollution Control Center phase one upgrades
- Comox No.2 Pump Station and forcemain project
- Other smaller water and wastewater capital projects

Upon closing of the RFP, eight compliant proposals were received. The proposals were evaluated by a team comprised of three CVRD staff and evaluated against a set of point rated criteria set out in the RFP, which included project understanding, approach and methodology, project delivery, portfolio review, demonstrated knowledge of workings of local governments, reputation and experience and cost. The results of the evaluation are provided in Table No.1 below.

Table No.1: Ranking of Proposals

Name of Firm	Ranking
Zinc Strategies Inc.	1
Taiji Brand Group	2
The C&E Group	3
ISL Engineering	4
Lanarc	5
AhA Creative Strategies	6
Be the Change Group	7
Navigator Ltd.	8

The firm that ranked the highest overall was Zinc Strategies Inc. (Zinc). Due to the long project timelines and complexity of the projects, the communications consultant is expected to assist with project communications for the next five years. Zinc's fee estimate for year one is \$92,325 exclusive of GST and disbursements for the water capital projects portion of the contract. Should the CVRD choose to retain Zinc for the whole five year term the total contract amount is not to exceed \$350,000 excluding GST and disbursements, for all water capital projects.

For water capital projects Zinc will be providing communications support for the Comox Valley Water Treatment Project and other smaller water capital projects as needed. Only communications fees related to each project will be charged to the specific function. For the water treatment project, Zinc will provide the following services:

- Prepare communications plans and work plans.
- Identify gaps in public understanding and address with new communications tools.
- Create project timelines with regular updates on project progress.
- Update/create background material.
- Issues management.
- Prepare for construction phase.
- Chronicle construction phase.

Policy Analysis

Bylaw No. 284, being the “Comox Valley Regional District Delegation of Purchasing Authority Bylaw No. 284, 2013” requires that the CVRD Board approve all contracts in excess of \$100,000.

Options

The Comox Valley Water Committee has the following options:

1. To approve the contract award to Zinc Strategies Inc.
2. To not award the contract at this time.

The RFP was issued with the intent to award a contract to the proponent that ranked the highest, offering the best value to the CVRD. Each proposal was evaluated based on the RFP criteria with the highest ranked proponent being Zinc. The contract will be awarded on a year by year basis allowing the flexibility to terminate the contract or modify the scope yearly. As such, only option No.1 above is recommended.

Financial Factors

Communication fees will be charged to each project specifically and have been included within the project budget for each item.

Legal Factors

Bylaw No. 284, being the “Comox Valley Regional District Delegation of Purchasing Authority Bylaw No. 284, 2013” requires that the CVRD Board approve award of all contracts in excess of \$100,000.

Intergovernmental Factors

The Comox Valley Water System is governed by the Comox Valley Water Committee whose membership includes representatives from the City of Courtenay, the Town of Comox and the CVRD Electoral Areas “A”, “B” and “C”.

Citizen/Public Relations

With the significant capital projects in the coming years, clear and consistent public messaging on complex capital projects is very important. Zinc will work with CVRD staff to develop clear public messaging to minimize public confusion on upcoming projects by utilizing communication tools.

Attachments: Schedule E.1 – “Communications Plan”