Environmental Management System

2018 Annual Report

THE CITY OF GRANDE prairie CANADA

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Introduction

This report highlights the City of Grande Prairie's environmental accomplishments and areas of opportunity within the corporate Environmental Management System (EMS) as directed by City Council through Policy 216. Policy 216 establishes that the City will implement an Environmental Management System that addresses environmental regulatory compliance and environmental risk management.

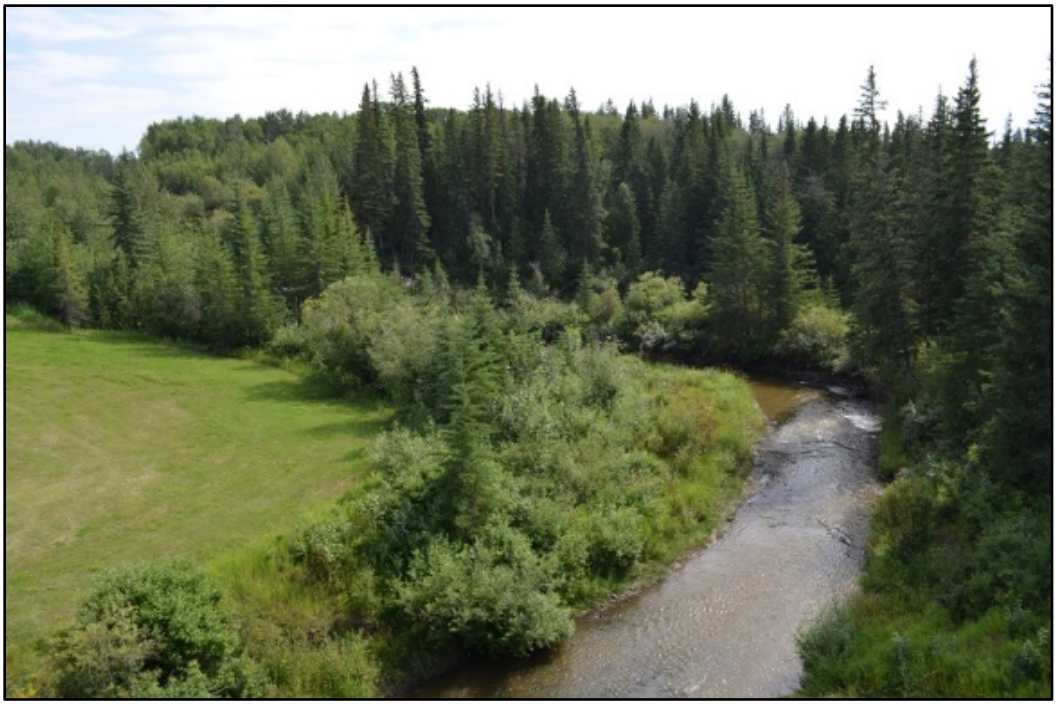
Many private and public organizations maintain an EMS. Some of these organizations follow the International Organization for Standardization (ISO) 14001 standard, while others hybridize ISO 14001 to fit their needs. In 2016, the City retained a consultant to conduct a gap analysis on the organization's management of environmental responsibilities. Following this gap analysis Policy 216 was adopted by City Council and the City implemented an EMS based on principles from ISO 14001. These principles include 11 core elements (listed below). As noted below, one of these core elements is "Communication". As a method to communicate on success and areas of opportunity within the City's EMS, annual reports have been compiled since the implementation of the EMS in 2016.

EMS Core Elements:

1. Environmental Emergency Preparedness and Response
2. Corporate Policies and Commitment
3. Compliance Assurance
4. Environmental Management
5. Audits and Inspections
6. Incident Reporting and Investigation
7. Contractor Management
8. Operation Control
9. **Communication**
10. Employee Training
11. Policies and Standards

While the EMS forms the central focus of the information presented herein, further environmental accomplishments and opportunities within the organization are noted.

2018 marked an important year for the City, as it set the stage for the next four-year planning horizon for City Council. During 2018, City Council implemented a strategic plan that includes direction to “protect the natural environment including our air and water to ensure a safe and healthy community”. This statement builds on a previous guiding principle where “we [as the City] consider the impact our actions on the environment and lead by example”. As a whole, the EMS and programs summarized in this report highlight the City’s success in addressing these strategic statements from City Council, and shed light on areas that need further improvement.



Environmental Management System (EMS)

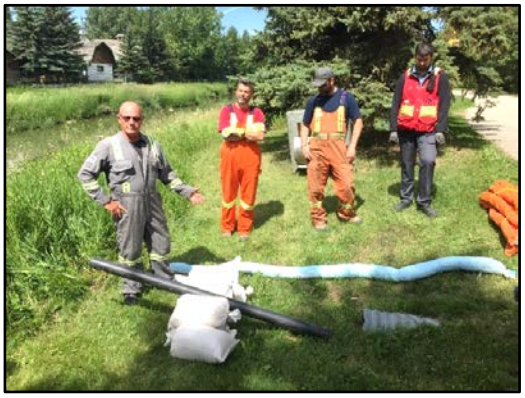
2018 was the second full year of EMS implementation. The EMS acts as a framework that allows departments and work units to track environmental documentation and objectives to continually improve environmental performance. This initiative began in 2016 and was directed through the establishment of the Environmental Risk Management policy (Policy 216). This policy establishes that the City will implement an EMS to address environmental regulatory compliance and ensure environmental aspects and impacts are considered and mitigated within City operations.

An environmental aspect is defined as an element of a department's activities that can interact with the environment. An environmental impact is defined as any change to the environment whether that be adverse or beneficial from an environmental aspect.

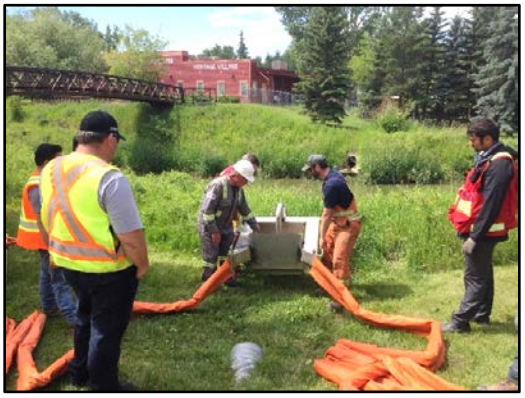
As of March 2018, all work units within the City of Grande Prairie have identified their environmental aspects and impacts, and outlined strategies to reduce their environmental risks and improve their environmental performance. While this is a step in the right direction, there was a missed opportunity across the organization to include these targets within the business planning process for all departments. Including these targets within departmental business plans would ensure a standardized place to capture targets to enable consistent progress in achieving the identified goals. To address this missed opportunity, the Energy Management & Environmental Services (EMES) department will work with other department manager's to ensure these targets are included and form a central focus within future business plans.

Environmental Emergency Response Procedure

The Environmental Emergency Response Procedure is in place to mitigate negative impacts of releases or spills into the environment. This procedure is constantly evolving to ensure best practices are applied across the organization when responding to environmental spills and releases. In 2018, City staff responded to 56 release incidents within the City.



In 2018, EMES hosted training exercises to ensure staff from responding departments are aware of best practices in spill response. The training in 2018 was customized to focus on hydrocarbon releases from the City's stormwater system.



Records Management

An essential component of the EMS is a thorough records management program. Maintaining accurate environmental records is crucial for:

1. Ensuring the City maintains documentation of operation and control mechanisms to mitigate environmental impacts
2. Tracking progress on established environmental goals, objectives, and targets
3. Ensuring accurate environmental records are provided through the Environmental File Search process

The City's Environmental File Search process is established to provide environmental records that may assist in the transfer of land within City Limits. Often, environmental consultants will request environmental records when completing Environmental Site Assessments on properties within the City. Making sure records are up-do-date within the City's EMS assists with the completeness of Environmental File Searches. While many work groups are now providing new environmental records, EMES needs to continue obtaining historical records from departments across the organization.

Potentially Contaminated Sites Inventory

The collection of environmental records within the EMS has allowed for the internal mapping of potentially contaminated sites within Grande Prairie. This data was initially mapped to provide indication of the number and location of brownfields within the community. Brownfields are commercial or industrial properties that are potentially contaminated; are vacant, derelict or under-utilized; and are suitable for redevelopment. Establishing an understanding of brownfield sites allowed the City to asses the feasibility of incentive programs to encourage redevelopment. Recent analysis has shown that new brownfield properties are generally redeveloped without incentives.

The development of this inventory proved valuable beyond its initial use. The data collected and mapped now provides crucial information for multiple departments across the organization. Development Officers are able to better identify and assess potentially contaminated sites prior to issuing development permits. Engineering Services uses the inventory when planning construction activities such as road rehabilitation projects. Planners consider the inventory when working on high-level Area Structure Plans or more detailed Outline Plans. The inventory will be continually updated with new information as it is made available.

Environmental Key Performance Indicators (KPIs)

Over the next four year budget cycle (2019 – 2022), City departments are responsible for setting and achieving Key Performance Indicators (KPIs) to continually improve services for residents. The table below highlights KPIs that have an environmental focus and are set for completion by 2022:

Key Performance Indicator	Measurement	Environmental Focus
Improve overall water quality of surface storm water	% improvement of water quality parameters over four years	Reducing negative impact of pollution in natural water bodies within City Limits
Reduce amount of refuse taken from public greenspace	% decrease in total tonnage of refuse taken to landfill	Reducing the amount of refuse that is improperly disposed of within the city
Reduce plant and insect disease outbreaks in the urban forest	% decrease in number of trees lost by disease or insects	Ensuring a healthy and stable urban forest to sustain ecosystem services
Reduce electricity consumption across the organization	% decrease in number of kilowatt hours consumed by city assets	Reducing the greenhouse gas emissions produced from energy use
Increase the ridership of Transit Services within the city	% increase in the number of public transit users	Reducing single occupancy vehicle trips, thus reducing air emission impacts
Reduce the time it takes for a vehicle to travel around the city	% reduction in travel time	Reducing the total idling time of vehicles in the city, thus reducing air emission impacts

Partners for Climate Protection Program

The Partners for Climate Protection (PCP) program is a Federation of Canadian Municipalities (FCM) program designed to assist municipalities with reducing greenhouse gas (GHG) emissions. The City has been an active participant in the PCP program since 2013. The program contains five milestones:

1. Creating a GHG emissions inventory and forecast
2. Setting corporate and community emissions reduction targets
3. Developing a local action plan to achieve the targets
4. Implementing the local action plan and/or strategies
5. Monitoring progress of the plan and reporting results

An inventory of corporate emissions was completed in 2014 with City Council setting a target to reduce emissions by 20% below 2009 base levels. An inventory of community emissions was completed in 2016 and a 6% reduction target was set in 2017. Council set the community target based on a recommendation from the Community Enhancement Advisory (CEA) Committee. CEA is a committee comprised of nine community members appointed by City Council. The CEA Committee members serve a three year term and have a mandate to provide an effective advisory link between the community at large and Council in matters relating to initiatives that impact the environmental and social health of Grande Prairie.

In 2018, EMES continued tracking both the community and corporate GHG inventory data. An investigation was complete to update both the community and corporate GHG calculators to ensure they meet the accepted standard. The GHG emissions calculators used by the City meet a global best-practice standard called the *Global Protocol for Community (GPC) Scale Greenhouse Gas Emissions Inventories: An Accounting and Reporting Standard for Cities (the Protocol)*. The Protocol is recognized by the FCM as the standard emissions calculating tool.

Because GHG emissions data is collected for the previous year (i.e. 2017 data is collected in 2018) the calculators were updated with 2017 data in 2018. As such, the following table presents updated GHG emissions from the City's operations showing the percent change from a three-year average of 2014, 2015, and 2016 as compared to 2017. The Activity Types in the table are defined as:

Scope 1: Direct GHG emissions from sources that are owned or controlled by the City

Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam, generated upstream, as a results of City operations

Scope 3: GHG emissions that are a consequence of the operations of the City but are not directly owned or controlled by the organization. This scope includes electricity distribution and line losses.

Change in GHG Emissions from City Operations			
Activity Type	**3 Year (2014/15/16) Average GHG Emissions (tCO2e)**	**2017 GHG Emissions (tCO2e)**	**Change**
Scope 1	16,223	18,853	16%
Scope 2	37,102	30,761	-17%
Scope 3	8,170	4,916	-40%
Total GHG Emissions	**61,496**	**54,530**	**-11%**

As seen in the table, the organization realized an 11% reduction in total GHG emissions from a three-year average (2014/15/16) to 2017.

At the community scale, the following table presents the GHG emissions from the entire community and the percent change from a three-year average of 2014, 2015 and 2016 as compared to 2017. The Activity Types in the table are defined as:

Scope 1: GHG emissions from sources located within the City's operational boundary

Scope 2: GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the city's operational boundary

Scope 3: All other GHG emissions that occur outside the city boundary as a result of activities taking place within the city boundary (e.g. electricity line losses, exported waste, etc.

Change in Community GHG Emissions			
Activity Type	**3 Year (2014/15/16) Average GHG Emissions (tCO2e)**	**2017 GHG Emissions (tCO2e)**	**Change**
Scope 1	1,186,906	1,150,312	-3.1%
Scope 2	376,783	375,039	-0.5%
Scope 3	170,942	152,429	-10.8%
Total GHG Emissions	**1,734,631**	**1,677,780**	**-3.3%**

As seen in the table, the community realized a 3.3% reduction in GHG emissions from a three-year average (2014/15/16) to 2017.

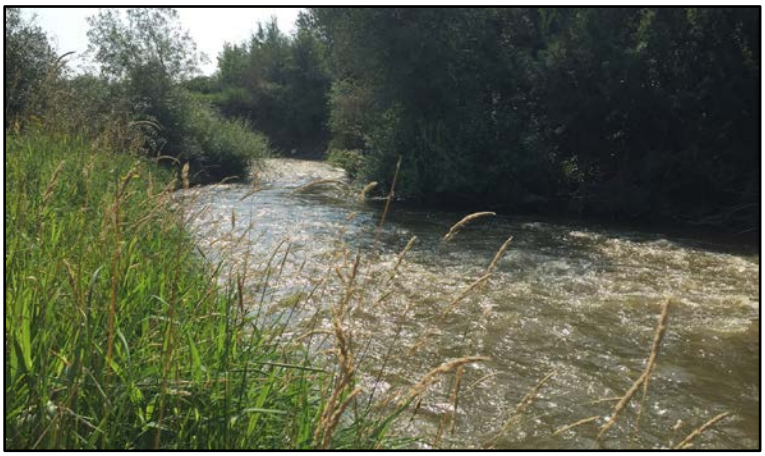
With regards to next steps within the PCP program, EMES will develop a local action plan (Milestone 3) in 2019 and will develop community focused energy and emissions reduction programs (Milestone 4) in 2020.

City Hall Solar Installation

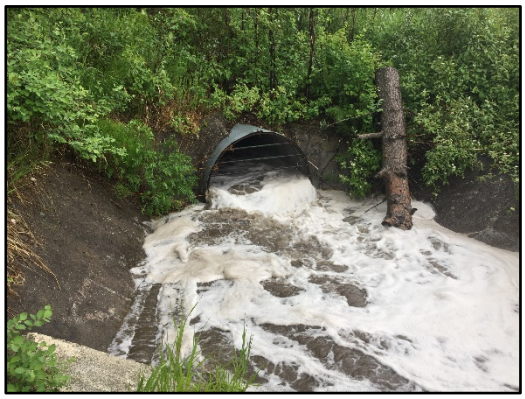
The EMES department managed a contract in 2018 to expand the array of solar PV on City Hall. The initial array was installed through a partnership with the Northern Alberta Institute of Technology (NAIT) in 2013. The addition of more solar PV on City Hall progresses the City's commitment to reduce GHG emissions and improve energy efficiency

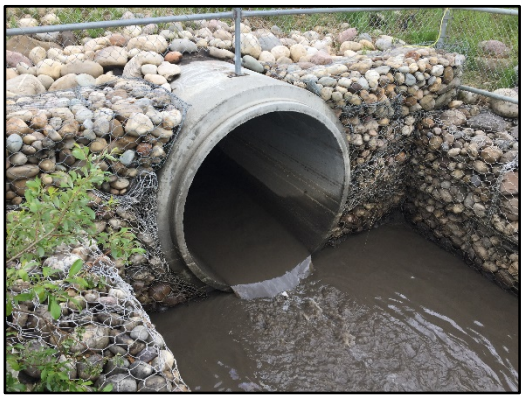
Bear Creek Water Quality Program

EMES continued water quality sampling of Bear Creek in 2018. The data collected builds upon annual sampling first established in 2014. The baseline water quality data collected in Bear Creek is critical when the City responds to environmental emergencies in and around this watercourse. The background information helps responding personnel determine the impacts of each environmental incident and helps guide mitigation and clean-up efforts.



In 2018, EMES focused the water quality program on six stormwater outfalls that discharge surface runoff into Bear Creek. This investigation compared heavy metal impacts from two residential, two commercial, and two industrial catchment areas within the City. The results of the investigation noted that the concentrations of heavy metals from industrial catchments were significantly higher than concentrations from residential and commercial catchments. Additional analysis determined that gravel land cover may contribute to metal concentrations in stormwater. Gravelled lots within the City act as a net source of metals, rather than a net sink.

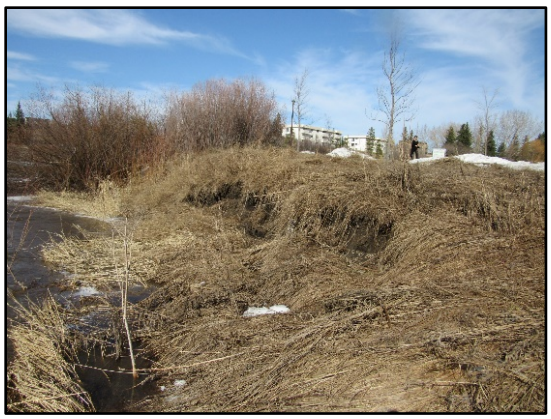


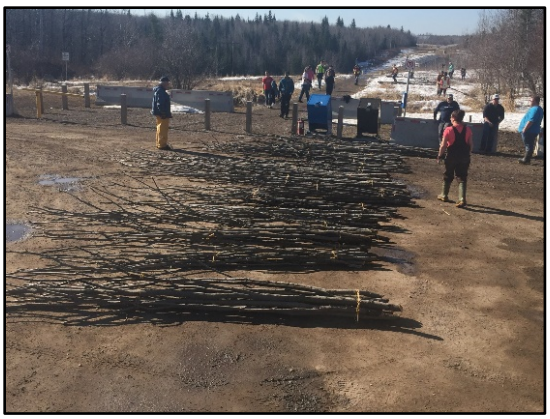


Understanding which land uses contribute to surface water quality issues allows the City to target and prioritize future stormwater management controls. The conclusions from this investigation present an opportunity for the organization to focus surface water pollution mitigation efforts on industrial areas. Additionally, this information opens a new opportunity to investigate how future developments could be designed to better address water quality issues.

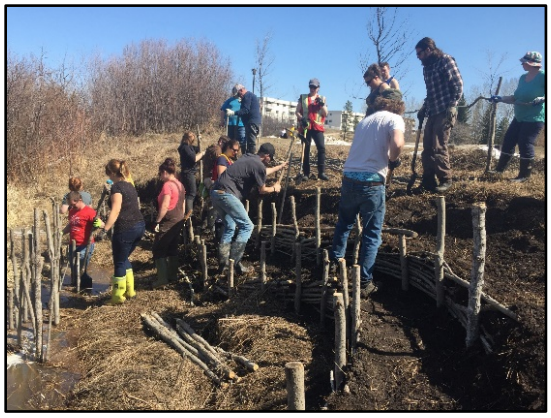
Bio-Engineering Workshop

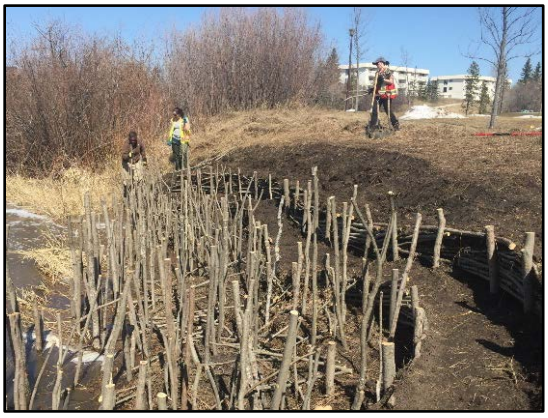
In April of 2018, EMES hosted a bio-engineering workshop in Muskoseepi Park. Bio-engineering uses living plant materials to perform engineering functions. Generally, this practice encourages vegetation growth to improve the stability of slopes that may have experienced sliding along a watercourse. Working with a consultant, EMES invited staff from other local municipalities to learn the techniques and repair a small slide along Bear Creek using live-willow steaks:





Small slide was identified, and willows were harvested from South Bear Creek Park





Trainees worked to add live-willow steaks and willow waddle fencing along the slope

The willows will continue to grow in 2019 and help stabilize the soil on the slope

Community Engagement Programs

As in previous years, 2018 saw continued growth and support for the EMES department's external engagement programs. The CEA Committee continues to guide the department on which programs to focus on. The following subsections present highlights from each of the programs.

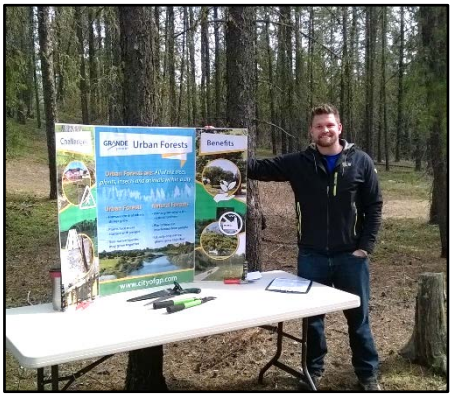
City Scrub

- Annual program (April 22nd - April 30th)
- 200 Staff hours – including staff from Parks Operations, Neighbourhood Associations, Communications, Finance, GIS, Muskoseepi Park, and EMES
- Volunteers – 8,500 people accounting for over 5,000 hours of service
- Budget - $2,275.00 Advertising, Prizes, Honorarium, Pickers (labour not included)
- Social Media tools realized a reach of 12,000 Facebook users
- Seven Neighbourhood Associations held events
- 15 tonnes of garbage was accepted at the landfill from Parks Operations during this time frame

Commuter Challenge

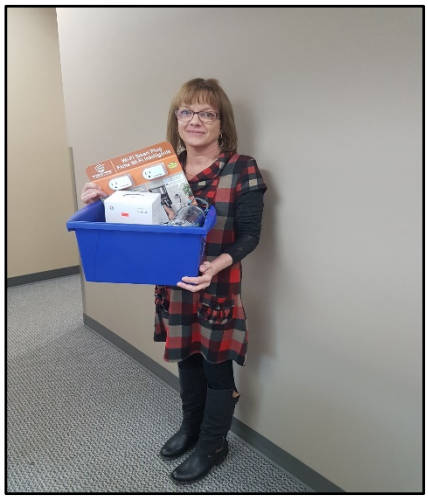
- Week-long event during Environment Week encouraging residents and City staff to leave their cars at home and find alternative modes of transportation (June 3rd - June 9th)
- Staff hours – 20
- Budget - $1,900
- 65 individual participants
- 61,100 calories burned
- 500 kg emissions saved

Walk Through the Forest



- Annual program hosted by Canfor, International Paper, and Norbord welcomes grade 6 students from across the region to visit Wapiti Nordic Ski Trails and "walk through the forest" stopping at information booths along the way.
- The City's booth focuses on the benefits of urban forests and the challenges City employees face managing an urban forest
- 2018 was the City's fourth year participating
- Departments involved – Parks Operations and EMES
- Budget – labour
- Staff hours – 36 hours
- Approximately 1,200 students participate

Waste Reduction

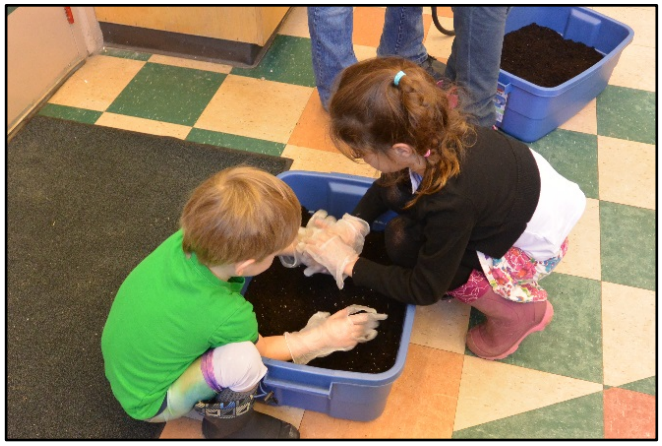


- Annual national program, third week in October, social media campaign requesting residents to post a tip on reusing items, every post was entered to win an iPad
- Budget - $800
- Staff hours – 30
- 300 entries received, over 16,500 people reached through social media
- Tips are then reused in EMES's #WattWednesday social media campaign, a weekly posting with an average of 400 views each week

Vermicomposting (composting with worms)

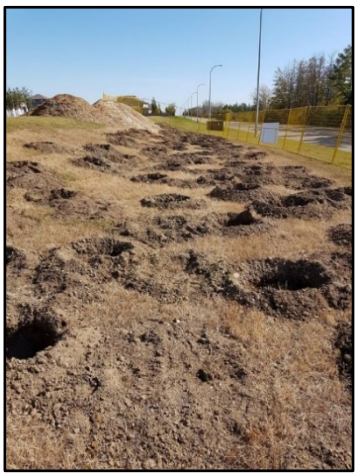
- Seasonal program where EMES hosts vermicomposting sessions to educate residents on how to compost using worms
- EMES farms worms that residents can pick up for free to start their own bins

- 4 vermicomposting workshops were held in 2018, 2 were free events (Earth Day and AB Culture Days)
- There are a total of 6 bins at the Service Centre, 1 at Community Social Development, 21 at the Eastlink Centre
- Approximately 80 bins went to local schools (40 total), homes, community groups and other City Departments



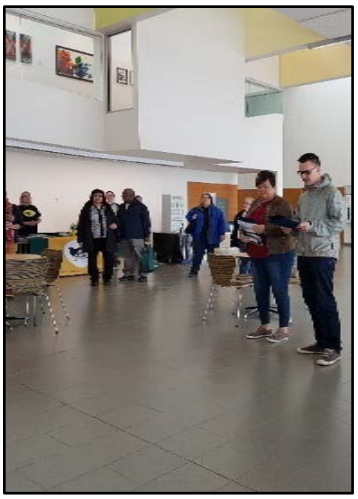
TD Tree Day

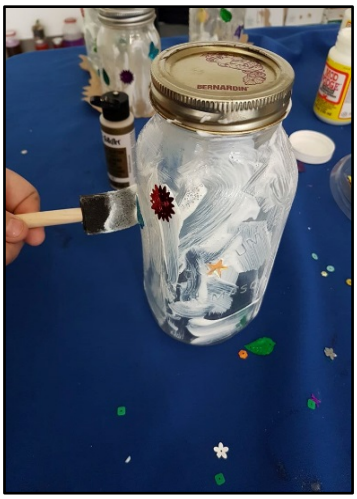
- Community volunteers planted 110 trees and shrubs along 116th street, in front of the fencing near 84th ave
- Plant material was provided through a Tree Canada grant of $2,300.
- Parks Operations provided site preparation which included digging holes for the plant material and providing the mulch



Earth Day

- Event held at the Montrose Cultural Centre with our community partner County of Grande Prairie
- Approximately 650 people attended the event where participants could build a terrarium, make a glow and/or calming jar with reusable jars
- 15 vendors participated including Braeheid Gardens, Safeway, ATCO, Aquatera, Urban Hens, Wapiti Gravel, AB Nature Kids





Community Enhancement Advisory Committee Grants

The Community Enhancement Advisory (CEA) Committee has $10,000 available annually to support beautification and environmental responsibility throughout the community. In 2018, the Committee funded the following projects:

Patrick Evans

Awarded a grant to install a mural on the Community Knowledge Campus sports field wall. This will be created in the summer of 2019.

Hillside School

Awarded a Tower Garden for the students to learn how to grow food year round.

St. Paul United Church

Received funding to improve their green space, work to be done in the spring of 2019.

Community Village

Awarded a grant to fix their concrete sidewalk/pathway.

St. Catherine's School

Received funding for a Tower Garden for school.

Interdepartmental Environmental Initiatives

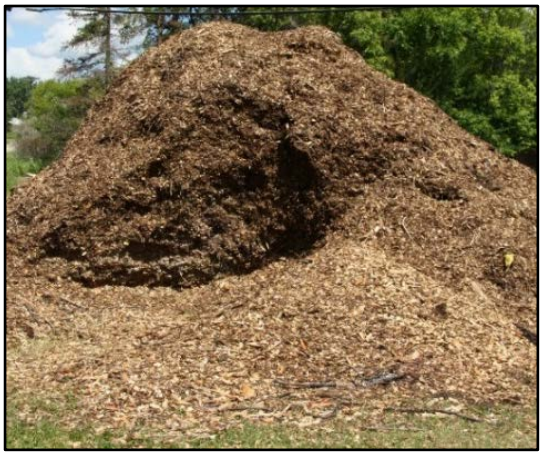
Parks Operations

Tree Mulch

Parks Operations mulches trees that are removed and branches that are trimmed from trees as part of their maintenance program. The resulting mulch is used for moisture retention and weed control throughout the City. Mulch also provides a diverse environment for microbes, and improves the nutrient content that is slowly released into the soil. In 2018, 90 tonnes of mulch was used in a variety of parks and at the cemetery.

Waste to Landfill

Parks Operations is responsible for litter control and managing solid waste within City green spaces including parks and public utility lots. In 2018, Parks removed and disposed of 219 tonnes of waste found within City Limits. This number represents a 32% increase from 2017 which may indicate an increase of improper refuse disposal around the City. The opportunity to address this issue is captured within the list of KPIs on page 7 of this report.



Edible Landscaping

Parks Operations has implemented planting edible trees and shrubs in various neighbourhood parks throughout the community. In 2018, green spaces were planted with these varieties:

Type of Plant	Quantity
Apple Trees	59
Apricot Trees	5
Blueberry Bushes	55
Cheery Trees	23
Gooseberry	12
Grape Vines	5

Honeyberry	85
Pear Trees	8
Plum Trees	28
Rhubarb	6
Saskatoon Bushes	45
Total	**272**

Integrated Pest Management

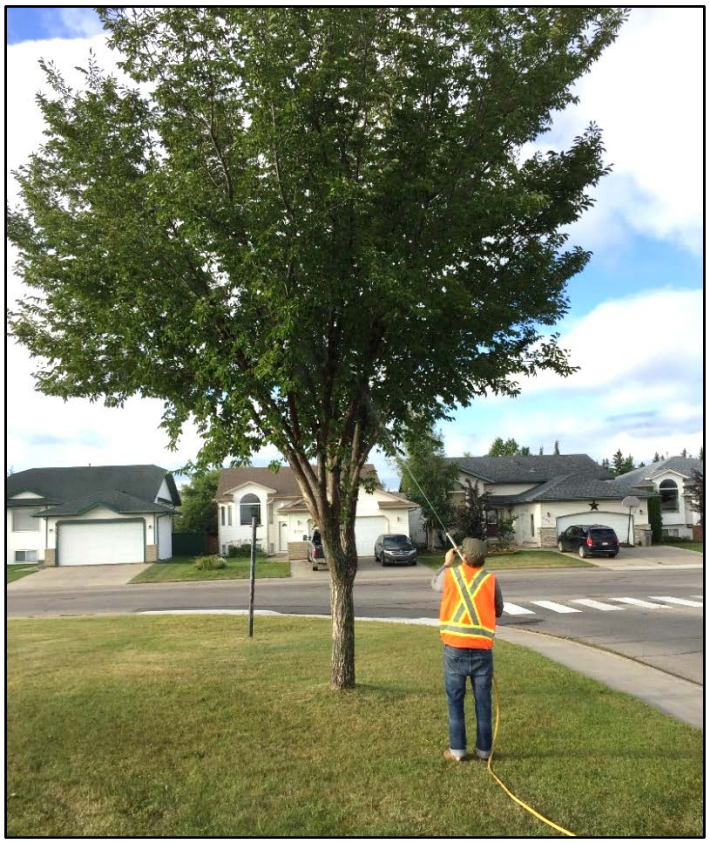
Parks Operations focuses on Integrated Pest Management (IPM) strategies to control pests using methods with low environmental impact. 2018 saw a number of unique strategies for controlling pests while mitigating environmental side effects. The list below captures some of Park's accomplishments on this front:

1. **Injecting Insecticide versus Spraying**: This program focuses on injecting insecticide directly into black ash trees to combat a pest called cottony psyllid. Injecting directly into the tree removes any chance of off-target effects of spraying that may impact pets or wildlife. Because of its effectiveness, injecting only needs to take place once every two years which reduces chemical use, as opposed to annual spraying.

2. **Installation of Nectar Gardens**: This program focuses on adding middle story, understory, and ground cover species to trees that have been sporadically placed in parks. Nectar Gardens bring trees together into mulched beds to mimic a forest situation and fills existing gaps with understory and groundcover to provide nectar for pollinators. In 2018, six Nectar Gardens were installed to improve diversity within the urban landscape.

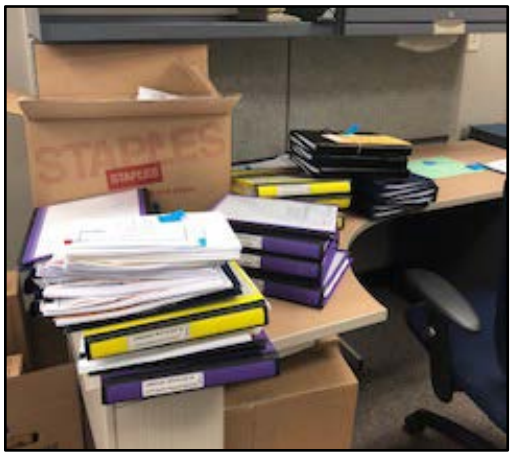
3. **High Pressure Water Use**: In 2018, Parks purchased a high pressure tree sprayer to control soft-bodied insects such as aphids. Using pressurized water is a safe and effective way to remove insects without the use of insecticides. The water runoff provides an added benefit of boosting the affected tree's health and vigour. So far, this method has shown great results against elm aphid, spruce aphid, spruce spider mites, pear slug sawfly, and spiny elm caterpillar. As seen in

the image below, this staff member is using high pressure water to control elm aphid.



Procurement Department

The Procurement department continues to search for and purchase sustainable products that minimize the City's impact on the environment. Paper products are now EcoLogo certified ensuring a lower environmental impact across the organization. EcoLogo products are verified by a third party to ensure their environmental claims are credible.

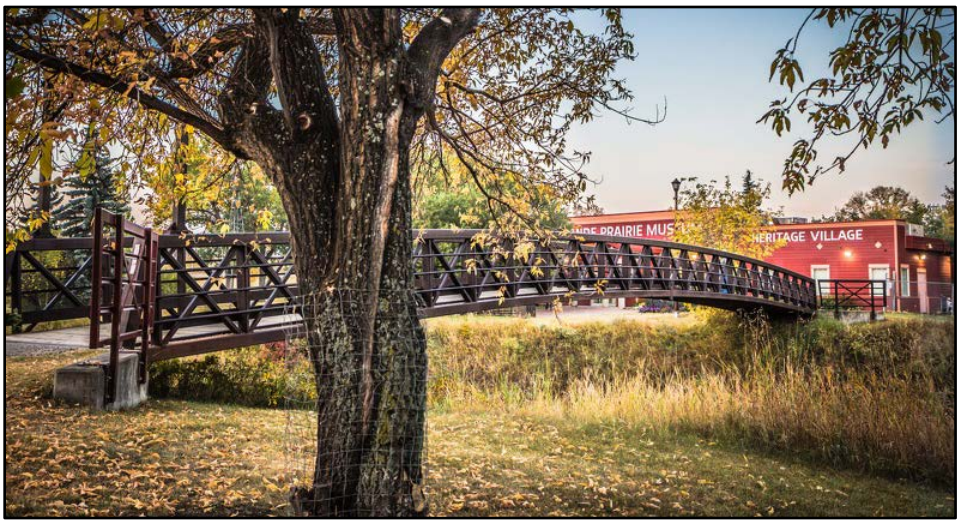


As implemented in 2017, the procurement team continues to accept electronic versions of all Proposals and Tenders to eliminate unnecessary printing from vendors and consultants as seen in the image to the right.

Grande Prairie Museum

While their displays may feature historic items, their environmental processes are current. The staff at the Grande Prairie Museum include the following measures to lessen their impact on the environment:

- Repurpose materials for exhibits including: flooring, panelling, and foam-core
- Repurpose old display cases by sending them to other museums
- Reuse old textiles for displays in the Heritage Village
- Reuse cleaning rags instead of paper towel when washing displays
- Compost biodegradable items in the Heritage Village
- Use a rain barrel to provide water for on-site gardens
- Use native annual plant species for on-site gardens each summer

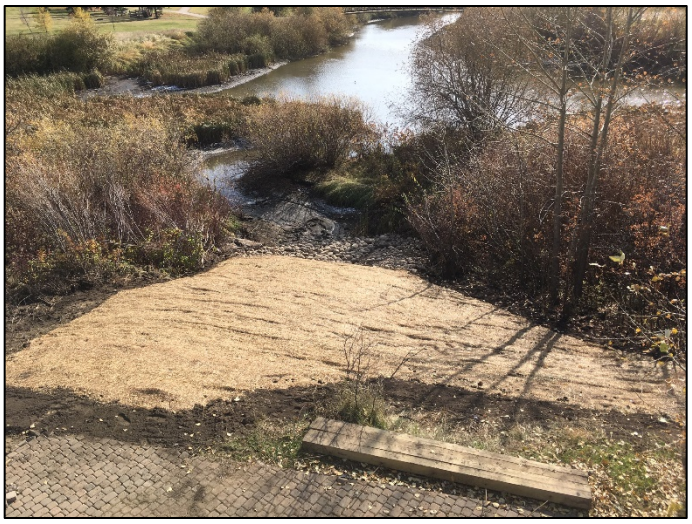


Engineering Services

Through 2018, Engineering Services improved their Environmental Construction Operations (ECO) Plan requirements for contractors. As described in last year's Annual Report an ECO Plan is a document containing written procedures that address environmental protection relevant to the construction activities of a given project. Engineering Services uses an ECO Plan template developed by Alberta Transportation, the City of Calgary, and the City of Edmonton. In 2018, this template was enhanced to ensure contractors accommodate the Restricted Activity Period (RAP) for classed waterways to avoid fish spawning periods. ECO Plans are an essential document used by Engineering Services to protect the environment from construction related impacts.

Also in 2018, Engineering Services was awarded $1.602 million via the Alberta Community Resiliency Grant Program. These funds will be used to enhance surface water drainage from the Richmond Industrial Park area to minimize flooding and reduce environmental impacts from the surface water runoff from this area.

Finally, Engineering Services made a concerted effort to use jute matting instead of plastic matting in construction projects throughout 2018. In the past, projects that required soil stability were often stabilized using plastic based matting. Jute is a plant based fiber that is spun into strong threads. When configured in a mat it is effective at preventing erosion following construction projects as seen in the photo to the right.



Closing

In summary, 2018 has seen a number of successful environmental initiatives from various departments within the City of Grande Prairie. The year also provided a number of opportunities to improve environmental performance going forward. The EMES department continues to support internal and external environmental programing, and will continue to assist the organization with achieving goals set by departments through the EMS. The EMS will continue as a central focus of EMES with the inclusion of an auditing process in 2019.

EMES anticipates a refined concentration on energy efficiency for 2019. The department is currently building a better understanding of corporate energy consumption to identify future energy upgrades within the organization. At the community scale, EMES will be engaging public members to understand energy literacy and to develop energy efficiency programs for residents and businesses. Increased energy and environmental management within the organization and community will be paramount for improving environmental performance next year and into the future.