

Engineering



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

First Quarter Report, 2016

Annis Road and Weeden Drive Pump Station Upgrades



The Annis Road Booster Pump Station provides water service to the Falls development in the Eastern Hillside area. Currently, it has reached its capacity due to the on-going development activities. Major mechanical and electrical upgrades including high capacity pumps are required to facilitate future growth in the area.

The Weeden Drive booster pump station serves a high elevation residential area of Promontory. The pump station requires an upgrade to provide fire flow pumping capacity. Major mechanical and electrical upgrades including BC Hydro service are required to accommodate the additional fire pump. Norich Electric Ltd. is proceeding with the construction work while Associated Engineering is providing required engineering services. The project is well underway and scheduled to be completed in April 2016.

Marble Hill Well Source Development



The City of Chilliwack explored groundwater potential in the Marble Hill area on 6950 Marble Hill Road to supplement the current Sardis Vedder Aquifer water source to meet the current and future drinking water supply needs in the Eastern Chilliwack Area.

The hydrogeological investigations were conducted by AMEC Foster Wheeler confirmed the aquifer is capable of producing 75L/s. AMEC identified several well sites within 6950 Marble Hill Road and two production wells were drilled and connected to the City's existing water distribution system in December 2015. The water quality analysis conducted on these wells indicated that groundwater is of excellent quality. AECOM is currently

proceeding with detailed design work to construct a permanent building to house both production wells electrical controls including BC Hydro power, standby power and process equipment. The project is scheduled to be completed in November 2016.

Chilliwack Mountain Zone 2 Pressure Reducing Valve (PRV) Station Upgrade



The Chilliwack Mountain Zone 2 PRV station services residential developments the Chilliwack Mountain and requires an upgrade to provide adequate fire flow to facilitate growth in the area.

The project includes supplying a new PRV chamber complete with all valves and fittings and modifications to existing water main.

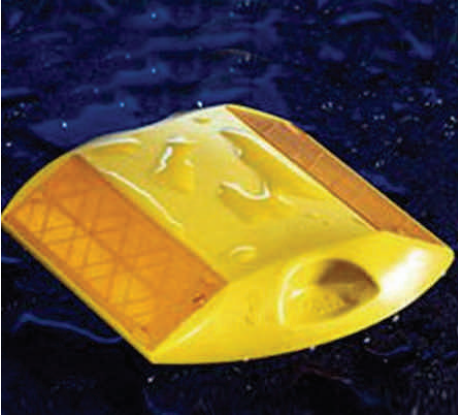
2016 Water and Sewer Combo Project

The project is a combination of one water main installation, one storm main installation, five sewer main upgrades throughout Chilliwack that have been combined to increase scope and economy of scale. 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 storm main installation will convey storm waters away from water supply production wells to protect drinking water.

The following table shows water, storm and sewer main installation and upgrade projects. RFP stage for this \$4.8 million design build project is currently underway. The project is scheduled to be completed in August 2017.

Name of Project	Description of Work	Budget
Keith Wilson Road Water Main	Installation of 1,195 meters of 300mm ductile iron water main	\$900,000
Watson Road Storm Main	Installation of 875 meters of 300mm and 600mm diameter storm main	\$750,000
Watson Road Sanitary Main	Installation of 25 meters of 450mm diameter sanitary trunk main	\$150,000
Watson Road Paving Works	Placement of 1,300 meters of level course and full road asphalt overlay	\$180,000
Evans Road Sanitary Main	Installation of 140 meters of 250mm HDPE sanitary force main and 150 meters of 450mm sanitary trunk main	\$450,000
Vedder Road Sanitary Main	Installation of 320 meters of 525mm diameter sanitary trunk main	\$600,000
Cheam Avenue Sanitary Sewer	Installation of 390 meters of 375mm diameter sanitary sewer and 215 meters of 450mm sanitary trunk main	\$950,000
Hodgins Avenue Sanitary Sewer	Installation of approximately 30 meters of 200mm sanitary sewer and 355 meters of 375mm sanitary sewer	\$450,000
Hodgins Avenue Paving Works	Placement of 520 meters of full road asphalt overlay including milling and reconstruction of Mary Street intersection	\$270,000
Princess Avenue Sanitary Sewer	Installation of 85 meters of 150mm and 200mm sanitary sewer	\$100,000

Roadway Reflectors



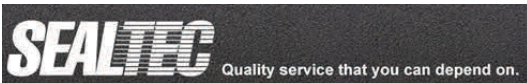
Roadway reflectors are placed on our roadways to assist motorists in adverse weather conditions such as rainy dark nights. These raised reflectors identify the centerline and lane lines of the roadway providing an added safety device to our roads.

The 2016 Roadway Reflector contract has been awarded to Roaron Construction Ltd. Installation of roadway reflectors will be completed by April 30, 2016.



Crack Sealing

The 2016 Crack Sealing Program has been awarded to Sealtec Industries Ltd. This program will see over 11,000 lineal metres of crack sealing undertaken on various roads throughout Chilliwack. This program works to extend the life expectancy of our roadways by preventing water from penetrating the asphalt and deteriorating roads which are in relatively good condition. It is anticipated that the work will be completed by April 30, 2016.



Roadway Markings



Roadway markings are a critical component of our traffic control devices that help the motorists, pedestrians and cyclists utilizing our roadways. They provide the necessary visual markers required to assist motorists to identify their position with the roadway and key pedestrian/cyclist corridors and crossings.

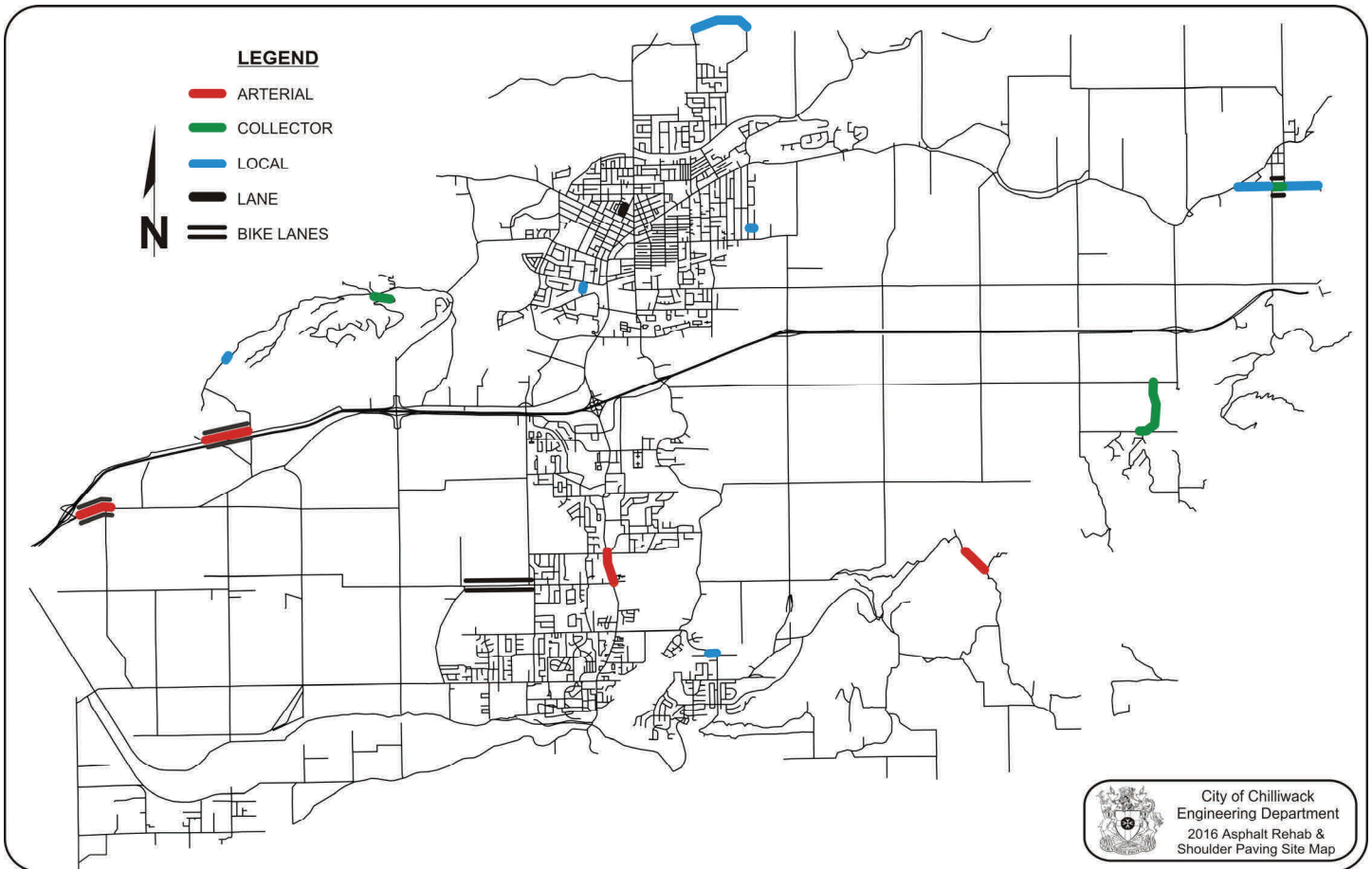
Roadway Markings include centerline and lane lines, crosswalk, stop bars, parking termination lines and more. Traffic, gravel abrasion, road construction and maintenance all add to the wear and tear on our roadway markings. Annual applications to ensure the roads are in the best possible condition for our users.

Council has approved the extension of the 2015 Roadway Marking Contract to 647354 BC Ltd., dba Aardvark Pavement Marking Services for the 2016 Contract. We can anticipate installation to begin in May 2016.

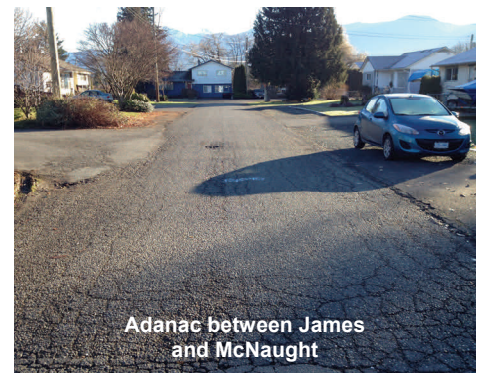


2016 Asphalt Rehabilitation and Shoulder Paving

The tender is currently out and will be closing on April 20th. Preliminary Survey and Geotechnical testing work is being carried out by the team of Murray and Associates and Braun Engineering. The sites shown will be constructed this summer:



The following photos show a few roads scheduled for rehabilitation this year:



Project Site	Description
Acorn - McNaught to James	Remove Existing and Place New Asphalt
Nevin - Yale to McElwee	Overlay
Patterson - Prairie Central to Marble Hill	Overlay and Reconstruction
Industrial – Arnold to Old Orchard	Overlay and Bike Lanes
Yale - Trans-Canada Highway to Chadsey	Overlay and Bike Lanes
Vedder - South Sumas to Stevenson	Overlay
Ballam – McDonald to east end of gravel	Pave gravel road and place continuous concrete barrier
Nevin from Ford to McGrath	Bike Lanes
South Sumas – Unsworth to Tyson	Bike Lanes
Elk View Road south of Wincott	Micropile Reinforcement
Old Orchard at #42721	Sheet Pile and Rip Rap Reconstruction
Uplands - Promontory to #46481	Concrete Curb, Widen and Pave
Grandview at Chilliwack Mountain Road	Reconstruct Base and Pave
Lane behind #9474 Cook Street	Pave Gravel Lane (Public Works Maintenance Funding)
Edward from Bernard to south end	Paving in Conjunction with Urbanization

Road Base Reinforcement

This year road base reinforcement to prevent sudden collapse is being tendered as part of the Asphalt Rehabilitation work. It will involve the extension of sheet piling adjacent to the Fraser River on Old Orchard Road and the installation of micro-piles and a concrete grade beam on Elk View Road just south of Wincott Road.



Old Orchard Road beside the Fraser River



Old Orchard Road beside the Fraser River



Elk View south of Wincott

Vedder Bridge Replacement Design-Build Project

Design-Build proposals were received on March 16th from Martens Asphalt Ltd. / McElhanney Engineering Ltd.; Emil Anderson Construction (EAC) Inc. / Klohn Crippen Berger; and Surespan Construction Ltd. / Hatch Mott MacDonald for the design and construction of the Vedder Bridge Replacement Project. Two bridge design options were received from each team for consideration: Option 1 (Steel Girder Design) and Option 2 (Steel Arch Design).

On April 19, 2016, Council accepted the proposal for the Vedder Bridge Replacement Design-Build Project from the lead proponent, Emil Anderson Construction Inc., in the amount of \$11,331,052 (plus applicable taxes) with Option 2 (Steel Arch) as the selected bridge type.

Based on the proposal, construction is anticipated to start in September 2016, with substantial completion of the project by October 2017. The document highlighted that the first 10 months of construction will be completed parallel to Vedder Road allowing traffic to continue as usual.



BikeBC Application

An application for shared funding on bike lane projects will be submitted by April 8th.

The Province funds infrastructure which forms part of a bicycle network plan prepared and adopted by a municipality or regional district through BikeBC.

BikeBC will provide the lesser of the granted amount or 50% of the actual eligible cost of a project. If a third party, including another Provincial agency, is contributing to a project, that contribution must be deducted from the project's total eligible cost and the BikeBC share calculated on the balance.

Traffic Signal Video Detection

In preparation for planned paving on Vedder Road in 2016 and 2017 video detection will be installed at the following intersections:

- Luckakuck Way
- Knight Road
- Stevenson Road

As soon as traditional traffic signal loops are milled out as part of the paving operation the traffic signal becomes very inefficient for the 3 to 7 day period it takes to complete the paving and road markings prior to signal loops being cut in and reconnected. Without detection the traffic signal must continually cycle through every signal sequence even with no vehicles present. Video detection allows the signal to operate seamlessly through construction activities. The cuts required to install loops weaken the asphalt and increase the rate of deterioration so video also eliminates that problem.



Distracted Driving



The month of March held the focus of Distracted Driving education for the Safer City Team. The use of hand-held personal electronic devices has been prohibited in the Province since 2010. Data indicates that one quarter of vehicle crash fatalities in B.C. are due to distracted driving. The Safer City team chose to deploy a distracted driving project at one of the City's busiest intersections in March, Luckakuck at Vedder. When drivers are distracted they react slower; data is showing that most rear-end crashes that result in injury are being caused by distracted drivers. The police issued a number of violation tickets for the following offences:

18 Fail to Wear Seat Belt	16 Defective Vehicle	37 Use Electronic Device
01 Improper Motorcycle Helmet	01 Notice and Orders (Unsafe Vehicles)	
01 Red Light at Intersection	01 3-Day Immediate Roadside Prohibition (Alcohol)	

Safer City is appreciative for the efforts of Chilliwack RCMP, Fraser Valley Traffic Services, Speed Watch, ICBC and City Public Works staff all who assisted in raising awareness of distracted driving in the community by participating in the enforcement project.

Safer School Travel

Sardis Elementary completed the Safer School Travel (SST) Program that Safer City offers. The school now has available to them a Best Walking Routes map that showcases the multiple routes to and from the school; student's road safety artwork; and Road Safety reminders and tips. For future reference, the school has a Road Safety Plan that they will be able to reference back to on actions, implementations or processes that were brought forward during the SST process.

Two additional schools have stepped up and are currently participating in the SST program; both McCammon Traditional School and Cheam Elementary will be working through Step 2 and 3 of the program this Spring. The SST program includes home surveys, traffic counts, site visits, stakeholder meeting and mapping efforts. Implementation of the final program will take both schools into the Fall of 2015.



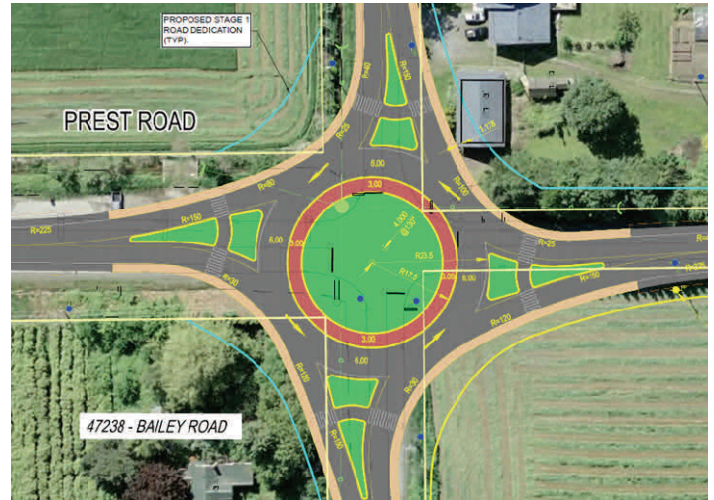
Commercial Vehicle Project



Safer City partnered with representatives from the Ministry of Transportation and Infrastructure's Commercial Vehicle Safety and Enforcement Branch (CVSE), WorkSafe BC, Chilliwack RCMP and Fraser Valley Traffic Services (RCMP) for a 1-day road safety project. A variety of commercial and passenger vehicles were inspected to confirm their compliance with applicable safety legislation. This public safety initiative did result in violation tickets for some drivers however the Safer City team advises that it is important to remember the majority of commercial vehicles are being operated in a professional and safe manner on local roadways.

Prest Road Roundabouts

Jakes Construction completed road base preparation and bottom lift paving of the Prest Road / Bailey Road and Prest Road / Prairie Central Road roundabouts. The majority of this paving construction was completed during Spring Break to take advantage of reduced traffic volumes in order to minimize traffic delays. Remaining works scheduled thru the month of April include landscaping, street lighting, signage, final lift paving and line painting with substantial completion anticipated for the beginning of May.



Bailey Sewer Force Main / Teskey Creek Storm Trunk



Jake's Construction started installation of Phase 2 of the Bailey Sewer FM/Teskey Creek Storm Trunk Sewer project in March.

Winner of Sustainability Excellence Award



Every year, the City of Chilliwack sponsors the Sustainability Excellence Award as part of the Chilliwack Chamber of Commerce's Business Excellence Awards event. The winner of the 2015 Sustainability Excellence Award was All Things Being Eco.

All Things Being Eco won the award for offering eco-friendly and fair-trade products, and implementing sustainable operating practices to conserve water and energy, and reduce waste.

Christmas Tree Composting

The City's annual Curbside Christmas tree collection program started off the New Year with Emterra Environmental collecting trees from Curbside customers and delivering them to the Parr Road Green Depot for composting.

Residents also dropped off over 160 trees for free at the Parr Road Green Depot. During this program, BioCentral, the site operators, collected close to \$350 as well as 150 canned food donations to the Salvation Army, a 50% increase from last year.

Combined, these annual options provide Chilliwack residents with convenient ways to compost Christmas trees and help to reduce illegal dumping and burning.



Fraser River Clean-Up

March 19 Clean-Up: Gill Bar Area

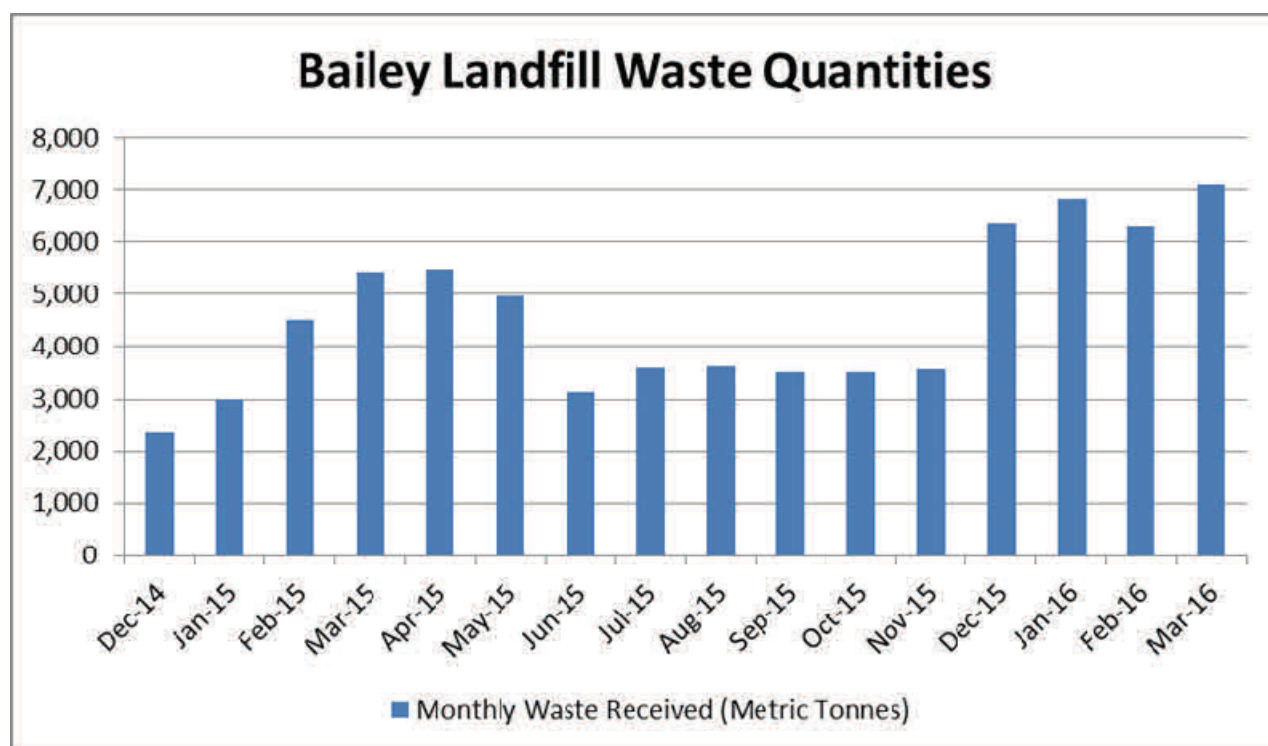


Household garbage, vehicle parts, spent ammunition, and construction waste were among the 20 tonnes of waste removed from the Fraser River near Gill Road on March 19. The event saw anglers, ATV riders, 4X4 groups, and concerned citizens gather to push, pull, and drag the dumped waste into separate bins for garbage, wood waste, and metal recycling. The City of Chilliwack supported their efforts by providing free disposal at the Bailey Landfill for the garbage they collected. The volunteers were treated to a BBQ lunch by the event organizers, Fraser Riverkeeper and Woodtone.

Bailey Landfill Operational Changes

Waste Tonnage Increase

Operations at the Bailey Landfill had to be adjusted to accommodate a significant increase in waste being delivered to the site commencing in December 2015, when the construction and demolition landfill at Shxw̓ha:y Village stopped accepting waste. Waste tonnages had already increased earlier in 2015 due to the US-Canada exchange rate, which is deterring private waste haulers from using landfills in Washington State. The Bailey Landfill operator, Tervita Corporation, required additional equipment and manpower to process the increased quantity of waste.



Sunday Opening

To serve landfill customers better, arrangements were made with Tervita Corporation to commence Sunday operating hours from 12 noon to 5 pm, effective April 1, 2016. Opening on Sundays should help address the congestion and long wait times that have been occurring on Saturdays, when over 600 customers can visit the site.

Organic Waste Processing Services

Proposals were received on March 30, 2016 from three companies interested in composting Chilliwack's organic waste, commencing May 1, 2017:

- Harvest Fraser Richmond Organics, Ltd;
- Orgaworld; and
- Net Zero Waste Abbotsford Inc.

The proposals will be evaluated by staff and a recommendation brought forward to Council in April or May, depending on the complexity of the evaluation process.

Asbestos Waste Disposal



Environmental Services staff have also been working with Tervita Corporation and a health and safety consultant to set up procedures to accept asbestos waste at the Bailey Landfill in an effort to curb the illegal dumping of the material by providing a cost-effective and safe local disposal option.

An Asbestos Waste Management Plan and health and safety procedures have been drafted for submission to the Ministry of Environment and WorkSafeBC. Safety training and other arrangements were still being finalized in March, so a start date for accepting asbestos waste has not been confirmed. Detailed information on limits, material preparation, and documentation requirements will be made available to landfill customers once the arrangements have been finalized.

Bailey Landfill East Cell Liner Project

Proposals were received from three design-build teams in response to the Request for Proposals for the East Cell Liner Project, which closed on March 16, 2015:

- Golder Construction/Golder Associates Ltd;
- Jacob Bros. Construction Inc./GHD Limited; and
- Tervita Corporation/Brybil Projects Ltd.

The project includes installing a liner system comprising clay and a geomembrane on a portion of the landfill slope to collect and control leachate (contaminated water) that will be generated when waste is placed against the slope in the near future. The project will protect groundwater and surface water quality at the site.



A third party engineering review was conducted of the design submissions, and a recommendation will be made to Council in April to accept a proposal from one of the teams.

Organic Waste Diversion Planning

Organic Waste Transfer Station

Expressions of Interest were received from five design-build teams on February 10, 2016 for the design and construction of an Organic Waste Transfer Station at the Bailey Landfill. The transfer station will be required in May 2017, when the City commences the next Curbside Collection Contract, which will include the separate collection of organic waste, including food scraps and yard trimmings.

Three teams were short-listed to provide proposals:

- Titan Construction Company Ltd./Morrison Hershfield Engineering;
- Jacob Bros. Construction Inc./GHD Engineering; and
- Windley Contracting Ltd./Herold Engineering.

The preliminary design of the transfer station is nearing completion and the Request for Proposals will be released in April.



Snowpack Report and Freshet Preparation

The BC River Forecast Centre has issued the April 1st snowpack report as follows:

Upper Fraser:	75% of normal	
Nechako:	79% of normal	
Middle Fraser:	102% of normal	
Thompson:	112% of normal	North
Lower Fraser:	107% of normal	
Thompson:	113% of normal	South

Lower snowpack in the Upper Fraser is offset by slightly higher than normal snow packs in the Thompson River basin, and the **overall Fraser River basin index is 96%**.

Warm weather towards the end of March and in early April has led to the onset of the melt season across the province. The transition from snow accumulation to snow melt is two to three weeks earlier than usual this season. Below normal snow packs in the north and west indicate below normal seasonal risk, and watersheds in these areas would need to experience extreme weather conditions to develop flooding conditions this season. With a basin-wide index of 96% for the Fraser River, seasonal risk to lower Fraser River from Hope downstream is normal. The expected peak flow for the Fraser River at Hope is 8000-9000 m³/s; higher or lower flows are possible depending on weather conditions. The River Forecast Centre will continue to monitor snow pack conditions and will provide an updated seasonal flood risk and stream flow forecast in the May 1st 2016 bulletin, which is scheduled for release on May 9th.



McGillivray Pump Station Upgrade project

Preliminary engineering design is underway by the consulting firm Urban Systems Ltd. (USL) for the McGillivray Pump Station Upgrade project. The McGillivray Pump Station upgrades, along with the Collinson Pump Station upgrades were recommended in the Greendale Drainage Study after extensive flooding occurred during the January 2009 flood event. The 2010 USL study included the conceptual design for both Pump Station Upgrades. The project objective is to increase the capacity of the pump stations to reduce or eliminate flooding caused by a 1:100 year return period rainfall event.

The McGillivray design scope of work includes:

- Upgrading the existing 2-300HP pump/motors with 2-500 to 600HP pump/motors;
- A new dedicated electrical building to house the new motor control center, VFDs control panel, and standby generator for the upgraded pumps;
- A new 600V 3 phase service from the transformer to the new motor control center;
- Provisions for an automated trash raking system, and reconfiguration or replacement of the existing debris conveyors; and
- Upgrades to the Flood-box to correct structural efficiencies and provide an automated slide gate actuator to enable conversion between gravity flow and pump flow.

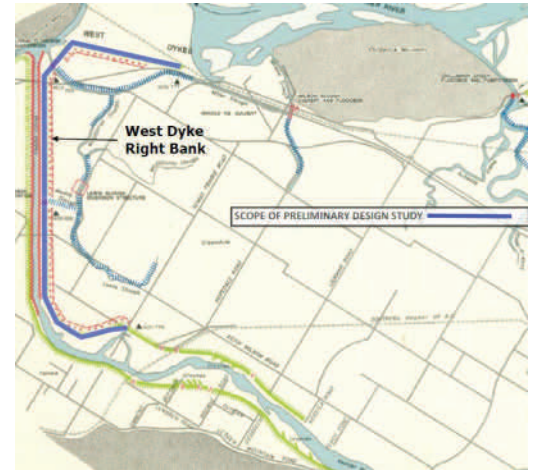


Vedder Canal West Dyke (Right Bank) Upgrades – Preliminary Design

The consulting engineering firm of Parsons has been retained by the City of Chilliwack to complete a preliminary engineering design study for this dyke upgrade project.

The section of the West Dyke under review extends from Sumas Prairie Road to Industrial Way, and has a length of approximately 8 km, as shown in the attached Figure. The existing dyke crest is below the current design flood control level (FCL). The objective of this study is to compare a number of design solutions for raising the existing dyke and to evaluate the cost effectiveness of each solution. Dyke designs both with and without seismic criteria will be evaluated.

The draft report has recently been received and is currently under review by City staff. The final report is expected to be completed in the next 30 days.



2016 Vedder River Gravel Management

Preparations are underway for the 2016 Vedder River gravel management program. River surveys are complete and hydraulic modeling and environmental planning is in progress. Removal sites will be confirmed by the Vedder River Management Area Committee in early May. Removals will take place during the Fisheries work window from mid-July to mid-September.

The following figure shows the 6 sites excavated in 2014 where a total of 56,000m³ of sediment was removed:

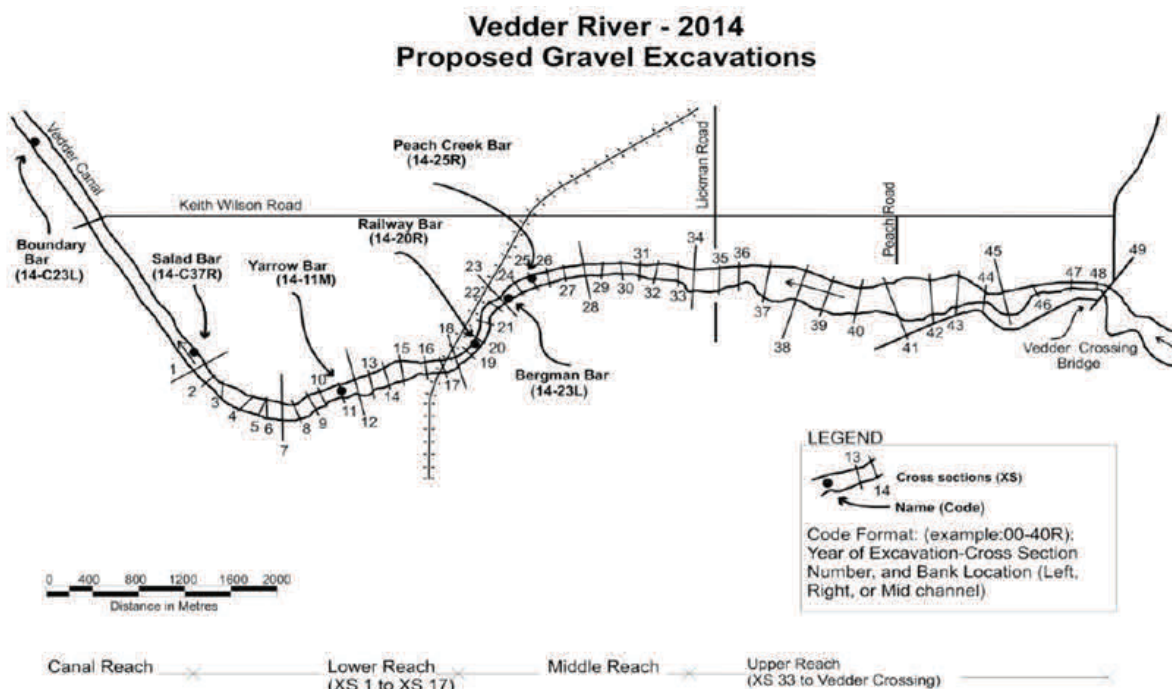


Figure 1 – Overview of sediment removal locations on the Vedder River in 2014