



Season's Greetings,

I want to wish you and your family happy holidays. It's been a busy year, and the holidays are a chance to relax, spend time with friends and family, and enjoy the festivities. I hope you have an opportunity to both celebrate and rejuvenate.

Before I sign off, I'd like to thank you, on behalf of the people of British Columbia and our executive, for your hard work and dedication. I look forward to working with you in 2017 and wish you a wonderful holiday season.

Best wishes,
Tim Sheldan
Deputy Minister

Advisory Group Vision:

"True to our proud histories, informing ministry staff through balanced and timely communication"

The Dirt Facebook



To join "The Dirt" facebook page, simply go to the link below and ask to join the group. <https://www.facebook.com/groups/flnrnews/>

Issues of "The Dirt" will be posted online quarterly. The newsletter and facebook group are for all employees and former employees of the Ministry of Forests, Lands and Natural Resource Operations and is intended to provide up-to-date information on the organization. **Let us know where you worked within the ministry.**

Add your story to The Dirt facebook account. "Participating in social media means contributing content or comment. When doing so, we trust you to be professional, personable, and relevant." –Social media guidelines.

Sudoku - do you play?



		2	7			9		1
6			4		9	2		
7		3	5	1				
	5			3	7		1	
	4	9				7	3	
1	3		9	5			8	
	2			7	8	3		6
		8	2		5			7
9		1			6	5		



SOLUTION



The Dirt Contents, December 2016

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RECOGNITION

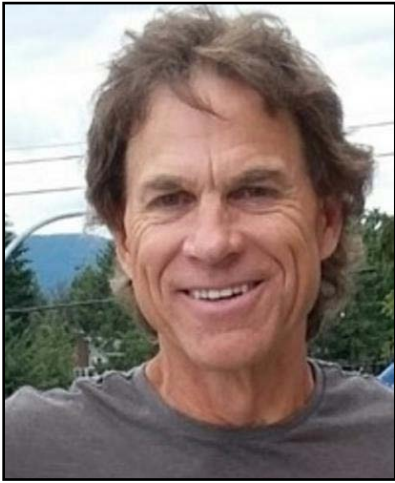
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Remembering Murray Stech

Submitted by: Kelly Schellenberg, Timber Pricing Forester, Timber Pricing Branch



It is with great sadness that we announce Murray's passing. Murray had recently retired from a 40 year old career with the Ministry of Forests, Lands and Natural Resource Operations.

Murray grew up in the small company town of Woodfibre, across from Squamish, but moved to Delta as a teenager. He loved the outdoors, and spent many hours fishing, hiking, cycling, and keeping in shape at the gym. He was an enthusiastic gardener, and lovingly tended his fruits and vegetables. He was a quiet man, but had many admirers both at work and in his personal life.

Murray held high performance standards and took pride in being the best and always encouraged staff to hold those same standards. He was well-known, respected and was entrusted by all who worked and knew him.

Murray represented all the good things that call us to the Public Service. The impact of this tragedy is deeply felt among Murray's friends and colleagues within the ministry.

Murray was married to Rosalie, his best friend and partner for over 40 years. They travelled and explored the great outdoors together.

Rosalie is deeply grateful to all the people who cared for Murray during his final days. We will remember him in his float tube, casting out on a calm sunny day, reeling in the big one.

Long Service Awards

Submitted by: Jennifer de Bree, Executive Assistant, Coast Area

The Long Service Awards program began in 1956 and celebrated its 60th anniversary this year. The Long Service Awards recognizes and honours the commitment and dedication of long-term employees who have worked 25 years, 30 years, 35 years, 40 years, 45 years and even 50 years.

This year the Ministry of Forests, Lands and Natural Resource Operations had 298 recipients celebrate their long service: 150 – 25 years, 64 – 30 years, 73 – 35 years, 10 – 40 years and 1 – 45 year. In previous years, we had 213 recipients

in 2013, 275 recipients in 2014 and 357 recipients in 2015. The current information that we have indicates that the total number of recipients will continue to grow in future years.

Each of our recipients were able to select an award from their milestone category and had the opportunity to travel to Victoria with a guest to celebrate their long service at the Deputy Minister Pre-Reception held at the Victoria Marriott Inner Harbour Hotel and the Long Service Awards ceremony held at Government House. Our ministry had a total of three celebration

nights: October 5, 12 and 13, 2016.

Although the Long Service Awards have wrapped up for 2016, the registration window for the 2017 Long Service Awards opens in March 2017. For more information on the Long Service Awards, please visit <https://gww.gov.bc.ca/career/long-service-awards> or contact Jennifer de Bree, our Ministry Long Service Awards Coordinator, by email at Jennifer.deBree@gov.bc.ca or by phone at 250 387-9773.

Congratulations to all our 2016 Long Service Awards recipients!

Vernon Water Allocation Team Geeks Out at the Burgess Shale

Submitted by: Jeff Nitychoruk, R.P.Bio., Water Authorization Specialist, Okanagan Shuswap Natural Resource District



views of the Rockies and the town-site of Field. Regular stops along the route provide time to catch ones breath and learn about the processes that shaped that Rocky Mountains. Did someone say “facies change?” Yes they did, multiple times.

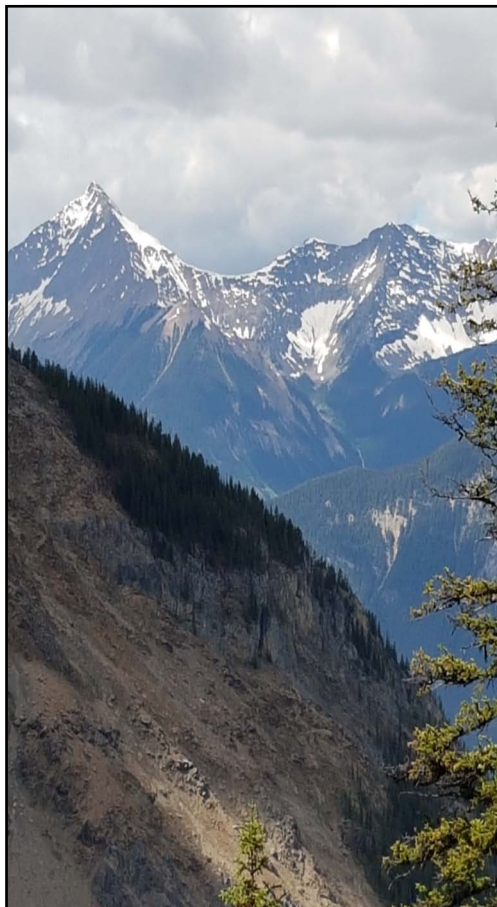
As the group ascended above the tree-line, the odd trilobite fossil presented itself for inspection. Everyone was excited and gathered around to look, but within five minutes the fossils became so abundant that we all became somewhat de-sensitized to their presence. I can recall thinking ‘Is it okay that I am stepping on all these fossils because its literally impossible to walk anywhere without treading on them?’ The thing to appreciate is that access to the site is strictly regulated by Parks employees. Unauthorized removal of the fossils is prohibited and the guides don’t even let you out of their site while up there.

It was a great outing, enjoyed by rock nerds and non-rock nerd alike. If you’re considering going, the Geoscience Foundation offers excellent guided tours with lots of supplementary information.

On a weekend in late June 2016 a contingent of the Okanagan Shuswap Natural Resource District, Water Allocation team organized a team building trip to the Burgess Shale in Field, BC. For those unfamiliar, the Burgess Shale is a ½ a billion year old shale formation high in the Rocky Mountains. It contains exceptionally well preserved fossils of lifeforms that dominated during the Cambrian period of the Earth’s geologic past. These were diverse soft and hard-bodied animals that lived in the shallow ocean during a period before there were plants on land. While containing some well-known specimens like trilobites, the Burgess Shale also contains remnants of truly strange creatures like Anomalocaris and Hallucigenia. The entire site is a UNESCO World Heritage site as well as a part of Yoho National Park. Academics from all over the world visit the site regularly to collect and analyze samples.

Spurred on by the author’s more-than-passing interest in fossils and early geologic history¹ and guided by members of the Burgess Shale Geoscience Foundation, the “stratigraphic six” undertook the eight kilometre (round trip) hike from Field to the fossil beds. The hike ascends through alpine spruce forest and affords panoramic

¹ **Seriously, I have a book on this stuff on my bedside table and it’s not collecting dust.**



BC Chief Forester meets with the Quebec Chief Forester

Submitted by: Allan Powelson, A/Senior Manager, Tenure Operations and Sustainability, BCTS



Louis Pelletier, ing. F. Forestier en Chef du Quebec; Diane Nicholls, R.P.F., Chief Forester of BC.

On November 15th and 16th Diane Nicholls, R.P.F., Chief Forester of BC met with Louis Pelletier, ing. F. Forestier en Chef du Quebec to discuss common issues and approaches.

In April 2013, Quebec enacted the new *Sustainable Forest Development Act*. While the original structure of the new system developed for Quebec had its roots within the BC Timber Sales structure, it has evolved to include additional elements related to local level planning, silviculture and First Nation and general public involvement.

As BC explores opportunities within its planning framework, a close examination of on-the-ground experiences with the forest management regime being deployed in Quebec will help inform BC practices and allow for the inclusion of cost saving efficiencies.

During these discussions both Chief Foresters found that although they are on opposite sides of the country the issues regarding timber supply management are very similar. Both Chief Foresters will continue the dialogue to learn from each other.



Have a Story idea?
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Crown Lands and LNG

Submitted by:

Steven Stüssi, P. Ag., Licenced Land and Resource Planning Specialist, LNG, Crown Land Opportunities and Restoration Branch, Tenures, Competitiveness and Innovation Division.

Jeremy LaFontaine, Land and Resource Planning Specialist, LNG, Crown Land Opportunities and Restoration Branch, Tenures, Competitiveness and Innovation Division.

You may not have known this, but there is a small group within FLNRO that is working with our partner agencies on proposed Liquefied Natural Gas (LNG) export facilities. There has been a lot of coverage in the media regarding the LNG sector, and we (the LNG, Crown Land Opportunity and Restoration Branch) thought we should provide the Crown lands' perspective.

LNG is a significant potential sector in BC's economy and a priority for the provincial government. The Conference Board of Canada has estimated that development of BC's natural gas sector could grow the national economy by \$7.4 billion a year for the next 30

years and create 65,000 jobs nation-wide with 45,000 of those in our province. The province estimates that the LNG industry has already invested \$20 billion and created 4,000 jobs, mostly in exploration and production.

The BC Oil and Gas Commission provides a single-window for regulating oil and gas activity, which includes administration of Crown land under the provincial Land Act for oil and gas activities including pipelines. However, in the case of LNG export facility developments, FLNRO has retained the responsibility for the administration of Crown land.



Conceptual depiction of Woodfibre LNG. Image from <http://www.woodfibrelng.ca/the-project/about-the-project/>

Our branch's role in LNG is to provide a streamlined, collaborative and consistent approach to Crown land disposition and administration under the Ministry of Lands, Parks and Housing Act and the Land Act. This includes accepting and reviewing applications and issuing authorizations to use and occupy Crown land for the purpose of investigative activities, construction and operation of LNG facilities. There are several other agencies that regulate the activities occurring on the land.

Continued...

Crown lands and LNG continued...



Conceptual depiction of Aurora LNG. Image from <http://auroralng.nexencnoocltld.com/en/AboutAuroraLNG/Design.aspx>

The natural gas is transported via pipeline to an LNG export facility. At the facility, the natural gas is run through cooling units called trains to remove condensates such as water, sulphur and carbon dioxide, and then liquefies the gas. In liquid form LNG is 1/600th the volume of its gaseous state (think beach ball to a ping pong ball).

Once liquefied, the LNG is stored in large insulated tanks that can be up to 14 stories high with a diameter similar to the length of a soccer pitch. The LNG is then loaded onto large LNG Carriers (specialized ships with insulated chambers) for transportation to market. An average LNG carrier carries enough LNG to power approximately 40,000 BC households for a year! An advantage of LNG is that it remains stable at atmospheric pressure and does not mix with water or soil. In the event of an accidental release, it would quickly evaporate into the atmosphere and would result in minimal environmental impacts when compared to oil.

There are approximately 20 proposed LNG export facilities in BC. Twelve of these facilities have Crown land aspects to them and fall under the mandate of the LNG, Crown Land Opportunities and Restoration Branch. Of those within our mandate 3 are within the Environmental Assessment application prep phase and 3 have been issued Environmental Assessment certificates. Over the past couple of years we have negotiated and put in place two sole proponent agreements and issued several investigative use licences. We are currently very busy working with proponents on investigative use leases and beginning to negotiate terms for longer term tenures, which include the construction and operation phases of these projects.

If you are interested in learning more about LNG the following link will take you to a good provincial resource on LNG development in the province: <http://lnginbc.gov.bc.ca/>

Featured LNG Projects:

Aurora LNG – Nexen Energy

Location

Digby Island, Port of Prince Rupert.

Facility proposed on Crown owned upland with components on Prince Rupert Port authority administered aquatic land.

Production Capacity

24 MTPA – approx. 160-320 LNG Carriers/year

EA certificates

Provincial and Federal Environmental Assessments underway.

Crown land authorizations

Approved: Investigative Use Licence for geotechnical investigations.

Applications: Investigative Use Lease for a more intensive investigative program.

Planned construction – After 2020

Planned operation – Through to 2048

Malahat LNG (Malahat Nation and Steelhead LNG)

Location

Bamberton, Saanich Inlet.

Floating facility proposed on aquatic Crown land with components on Malahat Nation's privately owned industrial lands.

Production Capacity

6 MTPA – approx. 73-122 LNG Carriers/year

EA certificates

Application pending

Crown land authorizations

Approved: Investigative Use Licence for geotechnical investigations.

3-4 LNG Carriers/month

EA certificates

Provincial, Federal and Squamish Nation environmental certificates;

Crown land authorizations

Approved: Former WFP foreshore lease for remediation.

Applications: Investigative Use Licence for investigative activities.

Planned construction – Late 2017

Planned operation - 2020

If you would like to learn more about the Projects featured in this article visit:

Woodfibre LNG: <http://www.woodfibreng.ca/>
 Aurora LNG: <http://auroralng.nexencnoocltld.com/>
 Malahat LNG: <http://malahatlng.com/>

#BCTM16 Forestry Trade Mission 2016



Submitted by: Tim Sheldan, Deputy Minister

During the 2016 Forestry Asia Trade Mission held November 25 – December 3, I accompanied Minister Thomson as he lead a delegation of more than 40 senior forestry executives and government and agency representatives to Japan and China to continue diversifying markets for B.C. wood exports. China and Japan are respectively B.C.'s second and third largest markets of B.C.'s softwood lumber products and it is important we continue to build strong relationships in order to support the maintenance and growth of these markets.

Upon arrival, in Tokyo, Japan, we spent the weekend conducting site visits in the Tohoku region to see how B.C.'s wood products

are contributing to reconstruction after the devastating earthquake and tsunami in 2011. We met with municipal officials, who it is important to connect with when promoting the expanded use of B.C. wood products, and we revisited Yuriage Public Market, a building reconstruction B.C. contributed materials to. It was heartening to see that, since our visit in 2013, the public market had expanded and many merchants were selling fresh seafood and vegetables early on a Sunday morning. The area is definitely reviving after the disaster. We spent the rest of our time in Japan meeting with key Japanese customers and government officials to build awareness around innovations in wood building systems, with the goal to expand

the use of B.C. wood products in growing construction markets.

Every time I visit Japan I am impressed by their orderly society and the way they have resiliently fought back from devastation and rebuilt areas of their cities that have been destroyed by disasters. They truly consider Canada a friend and are appreciative of our cooperation in helping them to utilize different building codes and of the variety of forest products our companies can sell them. The Japanese are an orderly and disciplined people so our work with them on building standards, codes, and research and development are important if we want to maintain and enhance trade with them. Lastly, I can't write this without noting the horrible

Continued...

2016 Forestry Asia Trade Mission continued...

devastation and loss of life that occurred in the areas we visited around Sendai and Natori City. It is humbling to walk on the coastal areas where so many people suffered and died.

Our next stop was Shanghai, China, where we attended the Sino-Canada Wood Conference and held discussions with industry executives and government officials on advancing wood design systems. Our itinerary also included visits to Beijing, where we were keynote speakers at the China-Canada Illegal Logging Conference, and Nanjing, China, where we attended a variety of site visits to review the progress made since a Memorandum of Understanding was signed with the Jiangsu Province during the trade mission of fall 2014.

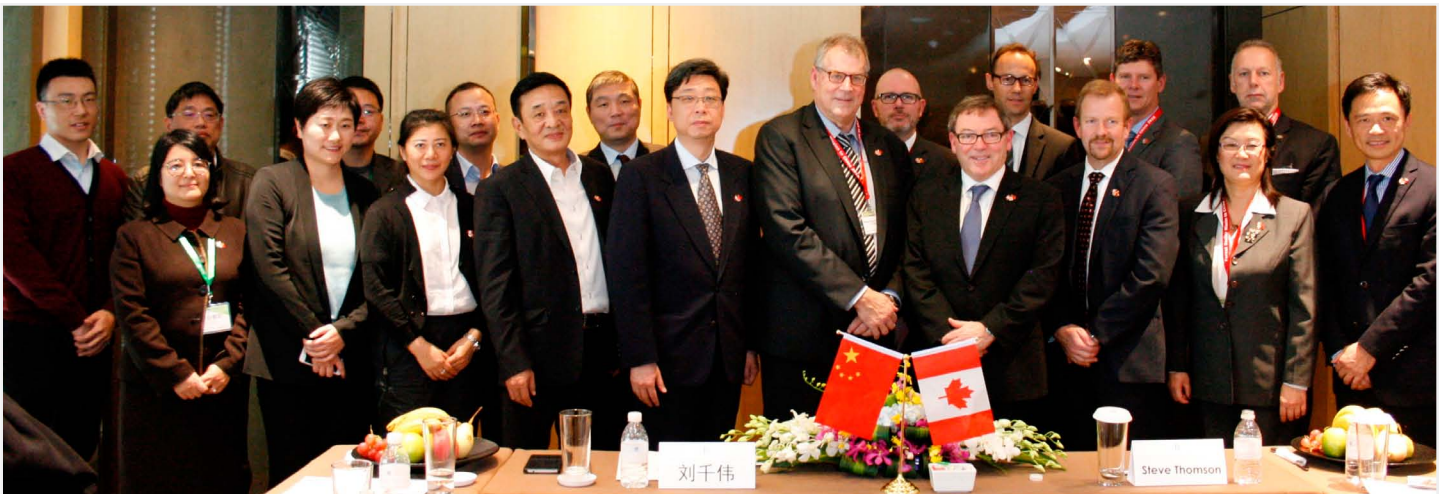
Our days in China were also full, with travel to both Beijing and Nanjing. Meetings there, with government officials responsible for housing, as well as site visits were useful and helped to maintain relationships. In addition, our participation in the two conferences lets us reach out to broader groups and a number of influential

individuals and companies involved in the construction trade. Market development is a somewhat slow, steady process where we have to be consistent and persistent with our messages of the durability, flexibility and appearance of B.C. lumber.

It is always fascinating working with our colleagues and understanding how business is conducted in these different countries whose cultures and practices contrast with our own.

It was a successful trip and I remain positive about the growth opportunities for forest products trade in this market. The economies of Japan and China have some challenges ahead, but it is even more important for the industry (supported by our Ministry and FII Ltd) to maintain our work there to ensure our objective of trade diversification continues. This way, we are doing the best we can to maintain and ensure stability in our forest sector back in B.C., the sector that employs so many British Columbians in many communities.

Meeting in Shanghai



Japan explores uses of cross-laminated timber



Yuriage Market



Client Service Training Investment in FLNRO and CSNR

Submitted by: Rick Manwaring, ADM, South Area (on behalf of ADMs, Trish Dohan, Kevin Kriese, and Sharon Hadway)



Left to right - back row:
Ajay Lal, Jordan Samis, Erin Halfnights, Greg Holtus, Steve Warrington, Deborah Cooper, Peggie May, Stewart Dickson
Left to right - front row:
Danton Remacle, Jamie Jeffreys, Nuala Van de Kamp, Danalee Harvey, Edi Torrens, Rick Manwaring

This past year, our ministry has partnered with the Institute for Citizen-Centered Service (ICCS) to invest in both the professional development of our staff and to raise our game around client service and service to British Columbians. This is in keeping with the goal of Enhancing Service to Citizens in the recently released “Where Ideas Work” plan. FLNRO is a large public facing organization challenged to deliver high quality, consistent standards of service in several communities across BC, including 29 FrontCounter locations in 8 regions. Additionally, client service is also delivered within our organization as we provide service to each other, such as the provision of corporate services. ICCS training is designed to support public sector organizations in the achievement of high levels of citizen, client and business satisfaction with services.

Our partnership with the ICCS has proven to be very worthwhile so far, producing some exceptional training for our initial intake of service managers and professionals.

I would like to acknowledge and congratulate the first round of early adopters who have achieved certification with the ICCS.

Certified Service Managers

Jamie Jeffreys, Mike Toews, Donna Myketa, Jane Nicol, Paula Mackay, Jordan Wagner, Danielle Cuthbertson, Tracy Stewart, Mary Bauto, Jessica Outhwaite, and Mike Kelley

Certified Service Professionals

Shelley Jackson, Alicia MacDougall, Mark Keely, Dorothy Benneke, Melody Wilson, Amber Merko, Jeannie O'Dine, Lesley Newman, Marlon Dosch, Nuala Van de Kamp, Gillian Harrison, Marcy Hewitt, Kyla Arduini, Gurdeep Khangura, Danalee Harvey, Robyn Thompson, Susan Taylor, Becky Oldring, Dorothy Manulak, Sherri Wenman, Tanya Laboucane, Alicia Borenheim, Trish Hooker, Julianna Currie, Shelly Boulton, Kim Hegarty, Elaine Hoffarth, Dawn Nicholson, Cheryl Verbrugge, Deanne Thomas, Vickie Veira, Jennifer Cross, Chelsea Werrun, Jacqueline Wheatley, Karin Christian-Wind, Ellen Phillips Kendall, Sara Murray, Debra Hallworth, Jane Nicol, Janice Girling, Sherry Musika, Diane Elliot, Michelle Mitchell, Judith Schieder, Cyndi Schofield, Tammy Ann Lawson, Daniel Stanyer, Rena Betemps, Corinna Brintjes, Tiffany Congdon, Erin Halfnights, Heather Hay, Robin Howe, Ben Robinson, Sheila Tucnik, Val Chura, Zen Leveille, Janet McIntosh, Jordan Samis, Sandra Winter, Caroline Birnie, and Silvia Fehr.

Congratulations to everyone!

We will be continuing to invest in this partnership as a ministry and identifying additional participants and opportunities across all divisions for both certification courses. Please speak with your supervisor if you are interested. If you have any questions, please contact the Director of Front Counter BC, Jamie Jeffreys, or for CSNR staff Mike Kelley, Director of Business Service Desk or Jordan Samis, Manager of Strategic Initiatives.

Vintage BC Forest Service Truck and One's Memories!

Submitted by: Gwen Leahy, Business Analyst, Thompson Okanagan Region

I went through my Mom's old photos recently and came across a picture of my Mom (Myrtle) sitting in the middle on the hood of a truck. The truck had a BC Forest Service plate on it.



When I showed my Mom the photo and asked her about it, her eyes brightened and she got a smile on her face. "That was a very happy time of my life", she said. My Mom is 84 years old and is in assisted living.

"Mom and Pop, Tiny (her sister) and I would drive together. Tiny and I would sit in the back on the two tool chests there and eat puffed wheat. When Pop stopped to clear the road, I'd jump out and help him. Mom and Tiny would wait for us and then we'd be off again. On the way back Pop would buy us sodas." "I asked Mom if she did this through teenage life and enjoyed it. She said "Yes!"

Pop, her Dad, would drive the roads between Princeton and Merritt keeping them clear in case there were fires.

He would also bring supplies to the people in the lookout towers. My Mom is very proud that Pop knew the land so well. Pop also worked for Douglas Lake Ranch for years. My family has been in the Nicola Valley since about 1850. This photo was taken in Aspengrove, BC about 1947.



Ruslan Yarullin—International Achievement!

Submitted by: Patrick Martin, RPF, A/Director, Tree Improvement Branch



Many of you will know Ruslan Yarullin, financial analyst from CSNR.

If you've met Ruslan you may have guessed that he is a weight lifter. Crunching the TIB budget numbers has not worn him down, yet.



Ruslan competed in an international weight lifting competition representing his country of origin, Kazakhstan.

Please congratulate Ruslan on this amazing achievement!

2016 Provincial Engineering Program Meeting

Submitted by: Charlean Lehman, Manager, Business Operations, Engineering Branch



Engineering Program members intently listening to one of many breakout sessions offered

The Engineering Program is a cross divisional program made up of staff from Regional Operations and Timber Operations, Pricing and First Nations Division. There is approximately 175 staff throughout BCTS, Engineering Branch and District offices that call the Engineering Program home. On November 15-17, 2016, the Provincial Engineering Program Meeting was held in Richmond BC. It had been over 7 years since the group had been together in one place at one time so you can imagine there was a lot to cover!

The planning of this meeting began back in January 2016 with the formation of a working group to tackle the details. District, BCTS and Branch staff all took part in generating agenda ideas, finding an appropriate venue, and coordinating all the little details that make these

Program meetings successful. The meeting consisted of two days focusing on full Program topics and day three saw the team break into two focus sessions. A number of breakout sessions were held on the first a third days providing opportunity to staff to take part in a more detailed discussion and review of certain areas of interest. Guest speakers were also in attendance – Dustin Meierhofer from the BC Forest Safety Council, Al Bradley from FP Innovations, Karen Bowman and Tim Baillie from Drop It And Drive, and numerous other ministry staff from outside the Engineering Program.

Highlights of the meeting include the presentation of the 2016 PJJ Hemphill Award for Excellence in Engineering to Wayne Hagel, a presentation on distracted driving from Drop It and Drive

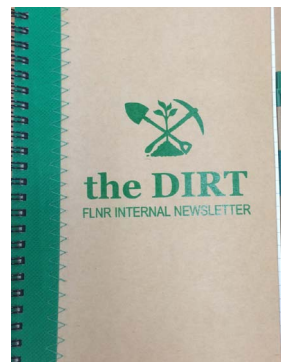
(dropitanddrive.com), a lively discussion with District Managers, a wonderful video on road construction in the North area and Dave Hamilton was recognized for his significant contribution to the Fish Passage program. Keeping nearly 175 Forestry and Engineering professionals engaged for three full days may seem like a challenge; however, it was evident that the group was happy to network with one another, review topics of concern, and most importantly, learn from the past to inform the future of the Engineering Program.

Thank you to the organizing team for 'bringing back to life' a meeting that helps this ministry lay solid foundations, build relationships and share important information toward keeping our Forest Service Road network safe and enjoyable for all!

Continued...

A group of people are gathered in a meeting room. Some are standing and talking, while others are seated at round tables. The room has a dark wall and a large screen displaying a presentation. The people are dressed in business casual attire.

Submit an Article to *The Dirt* and receive a Notebook



You can contact Richard directly at: Richard.Dominy@gov.bc.ca. Don't forget our [Facebook](#) page!

2016 PJJ Hemphill Award for Excellence in Engineering

Submitted by: Brian Chow, Chief Engineer, Engineering Branch

The PJJ Hemphill Award for Excellence in Engineering is presented annually to a ministry employee who has achieved a level of excellence in delivering engineering program (roads and bridges) initiatives and activities. This award, first presented in 2001, is named in honour of Pete Hemphill, who as a former Director of the “original” Ministry of Forests Engineering Branch was a leader and innovator that exemplified excellence in engineering. The achievements of the recipient of this distinguished award must demonstrate tangible contributions to ministry engineering initiatives and activities.

Each year, a call for nominations is made. It is an honour to be recognized for excellence by peers and nominated for this prestigious award. This year, the selection committee, consisting of engineering peers within the ministry Engineering Program, evaluated four nominees – Dan Burri, Engineering Officer, Prince George Resource District; Phil Macdonald, BCTS Engineering Specialist, BCTS Kootenay Business Area; Howard DeBeck, Bridge Engineer, Engineering Branch Northern Engineering Group; and Wayne Hagel, Senior Policy Analyst, Resource Roads, Engineering Branch HQ.

Once again, due to the calibre of the nominees and submissions, the committee had significant challenges in evaluating the submissions. This year, the award was made at the Provincial



PJJ Hemphill Award presented at Provincial Engineering Meeting to Wayne Hagel (right) by Chris Stagg, ADM, Timber Operations, Pricing and First Nations Division, November 15, 2016.

Engineering Meeting, the first such meeting since 2009. All of the nominees were recognized at the meeting.

The committee was extremely pleased to announce Wayne Hagel as the 2016 recipient of the PJJ Hemphill Award for Excellence in Engineering.

The committee selected Wayne as the recipient based on the broadness and depth of the nomination submission. The submission had 18 testimonials and notes of support from: peers in the Engineering program and community of practice, operations division as well as BCTS staff, managers, staff from other ministries and was provincial in cross section. In review of the support documents, there were themes on Wayne’s impact, influence and leadership to the engineering program, ministry, other ministries and the land based industrial resource sector. Some testimonials:

- Wayne has made many valuable contributions over the years to BCTS and the broader ministry and has earned this recognition.
- He has always had the passion for helping the engineering program be more efficient and effective.
- Wayne has a wealth of knowledge and insight second to none.
- Wayne is well respected by his peers and resource road external stakeholders across the NR sectors and throughout the province and frequently recognized as the go-to person in many areas of policy and operations.
- Wayne has demonstrated leadership and excellence in his work by always providing prompt, reasonable and defensible interpretations of FRPA, the engineering manual and other policies/procedures.
- His extensive background and experience has influenced the progressive improvements in road policy in the natural resource sector.
- His contributions exist in the development of forest legislation; Engineering policy manual; several FPC guidebooks; multiple interpretive bulletins; and daily communications to the many staff members who can confidently rely on advice, interpretation and opinion.
- Wayne’s broad engineering expertise, his calm, unbiased and comprehensive approach to problem solving, and his ability to communicate well have played an important and positive role in the shaping of Forest Road Engineering policy in our province.

Congratulations Wayne Hagel, RFT, as the recipient of the 2016 PJJ Hemphill Award for excellence in engineering!!

Environmental Flow Needs (EFN) - a simple idea with a complex science

Submitted by: Jaroslaw Szczot, R.P.Bio., Senior Aquatic Ecologist, West Coast Region

What are EFNs? Why do we care about them? How do we apply them to water licencing decisions? These are some of the questions that FLNRO staff has been asking since the February roll out of the Water Sustainability Act. Because of the relative lack of awareness of this new concept in our decision making process, I would like to provide a brief backgrounder on the EFNs.



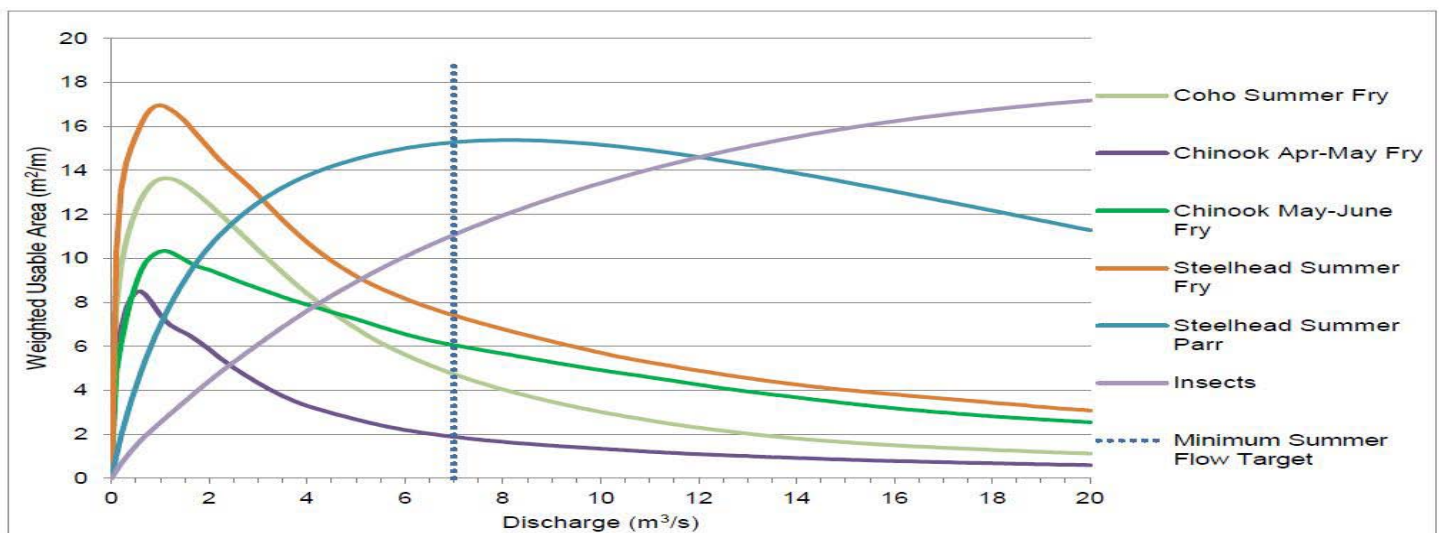
Environmental (or instream) flow needs refer to the fact that aquatic organisms require a certain volume of water at specific times of year in order to carry out their life processes and ensure the future survival of the population. The EFNs can be developed for standing or flowing waters, but the management focus is primarily on streams during the summer low flow period. In the majority of unaltered streams the organisms are well adapted to the historical low water levels and the year to year variability in streamflow.

However, in systems which are subject to high water demands and land use impacts, there is a potential for the over allocation of available surface and groundwater resources. This can lead to the disappearance of surface water from some streams resulting in a temporary elimination of parts of aquatic habitat.

To overcome this problem, tools such as licencing restrictions or angling closures are used during the drought periods to ensure EFNs concerns are addressed. In order to establish EFNs for a particular stream a multi-faceted approach is required, which includes collecting information such as historical flows, fish population and life history characteristics, water quality data and existing water demands. In a lot of cases, the site specific EFN data may not be available, which requires information input from a number of regional specialists including hydrologists, hydrogeologists, fisheries specialists, aquatic ecologists and water officers. The data is often modelled or a study is carried out in order to establish the EFNs for a particular site. Unfortunately, this makes the assessment process very time and resource intense, sometimes requiring multiple seasons to complete.



Such data complexity combined with the current climate change model predictions for streamflow will certainly increase the importance of EFNs as a water resource management tool. Thankfully, FLNRO is dedicated to the development of this new area of expertise, and will provide decision makers with the scientific support for years to come. So whether we love them or hate them the EFNs are here to stay!



FOREST RESOURCES MANAGEMENT AND DEVELOPMENT PLANNING USING **LIDAR** TECHNOLOGY (**L**IGHT **D**ETECTION **A**ND **R**ANGING)

LiDAR Series 1



Azadeh Ramesh, PhD. Azadeh.Ramesh@gov.bc.ca

GeoBC, Ministry of Forests, Lands and Natural Resource Operations



GeoBC

Introduction

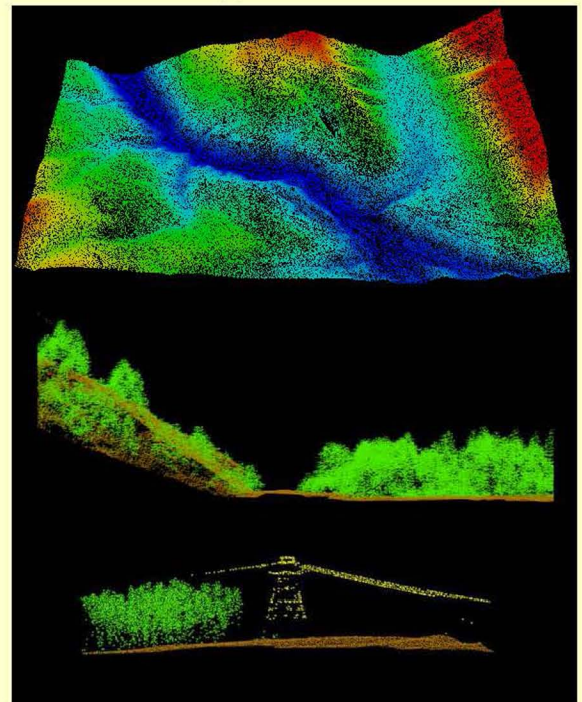
LiDAR technology is no longer an emerging technology but its usage and acquisition in forest inventory applications is relatively recent. It's broad range of products and applications that can be derived from LiDAR dataset. The power of these products in forest resource management and developing planning is huge. Although, some limitation with the LiDAR technology are still being addressed. However, as continued refinements to LiDAR are made, researchers are optimistic that the LiDAR technology could revolutionize the forest resources management and planning.

In our rapidly evolving world of new technologies, it is important that we understand how advanced technology such as LiDAR can improve our business and ensure we evolve to stay competitive, relevant, innovative and up-to-date. LiDAR data for this project was provided by Marcin Haladaj – Geomatics Section Head, Kootenay Boundary Region in support of Cumulative Effects Project.

LiDAR Derived Products

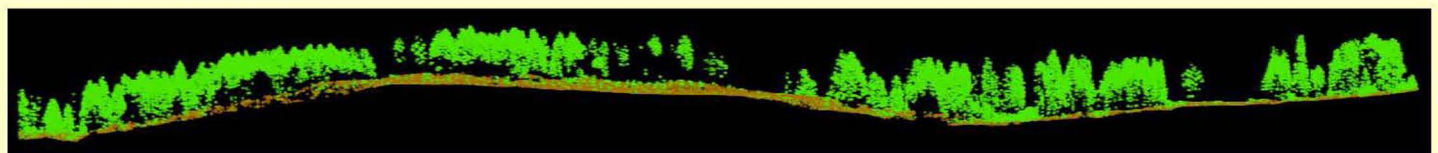
This article discussed some of the major products of utmost importance in forest resources management and development planning that have been generated using LiDAR. These products area including:

- 3D Visualization of LAS Files (Point Cloud)
- Surface Products (1m Resolution)
 - Digital Elevation Model (DEM)
 - Digital Surface Model (DSM)
 - Canopy Height Model (CHM)
- Tree Top Analysis (TTA) – Extract and Identify Individual “Tree Top” and “Canopy Maxima”
- Calculate and Extract Crown Base & Crown Width/Crown Diameter
- Tree Height Classification
- Tree Density Analysis



3D Visualization of LAS Files (Point Cloud)

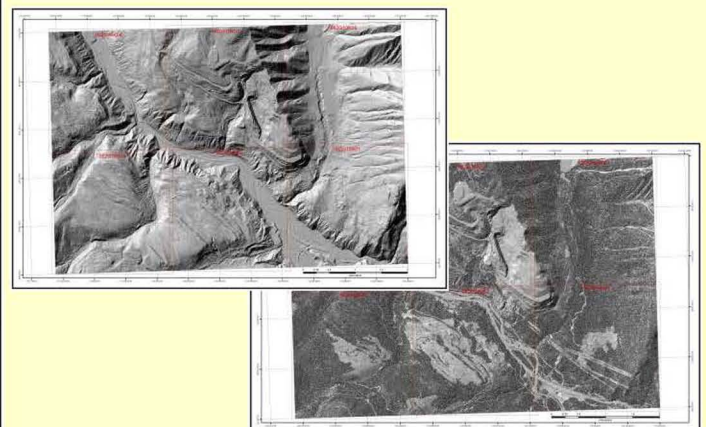
Surface Products



Surface / Canopy Model Cross Section (3D) Sample (red box)



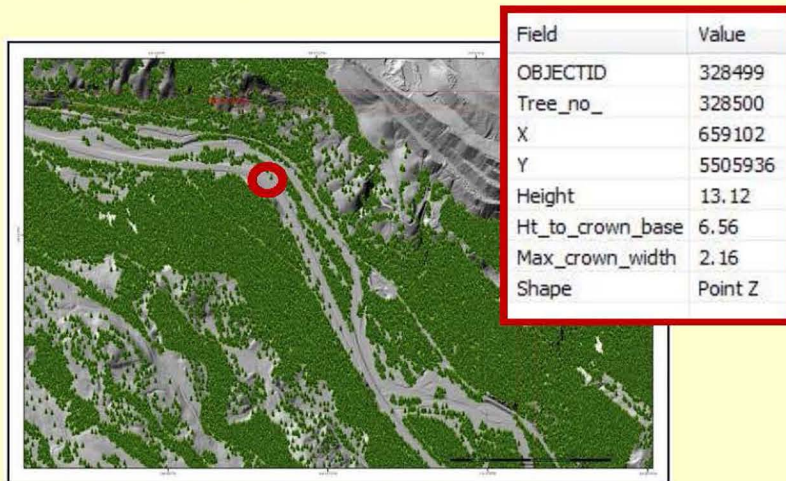
Canopy Height Model (CHM)



Digital Elevation Model and Digital Surface Model Creation

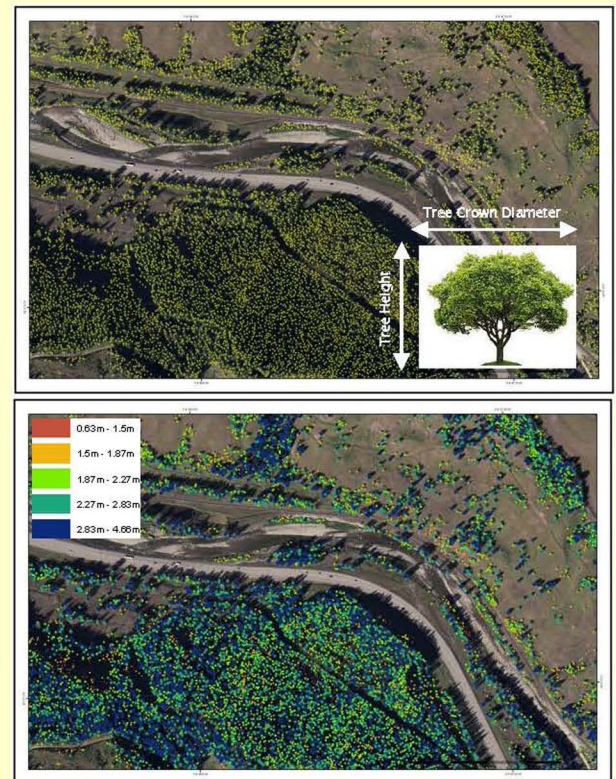
Tree Top, Crown Base and Width Extraction

Canopy Height Model is obviously one of the primary products that can be used for forestry planning. CHM represents the actual heights of the trees on the ground, or in other words, it's the ratio of vegetation to ground as seen from the air. Once CHM model is created, the tree top, crown base, crown width and crown diameter for each individual tree can be extracted. The accurate X, Y and Z location of all the trees are helpful information to infer the accurate density and height information to be used in various business areas such as visual impact analysis or pre-design cut-block development. Tree crown diameter for each individual tree would be also applicable in estimating forest volume and biomass.



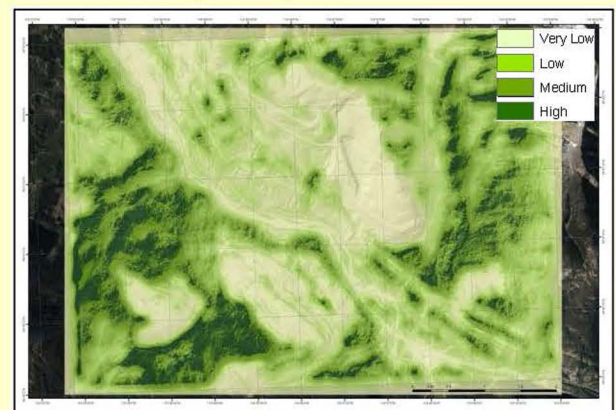
Tree Top & Crown Base & Crown Width Extraction

Tree Crown Diameter Calculation



Tree Crown Diameter Calculation

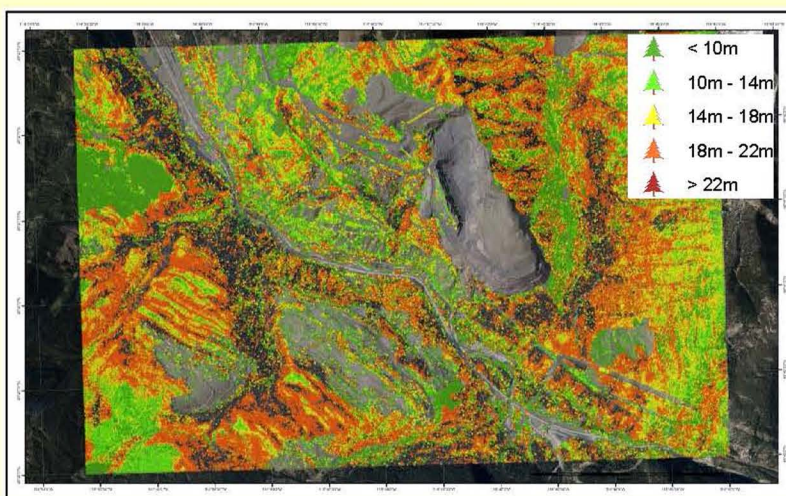
Tree Density Analysis



Tree Density Analysis

Tree Height Classification

Forest canopy density and height are valuable parameters to identify the location of tall and dens trees. Tree height can be used as variables in a number of environmental applications, such as forest age and health, and biodiversity determination. The density of crowns was also calculated using the crown count values to show areas of higher density trees, useful for fire behavior modelling and the production of fire risk maps. LiDAR technology can be used as an efficient replacement tool for the traditional field survey methods and it can save the costs/time required to collect field measurements for the estimation of individual tree height and crown analysis.



Tree Height Classification

Overall, the products derived from LiDAR in this project can be used in a number of forest applications, such as:

- To monitor logging and forest recovery/inventory, forest regeneration, forest volume, timber supply analysis
- To improve visual impact analysis
- To pre-design cut-block development
- To assess climate change, carbon sequestration and biomass modeling
- To model wildlife movement/wildlife habitat analysis (harvest impacts), and habitat suitability for wildlife
- To assess fuel load and wildfire risk/model, fire damage assessment
- To analyze forest age and health
- And many other applications...

Todd Davis – Staff Person of the Year Nominee!

Submitted by: Joel Graboski, Geomatics Technician, South Island Natural Resource District

As an occasionally enthusiastic cyclist I sometimes like to use my lunch hour to get in a casual ride. I did this on the 31st of May this year and it was a warmer, muggier day than we'd been having for a while. In fact it was warm enough that even at the perfunctory rate I was riding at, I managed to overheat enough to have need to take of my light coat. The bike I was on had no basket or carrier so I wound it around the handle bar and tied it (I recall, in my own defence) securely.

On my return part of my ride I was starting to feel pressed for time and sped up the pace -

(Choose A: because I'm a determined athlete of no small capacity)

(Choose B: because I had been dawdling along and now was late)

(Choose C: I was going downhill)

My fastening of my coat was suspect perhaps and possibly a sleeve had dangled and it is best guessed at that it then got caught up in the front wheel and was dragged into the fork. The bike then stopped. I didn't.

As was later related to me, Todd Davis (who is a real athlete) was on his lunch break as well, and was running the same route, same time. He and I have worked together in relatively the same line of work in the SINRD office for many years. He either saw the bike flip or came across me almost as soon as it happened. Todd is a long-time volunteer fireman with the Cherry Creek Volunteer Fire Department. He has had a lot of training in emergency First Aid which he put to good use as I was on the road unconscious, bleeding and kinda broken.

Todd very promptly and appropriately assessed the circumstances, gave me the First Aid treatment required and called for paramedics. He organised the scene and the other aid givers who also were on hand. He even called my wife, Anne and gave her the news that I'd been in an accident. Todd then assisted me into the care of the paramedics when they arrived, gathered up the bike and the guilty murderous coat and arranged (I guess) to have them taken back to the office. He then accompanied me to the hospital and gave all the incident report information to the attending staff, and he waited there until family members showed up. This all was related to me later, I have absolutely no recall of anything until the ambulance arrived at the hospital.

Todd is of the highest caliber of friend and acquaintance I have. I don't know what might have occurred if he hadn't been first on the scene, his training and his actions taken were for me was, I'm sure, part of why I'd recovered rapidly. I would like to see him awarded the highest possible commendation for his actions and character (He didn't even go thru my belongings and I couldn't say I wouldn't if I were in his situation).

He's a great guy, did a good thing for me, out of care and concern...

"If there was a staff person of the year award—Todd would be my nominee!"



Have a Story idea?
Send *The Dirt* Advisory Group your ideas!

Don't forget about the Facebook page
<https://www.facebook.com/groups/flnrnews/>



FLNRO HQ 49TH CURLING FUNSPIEL

Location: Esquimalt's Archie Browning Curling Rink
1151 Esquimalt Rd., Esquimalt

When: Saturday Feb. 11, 2017

Time: 3:30pm to 9:30pm

Price: \$35.00 per person

Dinner Only: \$20.00 per person



- Dinner & Prizes Included
- Prizes for Best Team Uniform (not mandatory)
- Theme: "Famous Families"



Deadline is January 27th or until sold out

Dinner: Buffet provided by 1550 Pub Style Restaurant

Contacts: Stephen Simonds: 356-8276

John Crooks: 387-9682

or Julie King: 387-4437



Have a Story idea?
Send *The Dirt* Advisory Group your ideas!

Don't forget about the Facebook page
<https://www.facebook.com/groups/flnrnews/>



Add your story to *The Dirt* facebook account. "Participating in social media means contributing content or comment. When doing so, we trust you to be professional, personable, and

February 17-19, 2017
North Thompson Sportsplex



Submitted by: Jessica Gunn, behalf of the Tournament Organizing Committee

Due to the overwhelming success of the event over the past years, we are continuing with the CO ED Hockey Tournament to attract as many participants from all over the province into the weekend festivities. This year the tournament is being hosted in Clearwater.

This is a preliminary notice only; additional details will follow including registration sheets, transportation and accommodation details etc.

In the meantime, the ice has been booked and our enthusiastic organizing committee has begun planning in earnest. We are unsure about the curling so if you like to stand on the ice more so than skate on it let us know and we may be able to accommodate you too with a bonspiel as well.

This is a great event and our emphasis will be on FUN and camaraderie, both on and off the ice.

At this point, to assist us with planning, we'd appreciate hearing from any and all teams that may be interested in participating.

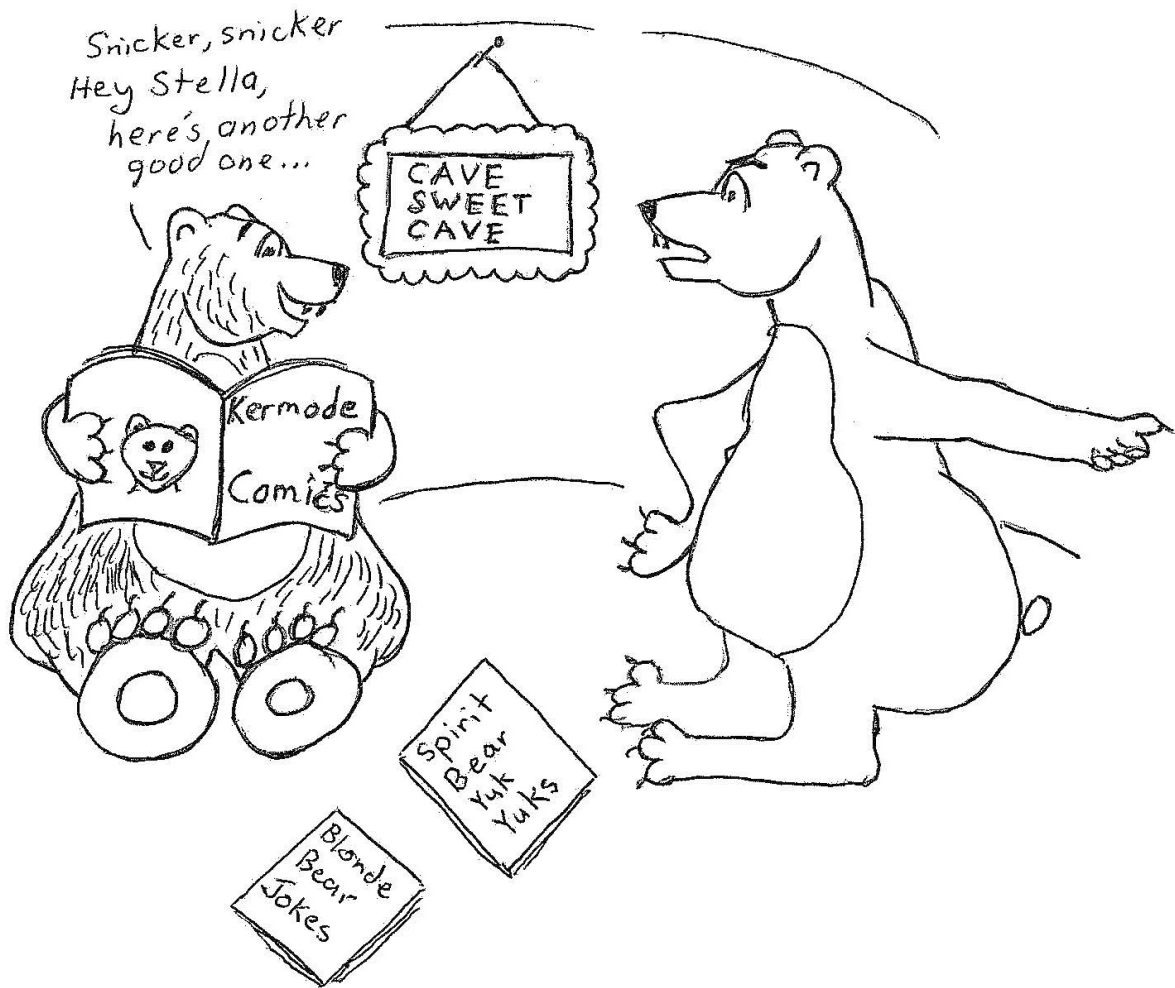
Individuals or partial teams are also encouraged to contact us—we may be able to hook you up with others who are in need of Hockey Players.

We have booked ice time and developed a tournament draw designed for the first 8 teams paid and registered. I have had a number of inquiries and potential for new teams this year so excited to have new faces and familiar faces attend this year's event! If you have any questions please don't hesitate to contact Jessica Gunn at Jessica.Gunn@gov.bc.ca or 250 587-6765

Payment for registration should be made via cheque or money order and payable to: [Jessica Gunn](#) so I can go on a holiday!! Kidding – proceeds will be split between local charities.

We hope to hear from you soon and see you in February 2017!

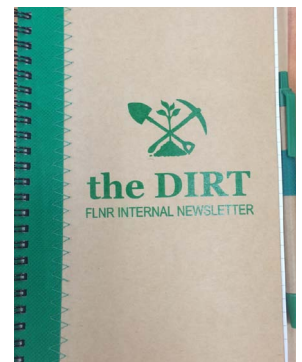
Wild World



Harry, enough with the “Dumb Blonde” jokes... just hibernate already!

Sheila Tucnik

Submit an Article to *The Dirt* and receive a Notebook



The Dirt Photographers!

Time to get out and snap some photos! *The Dirt* Advisory Group increasingly requires good quality digital photos for the quarterly newsletter. We acknowledge that there are skilled photographers among ministry staff and would like to showcase your photos in each quarterly edition.

Categories

Photos can consist of:

- Workplace images – individuals or groups / teams in office and field settings; health, wellness and social activities;
- Community involvement;
- Wildlife; or
- Scenic.

Submission Details

- Deadline for submissions is changed with each edition and will be noted on the previous edition.
- Images can be submitted to: FLNRNews@gov.bc.ca
- The contest is open to all ministry employees and retirees.
- Interested staff can make submissions to as many editions (season/category) as they want, but there is a limit of five images per category.
- We are looking for recent photos, please limit your entries to shots taken within the past 2 years.

Prizes and Judging

- There will be an overall 'Best' image in each category;
- Judging will be done by the Advisory Group;
- Images will be judged on composition, clarity, exposure, creativity, relevance to the ministry and category fit;
- The winner of the 'Best' image in each category will be sent a prize for their photo;
- Individuals can win only one prize; and
- All winners will be announced with their photo in the edition of the newsletter.

Technical Specifications/Requirements

The following specifications and requirements have been established to ensure that images can be used in a variety of applications.

1. All images must have relevance to the ministry and be submitted in digital format.
2. All images must be in full colour or black and white.
3. Photo dimensions (image size) should be at 300 dots per inch (DPI) and preferably in a jpg format and sent to FLNRNews@gov.bc.ca
4. Images can be digitally enhanced (i.e., colour / exposure adjusted composite photos are okay), but not digitally altered (i.e. NO "Photo-Shop" images must portray subjects and / or material in photo as they were captured).
5. When submitting images, some descriptive information should also be included – category of image and location.
6. All images submitted, whether or not selected as a winning image, may be published in future issues of the newsletter.

For further information, contact:

FLNRNews@gov.bc.ca

DEADLINE IS MARCH 17, 2017.

View and Select your Prize!!

(embroidery: *The Dirt* - Newsletter Advisory Group)

Prizes

Don't forget to try your hand at writing a limerick or poem. Send *The Dirt* Advisory Group your ideas!

December Edition Photo Contest Winners!

Scenic Category - Jones (Wahleach) Lake during low water levels in April 2016.

Photo taken by: Nels Nielsen, RPF, Tenures Forester, Chilliwack Natural Resource District



Photographers, please contact the [Advisory Group](#) to claim your prize or contact [Sonia Donison](#) directly.



Have a photo for the next “Photo Contest?”
Review the contest guidelines and send your
photo’s to the [FS News](#) Advisory Group!



Workplace Category - Ocean Falls Power Dam

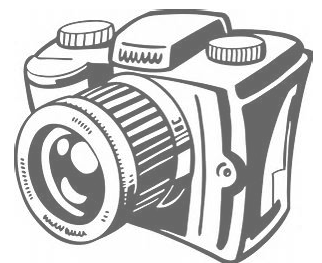
Photo taken by: Harold Hosken, R.F.T.,
Natural Resource Officer, Compliance and Enforcement Branch - West
Coast Region



Photographers, please contact the [Advisory Group](#) to claim your prize or contact [Sonia Donison](#) directly.



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HAPPY HOLIDAYS FROM *THE DIRT*!



**Richard Dominy
Sonia Donison
Josh Pressey
Kimberly Scott**

**Kimm Magill-Hofmann
Alexandra Ryland
Karlie Shaughnessy
Sheila Tucnik**

***All the best to you
and yours in 2017!***

***At this
most joyous time
of year, it is only appropriate
that we take time from our busy
schedules to reflect on our lives and
count the many blessings we enjoy
living in British Columbia.***

***On behalf of The Dirt newsletter
Advisory Group we would like to wish you
and your families a very Merry Christmas
and a safe, happy holiday season!***



The Dirt is a quarterly newsletter for all employees and former employees.

Sonia Donison is providing management and coordination support for the newsletter. Questions or comments about the newsletter should be directed to Sonia at 250 356-9638 or via [email](#)

Call for Stories/Ideas

The success of the newsletter depends upon the active engagement of staff throughout the organization. One way for people to support the newsletter is to share your ideas, news, stories, successes, experiences with revitalization and learning, celebrations and photos for use in future

editions of the newsletter. People are asked to check with Sonia at 250 356-9638 or via [email](#) about their idea or ideas before writing a story. Stories are to be submitted no later than 2 weeks prior to each quarterly edition—

deadline for articles is

March 17, 2017



SUBMISSION GUIDELINES