

# Engineering



*Engineering is responsible for water and sewer, transportation and environmental services*

Fourth Quarter Report, 2018

## Wastewater Treatment Plant: High-Strength Wastewater Pre-treatment Facility Project

The project includes the construction of a high-strength wastewater pre-treatment facility (HSWWTF) at the City's Wastewater Treatment Plant (WWTP) to accept and manage high strength-wastewater.

PCL Constructors Westcoast Inc. is proceeding with construction of the facility while Associated Engineering is providing design and construction services. Global Water & Energy is in charge of process design and anaerobic treatment technology use at the facility. All works such as civil, building, mechanical, process, electrical and instrumentation are completed except final commissioning which requires high-strength wastewater to conclude. The overall project is scheduled to be completed in the Spring of 2019.



## Yarrow Reservoir “A” Replacement Project



The project consists of the demolition of the existing damaged reservoir, rock excavation to prepare the reservoir foundation, slope stabilization, a duty/standby pumping arrangement, 1,500 cubic metre capacity glass-lined, bolted steel circular tanks and related piping and improvements to drainage systems. The Maple Reinders Inc. / Ecora Engineering & Resource Group Ltd. design-build team successfully completed the project in November 2018. This \$2,000,000 project was funded by Yarrow Waterworks District and a grant from the Provincial-Federal Clean Water and Wastewater Fund.

## Kerr Avenue Sanitary Pump Station and Forcemain Project

The project includes the construction of a sanitary pump station and the installation and upgrade of a forcemain which are being constructed to convey high-strength wastewater to the pre-treatment facility (HSWWTF) at the wastewater treatment plant (WWTP). The Kerr Avenue Sanitary Pump Station will include a 30 L/s capacity duplex submersible sanitary pump station, with a pump house building to house electrical controls, a backup generator and other appurtenances. Kerr Avenue Sanitary Forcemain is a dedicated sanitary forcemain to convey wastewater flows from the new sanitary pump station to the high-strength wastewater pre-treatment facility (HSWWTF) at the wastewater treatment plant (WWTP). Forcemain pipe installation works and all works at the pump station such as building construction, mechanical and electrical installation works are now completed. Jakes Construction Ltd. is currently proceeding with final site grading and pump station testing and commissioning work. The overall project is scheduled to be completed in the Spring of 2019.



## Mechanical Systems Replacement Project

The project is a combination of four sanitary pump station (SPS) upgrades and one pressure reducing valve (PRV) upgrade throughout Chilliwack that have been combined to increase scope and economy of scale. The proposed SPS #5, 6 and 7 replacement is to increase pump station capacity to meet future flow conditions, to upgrade to continue to meet current WorkSafeBC regulations and to replace aging infrastructure which has reached the end of its serviceable lifespan. The proposed SPS #10 upgrade is to meet future flow conditions and to improve operational reliability. The proposed Goldspring



PRV is to upgrade the PRV station to continue to meet current WorkSafeBC standards and to improve operational reliability.

Timbro Contracting Ltd./Onsite Engineering Ltd. design-build team completed the replacement of SPS #6 except site restoration works in December 2018. They are currently in the process of completing detailed design work for other pump stations and planning to commence SPS #5 replacement works in January 2019. This \$2.8 million overall project is scheduled to be completed in October 2019. The following table shows water and sewer infrastructure upgrade projects.

Name of Project	Description of Work	Contract Value	Project Status
Upgrade LS 5	Complete replacement of Sanitary Pump Station	\$ 744,000	Design Completed
Upgrade LS 6	Complete replacement of Sanitary Pump Station	\$ 832,000	Construction Completed
Upgrade LS 7	Complete replacement of Sanitary Pump Station	\$ 792,000	Design in Progress
Goldspring PRV	Complete replacement of Pressure Reducing Valve Station	\$240,000	Design in Progress
SPS #10 2 <sup>nd</sup> Submersible Pump	Installation of second submersible pump	\$176,000	Design in Progress

## Well # 5 Pilot Testing Study

The objective of this project is to undertake all necessary water quality testing required before the commencement of a successful pilot testing study. This study is needed to determine the treatment requirements to ensure that Well #5 can be brought online while providing continuous stabilized water of acceptable quality that meets discharge parameters.

Well pumping commenced in late July after obtaining necessary approval from the Province and it is planned to continue for an extended period of time to determine groundwater quality variations. Associated Engineering is providing the consulting services for this \$250,000 project. The project is scheduled to be completed in fall 2019.

## 2019 Utilities Upgrade Project

The project is a combination of six water main installations, two sewer main upgrades, one road rehabilitation work, one pressure reducing valve (PRV) installation and landfill gas collection system throughout Chilliwack that have been combined to increase scope and economy of scale. The road rehabilitation works will improve the condition of the failing roadway, drivability and safety of the users. The proposed water main installation will increase supply, fire flow capacity and improve water quality of the existing water system in the local area. The proposed sewer main replacements and upgrades will replace aging infrastructure and increase capacity to satisfy increased flow from new and future developments. The proposed Jinkerson PRV station will facilitate current and future development activities in the area. The proposed Bailey Landfill gas system will improve landfill gas collection within the landfill.

The Request for Proposals (RFP) stage for this \$3.4 million design-build project is currently underway. The project is scheduled to be completed in September 2020.

The following table shows road rehabilitation, water and sewer infrastructure upgrade projects:

Name of Project	Description of Work	Budget
Lewis Avenue Water Main	470 metres of 200mm diameter ductile iron water main installation	\$300,000
Crestwood / Leary Water Main	855 metres of 200mm diameter ductile iron water main installation	\$425,000
South Sumas Sanitary Sewer	440 metres of 450mm diameter PVC sanitary sewer installation	\$760,000
Nowell / Yale Sanitary Sewer	280 metres of 450mm diameter PVC sanitary sewer installation	\$550,000
Jinkerson PRV	Complete installation of Pressure Reducing Valve Station	\$300,000
Fletcher Street Water Main	320 metres of 200mm diameter ductile iron water main installation	\$200,000
Mellard Avenue Water Main	210 metres of 200mm diameter ductile iron water main installation	\$140,000
Cleveland Avenue Water Main	280 metres of 200mm diameter ductile iron water main installation	\$175,000
Banford Road Water Main	200 metres of 200mm diameter ductile iron water main installation	\$100,000
Banford Road Paving Works	Widening of 200 metres of road, placement of level course and full road asphalt overlay	\$100,000
Bailey Landfill Gas System	Supply and install landfill gas collection pipes	\$350,000

## Valley Rail Trail

The Valley Rail Trail extension grand opening event with Mayor and Council occurred on November 24. The trail features a cantilevered pedestrian/cyclist pathway off of the existing rail bridge over the Trans-Canada Highway, complete with a slip resistant, grated fiberglass deck, a new bridge over the Chilliwack River, multiple resting bench areas, signage and traffic signals at Airport Road. The 1.2 kilometre trail has LED lighting throughout, was funded in part by the Ministry of Transportation and Infrastructure with a one-third contribution of \$600,000 and completed by Design-Builder Eurovia BC Ltd.



## Cultus Lake / Vedder Mountain Roundabout



In November, final paving and line painting were completed. The last of the curbing, barriers, streetlights, signage and boulevard restoration was completed in December. Bicycle railing along the north barrier wall and painting of the roundabout truck apron will be completed in the new year.

## Evans and Stevenson Intersection

In November the signalized intersection was put into operation. Final concrete works and boulevard restorations were completed in December.



## Promontory and Chilliwack River Intersection



Final paving, line painting, boulevard restoration were completed and the traffic signal was put into operation in November.

### Remembrance Day

Remembrance Day services were held at both Veterans Memorial Park in Chilliwack Proper and All Sappers Memorial Park in Sardis. This year was particularly meaningful as it was the 100 year anniversary of the end of World War I.

These events are coordinated months in advance with City Operations, Administration, Recreation & Culture and the Engineering Department, as well as RCMP, BC Transit, First Transit Canada, Streetwise Traffic Control and Legions Branch 4 and Branch 280.

The support from the community for these services is greatly appreciated by the military members past and present and their families.



### Filming



This year was very popular for filming in Chilliwack. Chilliwack had repeat visits from Hallmark Productions with various Christmas themed movies, Chronicle Mysteries, a fitness show and indie films.

These productions bring business to Chilliwack by booking into our hotels and patronizing our local stores. The City and the Chilliwack Creative Commission continue to encourage different areas for filming in Chilliwack while minimizing the impact on residents and businesses.

## 2018 Asphalt Rehabilitation



Repaving work substantially completed or well underway in the fourth quarter includes:

- Camp River Road
- Southlands Crescent – new angle parking

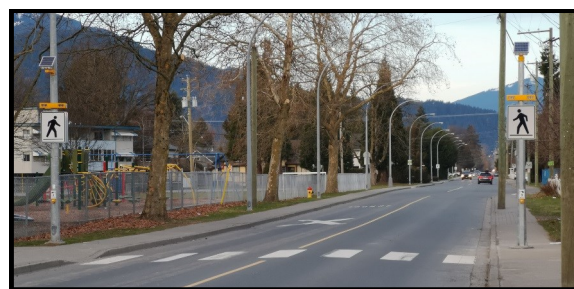
## Bike Lane Network

BikeBC announced the award of shared 2018/19 funding as follows:

Location	Project Total Cost Estimate	Grant Request
Valley Rail Trail South – Lighting and Visibility Enhancements (Knight Road to Luckakuck Way)	\$405,000	\$60,750
Sardis Wayfinding Signs	\$20,000	\$3,000
Berkeley Avenue at Young Street Crossing Improvements	\$10,000	\$5,000

## Traffic Signals

The Traffic Signal Improvements Contract was awarded to Fraser City Installations Ltd. Rectangular Rapid Flashing Beacon (RRFB) installations are substantially complete and the remaining work will be completed by March 31, 2019.



The following work is included in this project:

Location	Description
Vedder Road at Spruce Drive	8 Audible Pedestrian Signals
Young Street at Cleveland Avenue	RRFB
Hodgins Avenue at Edwards Road	RRFB and concrete work
Vedder Road at Thomas Road	Uninterruptible Power Supply

## Public Engagement

Safer City hosted a booth at the Chilliwack Crime Prevention Society Open House. This first annual event showcased a number of vendors with public safety interests. Safer City shared road safety tips with many families throughout the day.

The Engineering Department hosted the celebration of the completion of the Valley Rail Trail extension, which had nearly 90 cyclists join Mayor and Council for a ride along the newly opened trail.

## Projects

### Chilliwack Safety Fair

The Chilliwack Safety Fair, co-hosted by Safer City and the Chilliwack Fire Department, was held in October. The event was held simultaneously at three separate locations: Home Depot, Canadian Tire and the Yarrow Fire Hall. Multiple vendors provided booths to showcase their safety expertise in an effort to expand public safety knowledge throughout the community.

Vendors included:

- Chilliwack Fire Department
- City of Chilliwack Operations Department
- Safer City
- RCMP
- CN Police
- City of Chilliwack Bylaw Enforcement
- Speed Watch
- Manufacturing Safety Alliance of BC
- Motion Safe – Quake Cottage
- 89.5 The Drive
- Tolsons
- Quiring Towing
- Fraser Valley Brain Injury Association
- First Canada (Transit)
- Commercial Vehicle Safety Enforcement (CVSE)
- BC Ambulance Services
- St. John Ambulance
- Canadian Tire (tire and vehicle safety display)
- Home Depot (wood craft)
- Wally's Autobody
- Lafarge
- Combined Workplace Health & Safety



The team looks forward to expanding the Safety Fair next year to include more vendors and more opportunities for the public to be engaged one-on-one with local experts on a variety of safety topics.

## Commercial Vehicle Inspection Project



On October 10, Safer City hosted its annual fall Commercial Vehicle Inspection Project. Nearly 90 vehicles were inspected throughout the day with representatives from the Ministry of Transportation and Infrastructure's Commercial Vehicle Safety and Enforcement Branch (CVSE) and Chilliwack RCMP for a one-day road safety project. A variety of commercial and passenger vehicles were inspected to confirm their compliancy with applicable safety legislation.

## Roundabout Education

The fall roundabout education session welcomed just over 70 visitors. This drop-in style session is held twice a year, once in the spring and once again in the fall. The purpose of these sessions is to broaden the knowledge of using a roundabout while in a vehicle, on a bicycle or as a pedestrian. The rules of the road are confirmed for visitors through one-on-one discussions with Engineering staff or the RCMP and printed material and display boards.



## School Zone Enforcement



This fall, the Safer City team initiated a pilot project to expand the annual Back to School Enforcement and Education project. The pilot project had the team work on enforcement in 15 school zones in October and November in the mornings and again in the afternoons. An evaluation of the project determined its effectiveness and plans are underway to implement the project in 2019. The project will focus on all activity within a school zone: parking, speed, and pedestrian safety.

## Waste Reduction Month

Every year in October, the City hosts Household Hazardous Waste Day and other environmental related events as part of Waste Reduction Month.

### Household Hazardous Waste Day

Household Hazardous Waste Day was held on Saturday, October 13 at the City's former Operations Yard at 8300 Kiernan Drive.

In addition to Chilliwack, the event is open to residents from six surrounding communities and electoral areas through a cost-sharing arrangement with the Fraser Valley Regional District. This popular annual event is an opportunity for residents to drop off their household hazardous waste for proper disposal or recycling free of charge. Common items that were dropped off included paints, adhesives, fire extinguishers and household cleaners.



Event summary:

- Customer count: 375 (93% from Chilliwack, 7% from surrounding areas)
- Contractors: Terrapure Environmental Solutions and ReGeneration (the Chilliwack Bottle Depot)
- Amount of hazardous waste collected by Terrapure: 11.48 metric tonnes
- Amount of hazardous waste collected by the Chilliwack Bottle Depot: 3,150 litres of flammable liquids and pesticides, and 5,160 litres of paint
- Donations to Salvation Army Food Bank: Approximately \$1,698 and 1,500 food items

### Elementary School Presentations



Over 380 students from 14 elementary school classes engaged in discussions about recycling and composting with the City's Environmental Services staff.

### Recycling Competition

The City challenged 11 elementary school classes to collect and divert as many used batteries and pens as they could. They responded by gathering 550 kilograms for recycling during the month-long competition. The winning class received a zero-waste celebratory pizza party.



## Free Scrap Metal Recycling

Residents were permitted to drop off scrap metal at the Bailey Landfill free of charge throughout the entire month of October. A total of 47 metric tonnes of scrap metal from 643 loads was collected. All of the scrap metal is transported to a processing facility owned by ABC Recycling and is ultimately shipped to end markets to be recycled into new products.



## Pumpkin Composting



Residents brought 123 Halloween pumpkins to the Parr Road Green Depot in 2018, in addition to those placed in Green Carts as part of the City's compostables collection program. The pumpkin composting initiative reminds and encourages residents to divert their organic waste from the landfill.

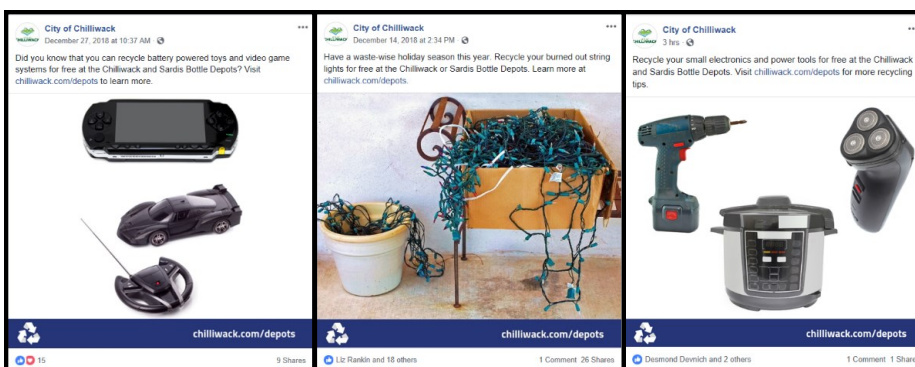
## Shred-a-Thon

The Shred-a-Thon event on December 1 was another success. Together, Chilliwack residents donated \$1,500 worth of food items as well as \$4,030 in cash to the Salvation Army Food Bank while participating in the document shredding event.

Emterra Environmental matched the community cash donations for a combined event total of \$8,060. The event was made possible through generous contributions from Shred-It, Cottonwood Mall, Emterra Environmental and Chilliwack residents.



## Green Christmas



Every Christmas, new gifts replace older versions of common electronics. In anticipation of residents clearing out the old items, free depot recycling options for the most common gift categories were promoted over social media. The posts were well received and many items are anticipated to have been diverted away from landfill for responsible depot recycling.

## Community Cleanups

Volunteers play an important role in helping keep our community clean. The City supports volunteer cleanups by providing free disposal and supplies, as required.

### Illegal Dumping Cleanups



Southside Church engaged over 100 volunteers on December 1 to perform a city-wide cleanup of riverbanks and known illegal dumping spots. The group collected an impressive 2.4 tonnes of garbage that could have ended up downstream with the high river volumes at that time. Emterra Environmental used one of their curbside collection vehicles and crew members to gather and transport all the debris for responsible disposal. The City coordinated the cleanup locations, Emterra's participation and provided free landfill disposal for the event.

The City also supported numerous smaller cleanups initiated by other groups and individuals this quarter.

### Illegal Dumping Campaign

Throughout November, Environmental Services coordinated social media and print ads, highlighting the average costs of common items found illegally dumped. The posts and information were well received and helped residents realize it is often cheaper than anticipated to responsibly dispose of items.



### Storm Drain Raking

To help prevent localized water backup, students from Unity Christian School volunteered to rake leaves off of storm drains just before heavy rains rolled in. The City provided the students with equipment for the cleanup.



## Habitat Enhancement

This fall, the City worked with volunteer groups and environmental organizations to carry out a variety of habitat enhancement and ecological education projects to help support biodiversity.

### Salmon Habitat Enhancement



AD Rundle's Outdoor Education class helped plant native shrubs, scatter branches and place rock piles along a new salmon spawning stream to help diversify the habitat. Environmental Services staff were on hand to guide the efforts and discuss the ecological changes the students were making. This event was made possible through financial contributions from the Fraser Valley Watersheds Coalition.

### Tree Planting and Nature Walk

Kindergarten to Grade 4 students helped diversify salmon habitat by planting local shrubs along Browne Creek. The Vedder Elementary students also discovered bird nests, worms, caterpillars, aquatic insects and other creatures while exploring the area with Environmental Services staff. This event was made possible through financial contributions from the Fraser Valley Watersheds Coalition.



### Streamside Re-Wilding



Students from Unity Christian School planted clusters of native trees and shrubs along Dunville Creek to improve habitat for spawning Coho Salmon. Soon, the overhanging vegetative clusters will grow to provide protection for the salmon from predators. Support was provided by Ice River Springs and the City.

## McGillivray Pump Station Upgrade

Construction is ongoing by the design-build team of Gerry Enns Contracting Ltd. / Urban Systems Ltd. in the contract amount of \$4.7 million.

The upgraded 600 volt underground hydro has been installed to replace the overhead poles. Construction of the new electrical building with standby generator, motor control centre and variable frequency drives is complete and in service. Instream works to upgrade the pump intake structure, pump discharge piping and new 600 HP pump/motors is complete. Pumps have been commissioned and are in service.

Work is underway on the flood box retrofit and intake screen automated rakes.

The project is being funded by the Province of BC and substantial project completion is scheduled for the end of January 2019.



## 2019 Fraser River Erosion Protection



The City of Chilliwack applied for and received provincial funding in the amount of \$750,000 through the Union of BC Municipalities (UBCM) to complete Fraser River erosion protection under the Community Emergency Preparedness Fund (CEPF). This funding approval included two sites: Orchard Slough Check Dam in the amount of \$87,000 and the riverbank erosion protection downstream of the CHIP area in the amount of \$663,000. The engineering design work for the Check Dam site is being completed to accommodate environmental applications. The area downstream of CHIP has received preliminary design and was tendered through public procurement, resulting in 14 bids received. City Council awarded the contract to Summit Earthworks Inc., in the amount of \$560,200. Work is expected to begin in early February 2019 with completion by mid-March 2019.