





CIFFC DO		Arrival Confirmation	
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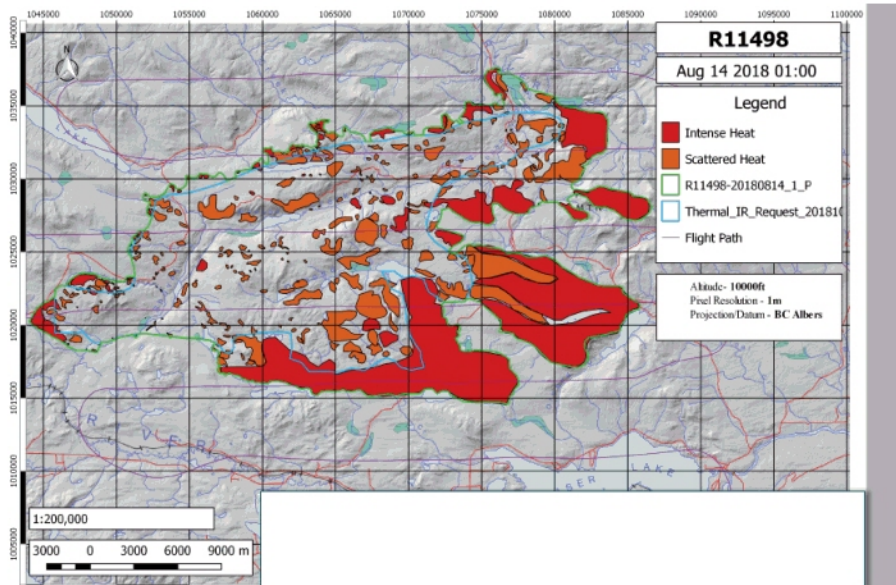


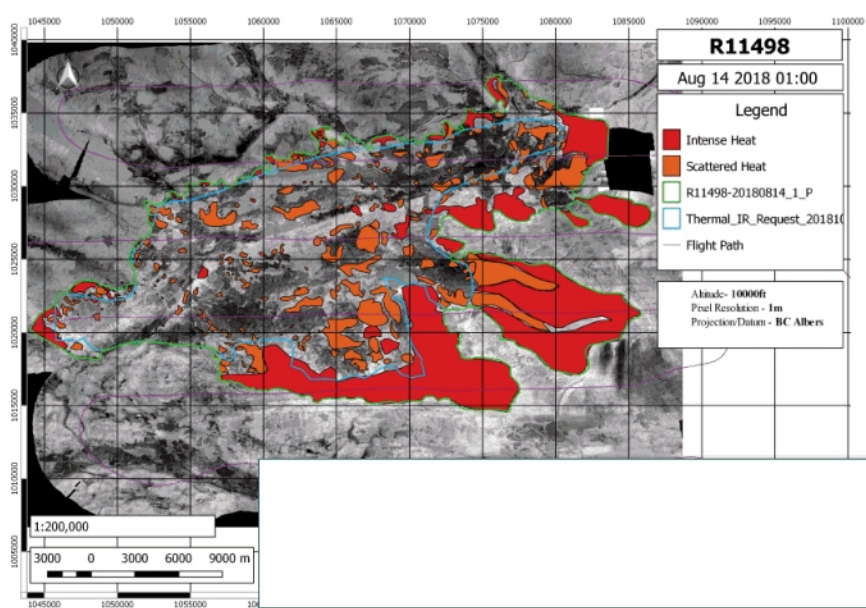
Date Required	Destination	Transport	Estimated Duration
19-Aug-2018	Kelowna	FLY	4-8 Days

Resources Requested			Resources Mobilized			ETD	ETA
Vigilance High Level Scanning			Travel Date: Aug 19, 2018				
Aircraft is already in BC.			1 High Level IR Scanning (A-058)				
Asked if could hire under Alberta Contract. BC was in contact with s.22			AB to provide				
			Aircraft make: DA42				
			Callsign: FMJM (A-058)				
			Pilot(s) s.22				
			Operator(s): s.22				
			Vehicle and accommodation needs (if reqd)				
			Rates for service:				
			Daily IR Rate: s.17,s.21				
			Hourly IR Rate				
			Contact s.22				
Personnel to come equipped as per MARS			# Personnel: 02			# of Rooms: 00	# Veh + Type: 1 car
Implementation Guidelines ANNEX D							
Initial Attack	<input type="checkbox"/>	Sustained Action	<input type="checkbox"/>	Support	<input checked="" type="checkbox"/>		

Transportation Cost Estimate			
Air	Ground	Other	Total
			\$0

Lending Ag. DO	Brian Wog	Date Approved	18-Aug-2018
CIFFC DO	Marc Mousseau	Arrival Confirmation	Aug.18,2018 Stephen Tulle







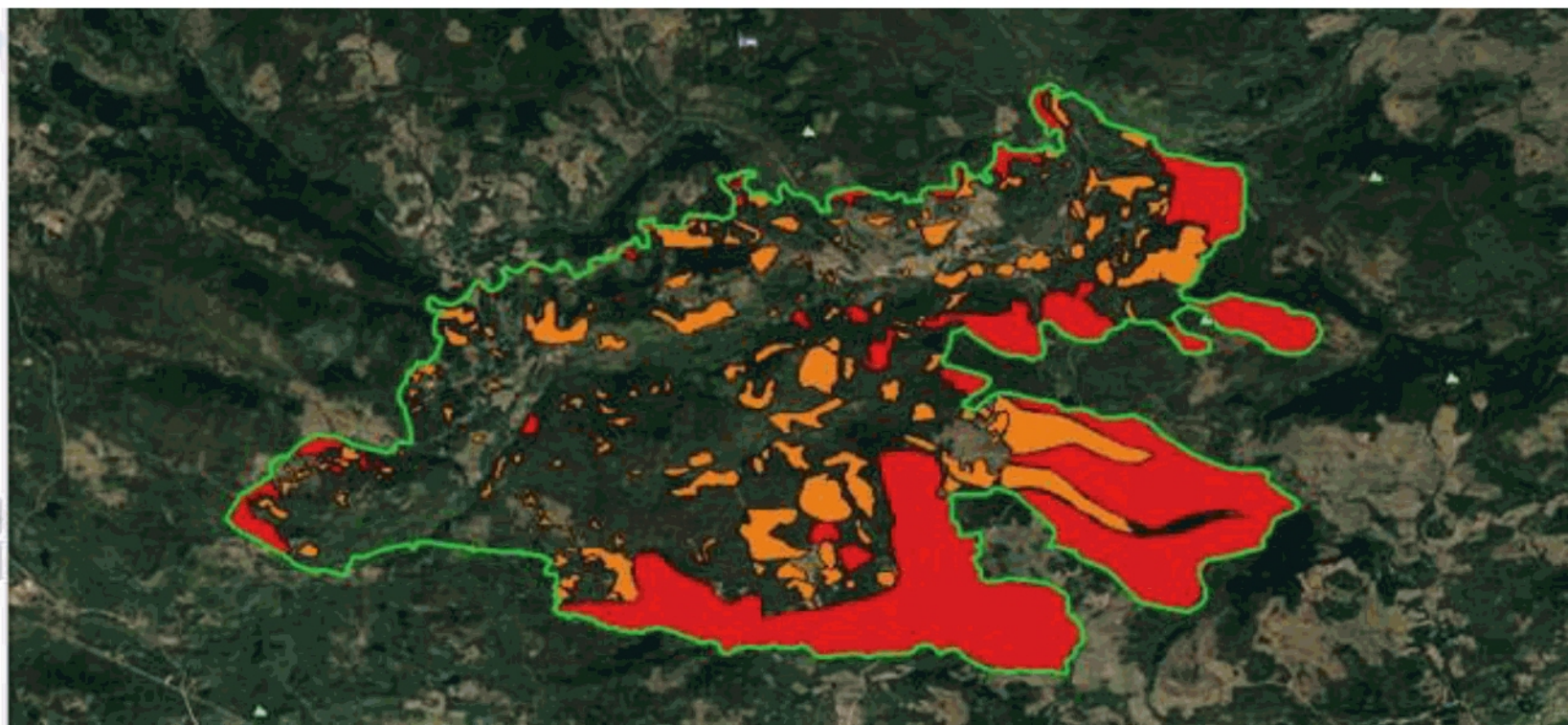
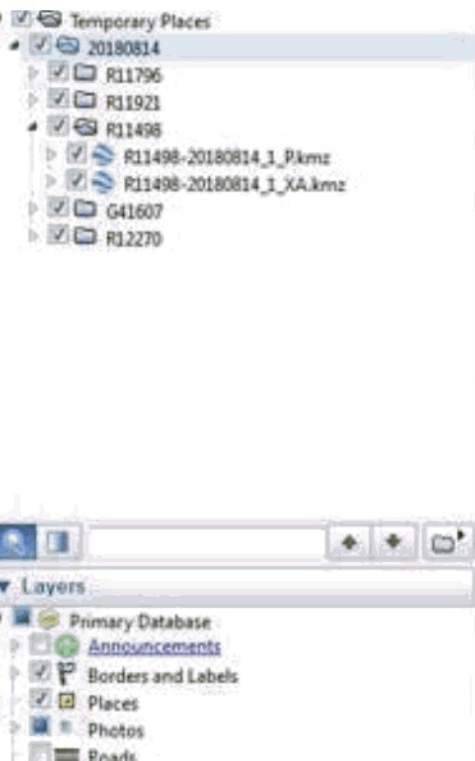
**Description of Services for
INFRARED IMAGE ACQUISITION AND CLASSIFICATION**

Services and product must be provided to the following specifications:

1. Provide as requested, near real time thermal imaging and/or mapping services with related digital data as outlined in the Thermal Imaging /mapping Service Request.
2. Provide all necessary equipment to meet the “Objectives” and “Products” as set out in the Thermal Imaging/Mapping Request.
3. Provide personnel with the skills and abilities relevant to wildfires, to accurately and timely locate, map and produce the products as identified in this contract.
4. Mobilize equipment, and personnel at the agreed upon locations and times.
5. Immediately report to the Province any conditions that would impact the Contractor’s ability to respond to a Thermal Imaging / Mapping Request.
6. Upon the request of the Ministry provide documentation confirming that all necessary certifications and/or permits are valid and current.
7. Be available to the Ministry for mission planning and de-briefing sessions.
8. Deliver all products agreed upon in the Thermal Imaging request to the individual identified on the request by **0700 the morning following the request** with the exception of items reported under bullet number 5.
9. Deliver the following thermal imaging / mapping products:
 - **Mission Summary Report**
 - Must be submitted in **PDF** format after each mission
 - **PDF QuickLook products**
 - An assessment of the targets identified delivered in georeferenced **PDF** file format. If you do not have the ability to produce GEO PDF you must also supply a GEO TIFF. The image shall be suitable for printing on “**8.5x11**”. It shall cover the area imaged by the thermal camera and provide a color representation of the classified thermal image. Fire perimeter data from previous missions is to be added to this file to create a perimeter composite.
 - Map products (2 PDF files – one with thermal image and one without) will include the following items:
 - **S**- Scale , **T** – Title, **A** – Author, **N** – North Arrow, **D** – Date
 - Grid graticule

- Base mapping sufficient for navigation (link to BC Basemapping geotiffs: <https://pub.data.gov.bc.ca/datasets/177864/tif/>)
 - Legend depicting hotspot and perimeter symbolization
 - The file should following the following naming convention. Please use spaces not underscores for PDF maps
YY <FireNumber> MAP IRQuickMap <PageSize> <YYYYMMDD>. PDF (base map with point and polygon data)
YY <FireNumber> MAP IRQuickMap IMG <PageSize> <YYYYMMDD>. PDF (map with thermal image)
- **Isolated Points and Heated Areas Vector Spatial Data**
 - All vector spatial data shall be delivered in shape file (.shp, .dbf, .shx, .prj) and projected to B.C. Albers (ESPG 3005).
 - Central Meridian: -126 0 0
 - Latitude of Origin: 45 0 0
 - 1st Standard Parallel: 50 0 0
 - 2nd Standard Parallel: 58 30 0
 - False Easting: 1000000
 - False Northing: 0
 - Datum: NAD83
 - Shape file names must follow the conventions as follows:
 - Example: K20971_20170829_1_Perimeter
 - Chars. 1-2 identify the Fire Zone (K2)
 - Chars. 3-6 identify the Fire # assigned by Fire Dispatch (0971)
 - Chars. 7 is an underscore
 - Chars. 8-15 identify the date in yyyyymmdd format (20070829)
 - Chars. 16 is an underscore
 - Chars. 17 identifies a version number for the day (1)
 - Chars. 18 is an underscore
 - Chars. 19+ – thematic content indicator. Perimeter (poly). Hotspots(All Hotspots Points), Isolated Hotspots (only isolated hotspot points) IntenseHeat(poly), ScatteredHeat(poly)
 - This example tells the user: This dataset is in Kamloops Fire Zone 2, pertaining to Fire # 0971, collected on August 29, 2017, it's the first perimeter collected on August 29, 2007 for this fire.
 - **Note:** Spaces are not acceptable in any spatial datasets. The ' _ ' character is used as a space.
 - Shapefiles must be accompanied by metadata/attributes to include, but not limited to; title, description, who created the project, how it was created (Collection Source Description) versions), date and time of acquisition collection, altitude, and contact information, heat class, projection including Datum, and data dictionary for any attributes. **Please note that the format for collection date is DD/MM/YYYY (22/07/2017)**
 - Isolated points (hotspots) shapefiles must include the following attributes;
 - Heat classification for each point,
 - Longitude and latitude for each point using degrees decimal minutes (DDM) format.
- **ArcGIS shape files and KML/KMZ files.**
 - The heated area (heated perimeter, scattered & intense heat polygons) delivered as KML,
 - The hot spot locations (isolated heat points) delivered as KML,
 - KML files are named according the naming convention above.

- **Orthomosaic and Infrared mosaic imagery**
 - Geotiff and KMZ delivered electronically.
- **Data Transfer**
 - A data transfer service will be provided that is suitable for transfer of large files.
 - Upon completion of this contract, the Contractor will provide all raw data and completed project files to the Ministry Contract officer in encrypted portable digital medium.



Verimap Costing

DATE	12	13	14	15	16	17
flight hours	3.3	3.5	4.2	3.9	7.6	3.4
flight hours X rates	s.17,s.21					
			G41607		N11886	
			R11498		N12413	
			R11796		N51329	
		R11498	R11921		N71602	
FireTargets	Ferry to CYXS	R11921	R12270	Ferry to CYXC	N72301	
					Ferry to	R11498
					CYXS	R11921
Total cost for day	s.17,s.21					

Released

51.2

18	19	20	21	22	23	24
4.6	5.7	3.7	3.4	4.0	0.0	3.9

s.17,s.21

G41607				G51632	Wait for	
R11498	C11837		G41607	G51634	part for	
R11796	R12315		R11683	G51928	plane.	
R11921	VA1964	VA1964	R11796	G61652	Not sure	
R12270	VA1787	VA1787	R11921	R32009	if we are	
				R32182	charged	Ferry to
					for this	CYBW

s.17,s.21

Daily rate	Hourly Rate
s.17,s.21	

From: Jean-Simon Michaud
To: [BCWS Geospatial Services FLNR:EX](#)
Cc: [Andy Dean](#); [Olivier Tsui](#)
Subject: RE: REQUEST: Hatfield Support V91119 and V92348
Date: Sunday, August 26, 2018 10:45:34 AM

Hi Will,

This is correct, the perimeters that we are providing are outlining all burned areas that are detectable in the processed image.

We understand the need to obtain up-to-date perimeter and given our semi-automated approach we can guarantee very rapid delivery as soon as the image is made available to us. Sentinel-2 and Landsat 8 images are acquired around noon and 10:00 am local time, respectively, and based on our experience, images are made available 8 to 16 hours after acquisition for Sentinel-2 and 16 to 24 hours after acquisition for Landsat 8. As mentioned on the phone, our best option for rapid monitoring would be the Sentinel-2 constellation which has now 2 satellites and collect imagery over any site in BC every 2 to 4 days, on average.

I was glad to read in your other e-mail that your staff think our perimeters are very good. Thank you for sharing this feedback. We are looking forward to hearing from you regarding the next priority fires.

Regards,

Jean-Simon

From: BCWS Geospatial Services FLNR:EX <BCWILDFIREGEO@gov.bc.ca>
Sent: August-25-18 6:45 PM
To: Jean-Simon Michaud <jsmichaud@hatfieldgroup.com>; BCWS Geospatial Services FLNR:EX <BCWILDFIREGEO@gov.bc.ca>
Subject: RE: REQUEST: Hatfield Support V91119 and V92348

Hello Jean-Simon,

The perimeters you built for three include all burned area that is detectable? Looking through some the description of RBAM I think I understand correctly. But wanted to ensure. Thinking about planning aspects I can see how we will want to chase the 1 day or less old images through an execution. Thinking of ways to achieve that. Also going to ask our advanced planner for this period if we can also get a cloud report for what happened to support planning effort.

Have a good night and I will be in contact tomorrow.

Will Robins | PWCC IR Coordinator | Wildfire TEAMS

Desk: 250-312-0542 | Cell: 250-319-2284

From: Jean-Simon Michaud [<mailto:jsmichaud@hatfieldgroup.com>]
Sent: Saturday, August 25, 2018 3:27 PM
To: BCWS Geospatial Services FLNR:EX
Cc: Andy Dean
Subject: RE: REQUEST: Hatfield Support V91119 and V92348

Hi Will,

It was good to talk to you this morning.

Please find at the following link the RBAM products for the Monarch Mountain Fire (V91119), Klinaklini Lake fire (V92348), and the Wilderness Lake fire (C52646). This includes the fire perimeter and the active fire that were captured from the Sentinel-2 image of August 22, 2018.
<https://spaces.hightail.com/receive/QsMHYrrNoL>

We have also prepared a status spreadsheet that details the RBAM products generated and the upcoming satellite acquisitions for each priority fire (see file attached).

Regarding your interest in receiving the active fire information, we decided to include it as part of the current R-BAM package at no additional cost. Our pricing thus remains:

s.17,s.21

As for our capacity to produced RBAM products, as mentioned on the phone, we have staff available in different offices and can accommodate the need of timely delivery even for large volume of fires.

We look forward to hearing from you regarding the production of R-BAM products for other priority fires.

Regards,

Jean-Simon

From: BCWS Geospatial Services FLNR:EX <BCWILDFIREGEO@gov.bc.ca>
Sent: August-25-18 11:11 AM
To: Jean-Simon Michaud <jsmichaud@hatfieldgroup.com>
Subject: RE: REQUEST: Hatfield Support V91119 and V92348

Thank you Jean-Simon

I do have some guidance for invoicing for this specific work. Invoices are getting paid now I was told

as soon as they come in and do not have the typical 20 day waiting period common in government. Please send invoices to this mailbox as the IR Coordinator on duty can sign as Qualified Receiver and get it signed off by our expense authority. I would like to establish a routine for invoicing with this test case we are conducting. Our admin staff have offered to assist with coding etc if required. I am sure resources in your company know all about those specifics.

The Wilderness Lake fire perimeter you provided yesterday was uploaded last night. Thank you.

I would like to speak with you to improve my understanding of this service, its limits/constraints, etc.. Specifically interested to understand capacity and what to expect for delivery of product etc. Please call when you are ready at either number below.

Will Robins | PWCC IR Coordinator | Wildfire TEAMS

Desk: 250-312-0542 | Cell: 250-319-2284

BCWILDFIREGEO@gov.bc.ca

From: Jean-Simon Michaud [<mailto:jsmichaud@hatfieldgroup.com>]

Sent: Saturday, August 25, 2018 10:42 AM

To: BCWS Geospatial Services FLNR:EX

Cc: Andy Dean

Subject: RE: REQUEST: Hatfield Support V91119 and V92348

Good morning Will,

I can confirm that the fire perimeter for the V91119 and V92348 fire will be completed this morning.

In order to help you with the planning of the next priority fires, you can have access to the Sentinel-2 acquisition plans here: <https://sentinel.esa.int/web/sentinel/missions/sentinel-2/acquisition-plans>

Note that a plan is available for Sentinel-2A and Sentinel-2B as Sentinel-2 is a constellation of two satellites.

Do not hesitate to let me know if you have any questions.

Regards,

Jean-Simon

From: BCWS Geospatial Services FLNR:EX <BCWILDFIREGEO@gov.bc.ca>

Sent: August-25-18 9:45 AM

To: BCWS Geospatial Services FLNR:EX <BCWILDFIREGEO@gov.bc.ca>; Jean-Simon Michaud <jsmichaud@hatfieldgroup.com>

Cc: Andy Dean <adean@hatfieldgroup.com>

Subject: RE: REQUEST: Hatfield Support V91119 and V92348

Good morning Jean-Simon,

Will you please confirm that you have seen request I sent last night confirming our request to provide two perimeters.

Will Robins | PWCC IR Coordinator | Wildfire TEAMS

Desk: 250-312-0542 | Cell: 250-319-2284

BCWILDFIREGEO@gov.bc.ca

From: BCWS Geospatial Services FLNR:EX
Sent: Friday, August 24, 2018 7:41 PM
To: 'jsmichaud@hatfieldgroup.com'
Cc: BCWS Geospatial Services FLNR:EX
Subject: REQUEST: Hatfield Support V91119 and V92348

Hi Jean-Simon

My name is Will Robins and I am the current IR coordinator on duty at PWCC. We would like you provide perimeters for two fires and pricing described below. **s.17,s.21**
s.17,s.21

Monarch Mountain Fire (V91119) and
Klinaklini Lake fire (V92348)

I have been instructed to ask that you please direct invoice us for this job to PWCC. I will confirm with our administration support staff on exactly what that means and follow it through. We have authorization for this work tonight. I will follow up tomorrow with invoicing instructions.

Tomorrow I will begin to consult with our Advanced Planer and Fire Centre plans groups to develop other targets in an prioritized manner. To help with that planning do you have a spatial file, WFS, WMS showing footprints for Sentinel scenes which we can use in planning efforts. If you have a WFS or WMS service whatever where I can see I would appreciate it.

My contact information is listed below.

Will Robins | PWCC IR Coordinator | Wildfire TEAMS

Desk: 250-312-0542 | Cell: 250-319-2284

BCWILDFIREGEO@gov.bc.ca

From: Naylor, Jennifer A FLNR:EX
Sent: Friday, August 24, 2018 6:17 PM
To: BCWS Geospatial Services FLNR:EX
Subject: FW: Burn Perimeter Mapping - Wilderness Lake fire (C52646)

From: Jean-Simon Michaud [<mailto:jsmichaud@hatfieldgroup.com>]
Sent: Friday, August 24, 2018 5:59 PM
To: Naylor, Jennifer A FLNR:EX
Cc: Andy Dean; Olivier Tsui
Subject: Burn Perimeter Mapping - Wilderness Lake fire (C52646)

Hi Jennifer,

As requested in today's phone call, we have started the production of fire perimeters for the three fires in proximity of Kleena Kleene:

- Wilderness Lake (C52646)
- Monarch Mountain Fire (V91119) and
- Klinaklini Lake fire (V92348)

Find at the link below the fire perimeter of the Wilderness Lake fire (C52646) which was derived from the latest Sentinel-2 image available over the site acquired on 22 August at 12:15PT. This can be considered our demo product at no cost to BCWS.

<https://spaces.hightail.com/receive/oKAA19kagi>

Tomorrow, we will provide you with the latest fire perimeters over the Monarch Mountain fire (V91119) and the Klinaklini Lake fire (V92348). These would be provided following the pricing scheme we shared with you in our last e-mail **s.17,s.21**

Please let us know if you would like us to produce fire perimeters for other priority wildfires.

Best,

Jean-Simon

From: Jean-Simon Michaud
Sent: August-24-18 1:32 PM
To: 'Naylor, Jennifer A FLNR:EX' <Jennifer.Naylor@gov.bc.ca>
Cc: 'Andy Dean' <adean@hatfieldgroup.com>
Subject: RE: Burn Perimeter Mapping - Shovel Lake 92,000 hectares (August 20) - Update to August 22 Pending

Hi Jennifer,

s.22 From what I understand from your voicemail, BCWildfire Service would be interested in receiving fire perimeter updates from our R-BAM service over some wildfires in BC.

I have attached to this e-mail the pricing scheme for the R-BAM service. Also included is an example of what would have been the pricing for monitoring the Shovel Lake fire from August 7th to the 20th. We are open to discuss this pricing scheme with you.

I also understood that you are interested in a fire in proximity to the Kleena Kleene town. Would this

fire be your preferred choice for a demonstration site? We offer to set up the R-BAM service over one site at no cost and provide you with 1-2 updates for you to evaluate the service.

Regards,

Jean-Simon

From: Naylor, Jennifer A FLNR:EX <Jennifer.Naylor@gov.bc.ca>

Sent: August-24-18 12:53 PM

To: Jean-Simon Michaud <jsmichaud@hatfieldgroup.com>

Subject: Burn Perimeter Mapping - Shovel Lake 92,000 hectares (August 20) - Update to August 22
Pending

Jean-Simon,

Can you give me a call when you get this message. I also left you a voice message.

Regards,

Jen

Jennifer Naylor

GIS Specialist – Quinsam Complex

BC Wildfire Service

Desk (250) 286-9367 | Cell (250) 203-3221 Forests, Lands and Natural Resource Operations

Jennifer.naylor@gov.bc.ca