

James Bay Development Corporation (JBDC)

JAMES BAY ROAD AND CHISASIBI ROAD 2017 REPAIR WORK

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Type of document (final)

Project N°: 141-23211-09
Date: March 2017

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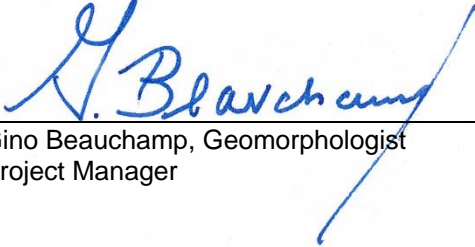
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Reference to be cited:

WSP. 2017. *James Bay Road and Chisasibi Road 2017 Repair Work*. Form produced for the James Bay Development Corporation (JBDC). Detail. Multiple pagination and appendices.

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1 FORM

DIRECTION GÉNÉRALE DE L'ÉVALUATION ENVIRONNEMENTALE ET STRATÉGIQUE

James Bay Road and Chisasibi Road 2017 Repair and Maintenance Work

March 2017

***Développement durable,
Environnement et Lutte
contre les changements
climatiques***

Québec 

À l'usage du Ministère	Date de réception :
	Numéro de dossier :

1. Project Initiator (legal or natural person)

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Person Responsible for the project:	Raymond Thibault	
Required: Quebec Business Number (NEQ) from the Quebec Business Registry		

2. Consultant mandated by the Project Initiator (if applicable)

Name:	WSP Canada Inc.	
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Person Responsible for the project:	Gino Beauchamp (Environment section)	
Required: Quebec Business Number (NEQ) from the Quebec Business Registry	1148357057	

3. Project Title

James Bay Road and Chisasibi Road 2017 Repair and Maintenance Work

4. Project Objectives and Justification

The James Bay Road is one of the main roadways within the territory. This road provides access to numerous hydroelectric generating stations and serves a population of over 11,000 inhabitants, including numerous Cree Nation communities. Over the years the roadway has become busier and busier, used by the public and large companies looking to develop the territory.

As part of its 2011-2013 development plan, the JBDC put in place a regional committee to determine the minimum amount of maintenance required for the road and the required budgets. This committee is made up of numerous representatives from Hydro-Québec, the Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET), the Ministère de l'Énergie et des Ressources naturelles (MERN), the Ministère du Développement économique, de l'Innovation et de l'Exportation (MDEIE), the Ministère des Affaires municipales et de l'Occupation du territoire (MAMROT), the Cree Regional Authority, the Waskaganish Cree Nation communities of Eastmain, Wemindji and Chisasibi, the Municipality of Baie-James as well as the JBDC. Following the first meeting of the representatives in 2012, all agreed that a repair program needed to be implemented.

The repair program, a seven-year plan, will help both ensure the road's sustainability and to maintain a proper level of safety for its various users. To achieve these objectives, an array of maintenance work is required. The work began in 2015 and will be completed in 2021.

The present request aims at documenting work that will be conducted in 2017 for the procurement of a non-liability application under the Environment Quality Act for the use of a mobile asphalt plant, the reopening of a former quarry located at the km 168, as well as the expansion of certain existing quarries (km 35.5, 85.5, 207.9 and 254.4) for the purposes of work to be conducted in the coming years.

5. Project Location

The 2017 repair and maintenance project is located mainly on the James Bay Road which crosses the Jamésie region in north-western Quebec. This is the northern extension of Route 109 and connects the cities of Matagami and Radisson (620 km). The project also includes the 100-km section connecting Chisasibi to Radisson.

The work planned for 2017 will mainly take place between km 0 and 200. The only work to be carried out throughout the James Bay Road and the Chisasibi Road will be the selective replacement of culverts. The specific description of the work is presented in Section 6.

Recall that the work is located within the limits of the former Municipality of Baie-James which has now been replaced by the Gouvernement régional d'Eeyou Istchee Baie-James.

6. Description of the Project and its Variants

Work planned for 2017 primarily consists in activities for the improvement of the James Bay Road and the Chisasibi Road security and reliability. The location of the work areas can be found on maps in Appendix 1 and table in Appendix 2.

Clearing Work:

No clearing work is projected within the right-of-way of the James Bay Road in 2017. Clearing (mechanical shredding) will be conducted between km 4.5 and 90 of the Chisasibi Road, on a width varying from 6 to 10 metres within the existing right-of-way. The work is meant to increase the visibility and allow for a better maintenance during winter.

Roadway and Material Procurement:

Due to the degradation of the James Bay Road between km 144 and 200, pavement work is also planned in this area. Two types of measures shall be taken: the first consists in smashing the existing pavement, adding a support aggregate to control the particle size, and then placing the pavement. The second measure is palliative. It is meant to correct sectors, on the short-term, by placing a course of corrective pavement and a thin wearing course to fill in the ruts and deformations. In any case, actions are limited to the upper 200 mm of the existing roadway. Sectors targeted by the two types of measures are:

- between km 144 and 184 of the James Bay Road (milling and deco-paving)
- between km 185 and 200 of the James Bay Road (correction course and bituminous wearing course)

Note that no pavement work is planned for the Chisasibi Road.

Km 168 Quarry Material Procurement:

The reopening of a former quarry located near km 168 of the James Bay Road will be necessary given that pavement work to be conducted in 2017 will be located in this sector (Appendix 3). The quarried area that is requested has a surface area smaller than 3 ha, i.e. 2.92 ha. The quarry will also be used for work to be performed in 2018 and will be able to provide a total quantity of 303,700 m³ of material. Note that the access road to the quarry is still open but will require clearing work because of the regrowth of vegetation. Application for an exclusive lease and a certificate of authorization for the operation of the quarry shall be submitted to the respective departments (MERN and MDDELCC- industrial sector).

Expansion of the Existing Quarries:

Applications for the expansion of existing quarries (km 35.5, 85.5, 207.9 and 254.4), for which the SDBJ possesses the leases and certificates of authorization, shall also be required for the procurement of materials for upcoming work (until 2021). The additional material procurement areas of these quarries shall be located within the boundaries of areas that have already been authorized by the leases issued by MERN. However, applications for certificates of authorization need to be re-submitted to the MDDELCC for the expansions. Information regarding the surface area of the procurement areas is presented on maps and technical sheets in Appendix 4. The surface areas of the new requested excavating areas (areas to be discovered), as well as the areas that have already been quarried, amount to:

- 1.5 ha for quarry 35.5;
- 2.0 ha for quarry 85.5;
- 2,7 ha for quarry 207.9;
- 3,7 ha for quarry 254.4.

It should be noted that SEBJ previously owned an active lease for quarry 254.4. It is most likely that materials were meant for the Rupert Project located near this quarry (access road, construction of a concrete weir on the Rupert River). According to GESTIM data, the exclusive lease submitted to SEBJ was in force between 2009 and 2011 and quantities declared in the certificate of authorization were estimated at 60,000 m²/year, i.e. a total estimated volume of 120,000 m² (1.2 ha) as data indicate that the rehabilitation started in fall of 2010. Therefore, the actual surface area used by the SDBJ is estimated at 2.5 ha not 3.7 ha. Thus, the total surface area of each quarry, by taking into account the requested expansions and the areas previously quarried by the SDBJ, is smaller than 3 ha.

Culverts:

The replacement of 47 culverts is also planned on the James Bay Road. Proposed measures are the replacement of the existing culverts with culverts of equivalent diameter or the replacement of parallel culverts with a reduced number of culverts providing comparable hydraulic efficiency, in accordance with the Regulation respecting standards of forest management for forests in the domain of the State and standards of the MTMDET Road Structure series. Note that culverts placed on water courses with fish habitats shall comply with the Department of Fisheries and Oceans guidelines for the design of fish passage for culverts.

Bridges:

Three bridges shall also be subjected to rehabilitation work in 2017. Projected work includes:

- replacement of bridge bearing;
- replacement of deck joint;
- protection of ditch slope, correction of draining gradient.

This represents minor work that shall be performed from deck-anchored platforms or by using equipment with telescopic platform. Work regarding drainage shall consist in stabilization using rock ballast. The replacement of guard rails is also planned between the km 1 and 120 of the James Bay Road.

The equipment used for this work will include the following:

Clearing work

- shovels with mulcher head;
- brush cutters;
- 10-wheel, 12-wheel and semi-trailer trucks.

Culvert dismantling and construction

- shovels;
- loaders;
- bulldozers;
- roller compactors;
- vibrating plates;
- mini-loader (Bobcat) + mechanical broom;
- 10-wheel, 12-wheel and semi-trailer trucks.

Roadway repair work

- shovels;
- bulldozers;
- levellers;
- graders;
- pulverisers;
- aggregate spreaders;
- roller compactors;
- mobile hot-mix asphalt plant;
- pavers;
- coupling binder trucks;
- material transfer vehicle (MTV);
- loaders;
- 10-wheel, 12-wheel and semi-trailer trucks.

7. Environmental Components and Main Project Constraints

Physical

The James Bay Road between Matagami and Radisson crosses three natural provinces, namely the Abitibi and James Bay Lowlands, the Mistassini Highlands and the Low Hills of the Grande Rivière.

The studied region's morphology and the nature of surface deposits are highly influenced by the last glacial cycle, more specifically by the retreat of the Laurentide ice sheet. The ice front retreated along the study area sequentially from south to north in three distinct stages, namely the invasion of the glacial Lake Barlow-Ojibway, the Cochrane Readvance and the glaciomarine invasion of the Tyrrell Sea. The nature of the surface deposits is directly linked to these stages of deglaciation and to properly analyze the nature of the surface deposits, the studied region was divided into three distinct sectors.

SECTOR 1: Postglacial Lake Barlow-Ojibway

This immense proglacial lake asynchronously covered the whole of Abitibi and the southern part of James Bay. The territory's gradual flooding was caused by the south-north declining topography and the melt water being held back by the ice front further north. The deposits associated with this glaciolacustrine episode are mainly in the south of the studied region, between KP 0 and KP 130 where the majority of the work will be carried out in 2016. It is recognized that the glaciolacustrine deposits are mainly composed of sandy silt and, to a lesser extent, gravelly sand. These deposits make up a vast plain that is poorly drained due to the sandy silt's impermeability, which explains the presence of numerous bogs and wetlands. The identified borrow pits are within glaciofluvial deposits finding gravelly sand is more likely.

SECTOR 2: Cochrane Glacial Readvance

The deposits associated with this ice front readvance episode are located between KP 130 and 230. The northward retreat of the ice front was interrupted a few times and ice tongues readvanced southward. The Cochrane ice tongue flowed onto the Barlow-Ojibway glaciolacustrine deposits. The glacial debris (till) thus was incorporated into the Lake Barlow-Ojibway clay, forming the Cochrane till.

SECTOR 3: Postglacial Tyrrell Sea

In the sectors north of KP 230, the weight of the ice sheet depressed the continent well below the current sea level. The Tyrrell Sea thus flooded the entire territory, as the glacier retreated towards the north-east. The northern sector of the study area is thus mainly covered in glaciomarine deposits. The vast majority of these deposits consist of silty clay, mainly in the depressed and low-altitude sectors, and to a lesser extent sand and gravels, more present in the Chisasibi sector.

In this sector, two elements mark the landscape and are of great interest, namely the Sakami Moraine and the Chisasibi Delta Complex. The Sakami Moraine formed during a pause in the glacial retreat and forms an important discontinuous barrier of sand, gravel and boulders. This barrier, crossing the sector between KP 480 and KP 530, is of particular interest for borrow pits. As for the Chisasibi Delta, it is located downstream from the Grande-Rivière covering a 10-km² area and it is made up of sand and gravel.

The general topography is characterized by a relatively flat relief made up of a coastal plain and a plateau with some hills. The road section's altitude varies between 130 and 230 m. Hydrographically, the region is remarkable for its major rivers and bodies of water. The main rivers that the road crossed, from south to north, are the Broadback River, the Rupert River, the Pontax River, the Eastmain River and the Opinaca River. They drain towards James Bay, increasing its sediment dynamics.

Biological

Two vegetation sub-zones cover the study area, namely continual boreal forest and taiga. Each one's respective bioclimatic domains are spruce-moss forest for boreal forest and spruce-lichen forest for taiga. The spruce-moss forest cover is dominated by black spruce. Fir stands occasionally cover hill slopes. Deciduous species include white birch, trembling aspen and the occasional balsam poplar. The undergrowth includes mosses and ericaceous shrubs. Spruce-lichen forest is similar to spruce-moss forest, but black spruce dispersion is less monospecific more spread out. The forest floor is basically covered in lichen. Balsam fir and jack pine are at the northern limit of their distribution areas. The main natural disturbance comes from forest fires.

There are numerous wildlife habitats considering the wide spaces available in the territory. There are some forty species of mammals, 238 bird species and 36 freshwater fish species, including brook trout, lake trout, walleye and northern pike, within the James Bay Territory.

The road runs through two planned biodiversity reserves, namely the Waskaganish reserve located between km 260 and 285 as well as the Paikumshumwaau-Maatuskaau reserve located between km 465 and 525.

Human

Located in the Nord-du-Québec administrative region, the study area touches four Cree communities (Waskaganish, Eastmain, Wemindji and Chisasibi) and two Jamesian communities (Matagami, Radisson). The James Bay Road, built at the beginning of the 1970s, has since contributed to the development of the road network connecting the various Cree and Jamesian communities, whose total population is estimated at 30,000 people.

From an economic point of view, the road has provided access to numerous hydroelectric generating stations and will provide access to Goldcorp's future Eleanor mine. The first 200 kilometres from Matagami are also used by the forest industry. The road has in recent years been increasingly used by the general public for activities such as hunting, fishing, snowmobiling, canoe-kayaking, ATVing, etc.

8. Main Anticipated Impacts

This section documents the anticipated impacts related to the reopening of the former quarry located at the km 168, the use of a mobile asphalt plant and the expansion of existing quarries.

Quarry 168

As mentioned before, the quarried area (including operation areas) requested for the reopening of the quarry located at the km 168 will have a surface area of 2.92 ha while the surface area of the excavation area is estimated at 2.17 ha (map in Appendix 3). The quarry will be accessed via the former access road. Regarding the operation of the mobile asphalt plant, tender documents shall require for the plant to be located within the boundaries of the quarried area, i.e. on the existing platform as to minimize impacts on the natural environment. It is impossible at this stage to determine the exact location of the plant since it is up to the mandated contractor to provide its location. The plant shall be in place for the entire duration of work, from summer to the start of fall. It should be noted that no hydrous environment or wetland is located less than 75 m from the quarried area. Also, no inhabited or sensitive areas are in the vicinity. If we consider that the Contractor will comply with the regulation in force and with the measures previously presented, projected impacts of the operation of the quarry and the use of the mobile asphalt plant are considered to be low.

Existing Quarries

For the expansion areas of the existing quarries (km 35.5, 85.5, 209.7 and 254.4), no hydrous environment (water course or body of water) or wetland is located less than 75 m from them (Appendix 4). Moreover, no inhabited area is found in the vicinity. The operation and restoration methods used for quarries 35.5, 85.5 and 254.4 remain compliant with the requirements of the Regulation respecting pits and quarries as provided in the applications for authorization. From now on, the rock face (which has not been quarried for several years now) of quarry 207.9 shall be quarried. The operation of this quarry will, however, require the pumping of accumulated water (estimated volume of about 200,000 m³). Discharged water shall comply with requirements of article 22 of the Regulation respecting pits and quarries. Also, water shall be pumped into vegetation so to be naturally filtered by the soil. An additional filtering device shall be requested in the contract documents. The targeted area shall be approved by the on-site supervisor. If we consider that the Contractor will comply with the regulation in force and to the measures previously presented, the projected impacts of the operation of the new areas of the quarries are considered to be low.

9. Project Completion Calendar

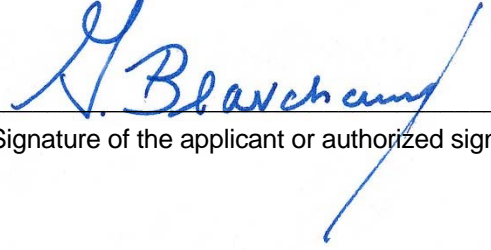
The work will be carried out between June 1 and October 15, 2017, depending on weather conditions. Clearing work will be carried out first, with work on the roadway and culvert replacements to follow.

10. Future Phases and Related Projects

Besides the work planned for 2016, repairs and maintenance on James Bay Road and Chisasibi Road will continue until 2021. The work to be carried out during this period has yet to be specified, but will be similar to the work carried out this year.

11. Applicant Signature

I, Gino Beauchamp, certify that all the information mentioned in the present preliminary information form is correct to the best of my knowledge.



Signature of the applicant or authorized signatory

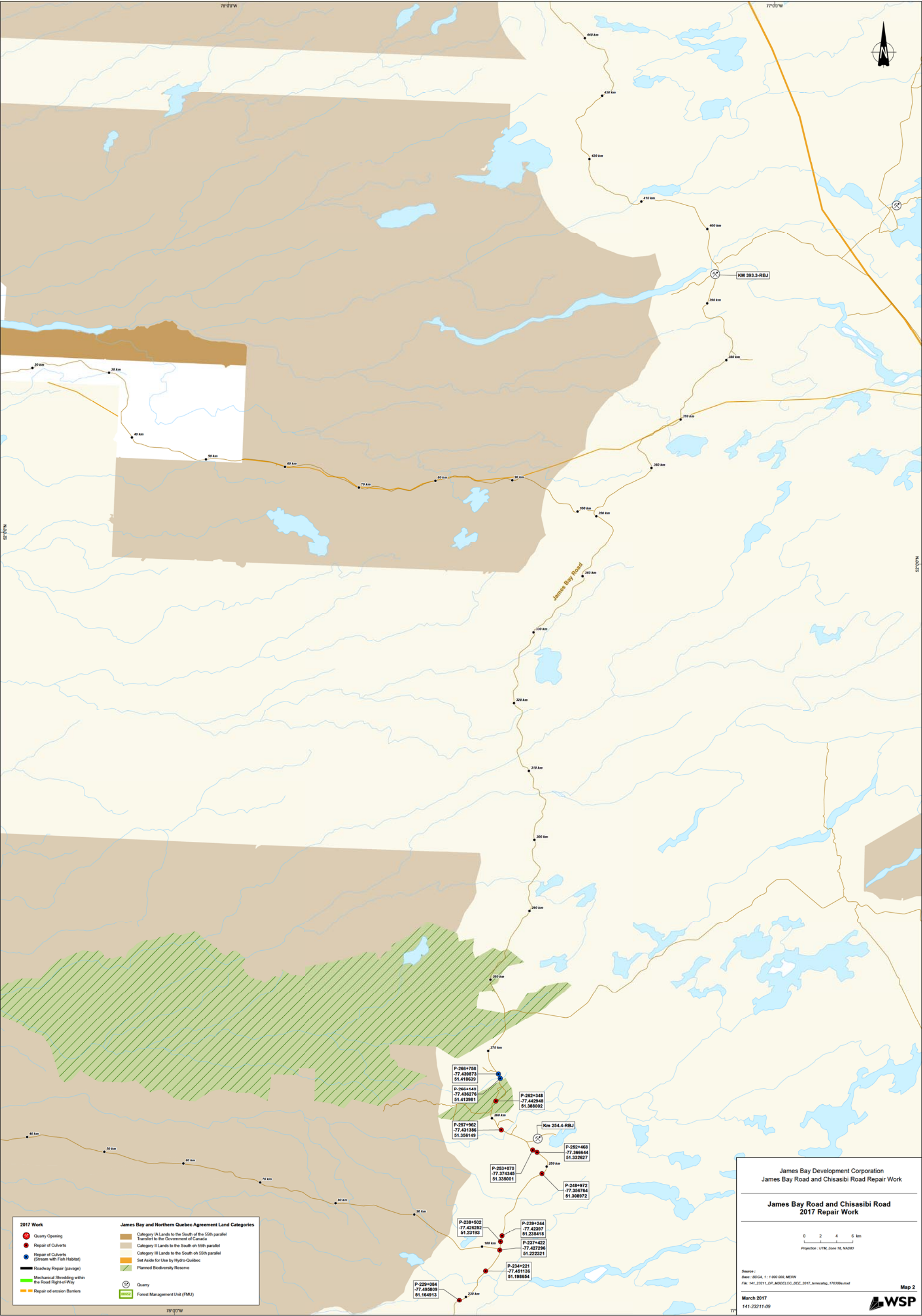
March 10, 2017

Date

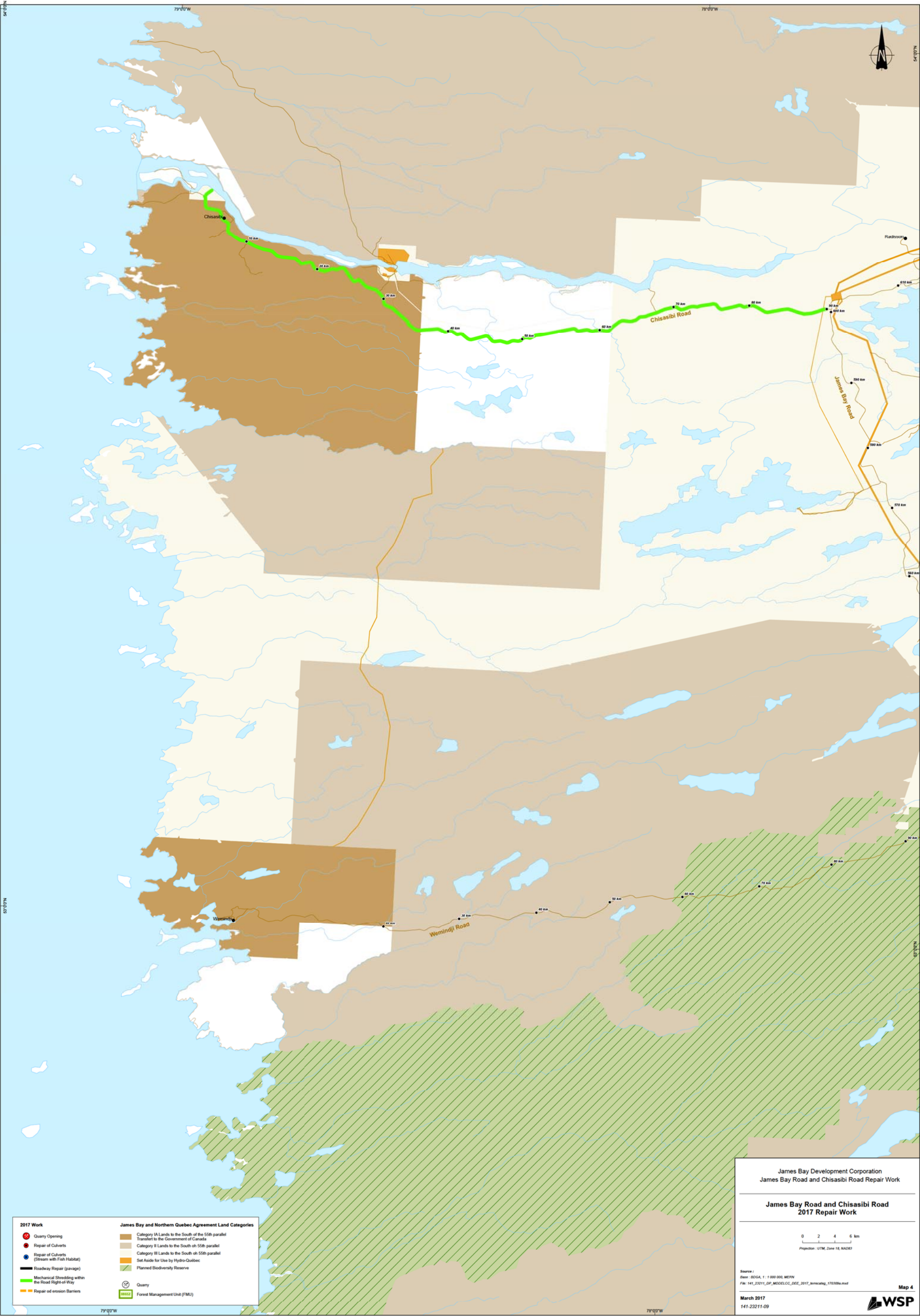
Appendix 1

MAPS SHOWING THE LOCATIONS OF 2017 REPAIR
WORK









Appendix 2

COORDINATES OF WORK AREAS

Pavement structure work

Section	Type of work	Order	Long DMS	Lat DMS
km 144 à km 184	Pavement	Start	-77,5420567	50,53377677
km 144 à km 184	Pavement	End	-77,61154146	50,81674343
km 184 à km 200 Layer of correction and layer of wear in the bituminous coated		Strat	-77,61154146	50,81674343
km 184 à km 200 Layer of correction and layer of wear in the bituminous coated		End	-77,64689977	50,94418657

Culverts replacement on James Bay road

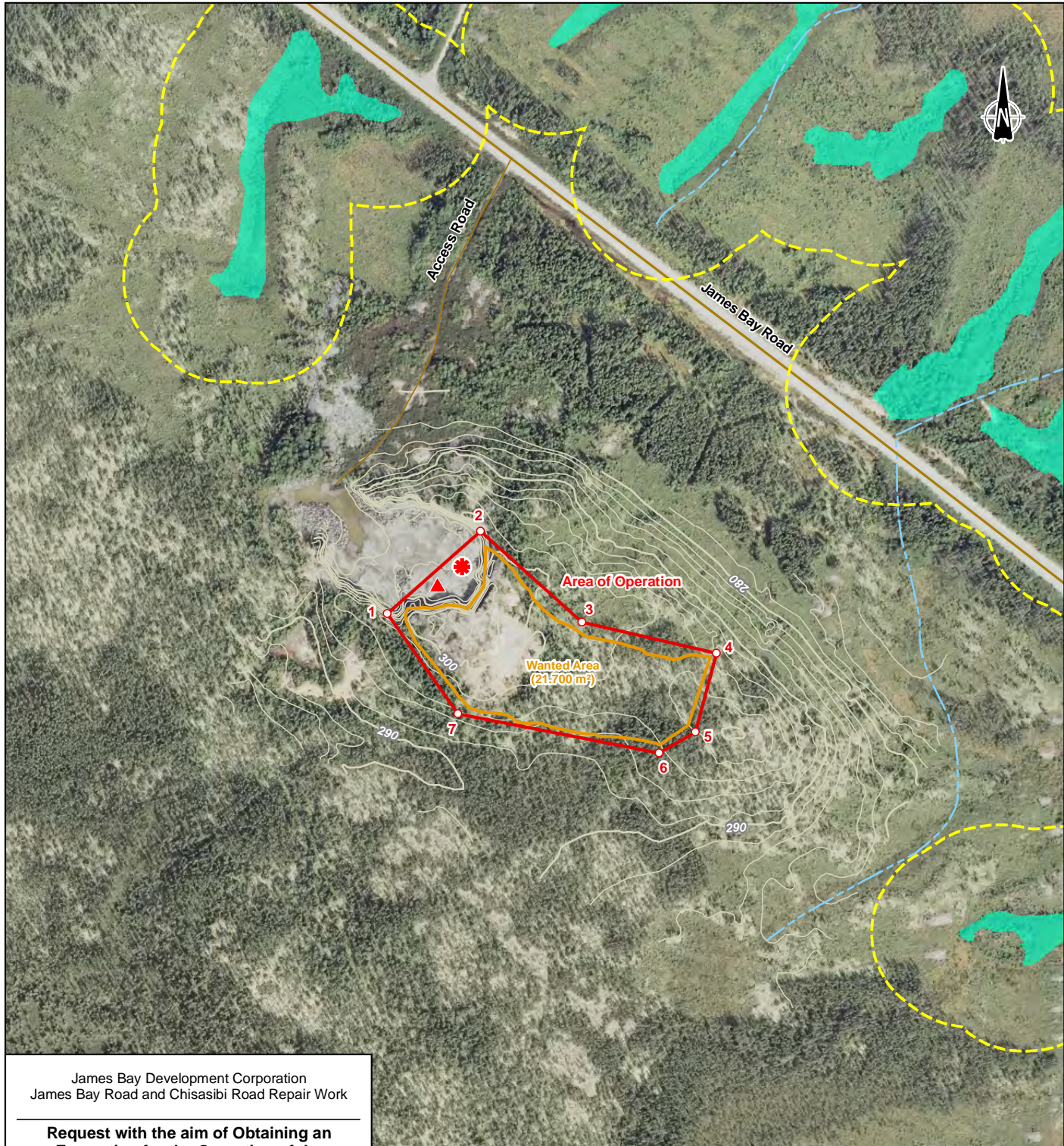
Kilometer point	Lat DMS	Long DMS	Existing diameter
147+222	50,56132012	-77,55397711	1200
147+226	50,56134778	-77,5539621	1200
148+817	50,57398777	-77,54590423	1200
151+359	50,58962923	-77,56914217	900
151+557	50,59138353	-77,5696859	1200
152+352	50,602719	-77,56623	900
153+864	50,606864	-77,564088	900
158+966	50,64559598	-77,60415827	1200
160+439	50,65847801	-77,60331531	1200
161+040	50,66224678	-77,60906617	1200
163+475	50,67733664	-77,63670769	900
165+651	50,67733664	-77,63670769	600
167+964	50,70405849	-77,67852385	900
168+571	50,70870516	-77,68297679	1500
173+923	50,74563609	-77,66907856	1200
175+135 ¹	50,75494092	-77,66907856	1500
179+135	50,78052124	-77,63140721	900
182+270	50,80142138	-77,61064751	900
182+820	50,80636004	-77,61124953	1200
184+027	50,81684536	-77,61164513	900
184+465	50,8202493	-77,61465529	900
187+844	50,84508888	-77,6400629	1500
188+822	50,85364237	-77,63978245	900
195+506	50,90505516	-77,64617551	1200
196+227 ¹	50,91199789	-77,64618084	900
197+262	50,92059679	-77,64858552	900
201+352 ²	50,956696	-77,645718	1500
201+356 ²	50,956728	-77,64572	1500
213+384	51,0469342	-77,57214159	900
213+807	51,05070735	-77,57243296	1500
214+936 ²	51,056203	-77,559933	2700
214+941 ²	51,056235	-77,559873	2700
221+951	51,116024	-77,551443	1200
221+955	51,11606023	-77,551441	1200
223+327	51,12537212	-77,5393012	1200
229+084	51,164913	-77,495809	1200
234+221	51,19865434	-77,45113565	900
237+422	51,22232085	-77,42729629	1500
238+502	51,23192962	-77,42625196	900
239+244	51,23841844	-77,42397027	1200
248+972	51,30897221	-77,35676356	1200
252+468	51,33262723	-77,36664443	1500
253+070	51,33500068	-77,37434483	1200
257+962	51,3561485	-77,43138643	1200
262+348	51,3880018	-77,44294845	900
266+140 ²	51,41398134	-77,43627622	2000
266+758 ²	51,41863875	-77,4398734	2700

¹ Stream with potential of fish habitat which must be validated in spring

² Stream considered as fish habitat. Specific culverts will be installend to assure the free passage according to the guidelines for the conception culvert of Fisheries and Oceans Canada

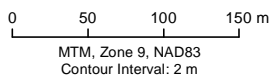
Appendix 3

LOCATION OF THE QUARRY AT KM 168



James Bay Development Corporation
James Bay Road and Chisasibi Road Repair Work

**Request with the aim of Obtaining an
Exemption for the Operation of the
Quarry Located at Kilometer 168**



Source :
Imagery, MRNF Québec, 2010, © Gouvernement du Québec
BDTO, 1/20 000, MERN Québec
Wetland, WSP, 2015
Contour Interval, WSP, 2015
File: 141_23211_DP_MODELCC_DEE_2017_km168_wspq_170308a.mxd

March 2017

Project: 141-23211-07

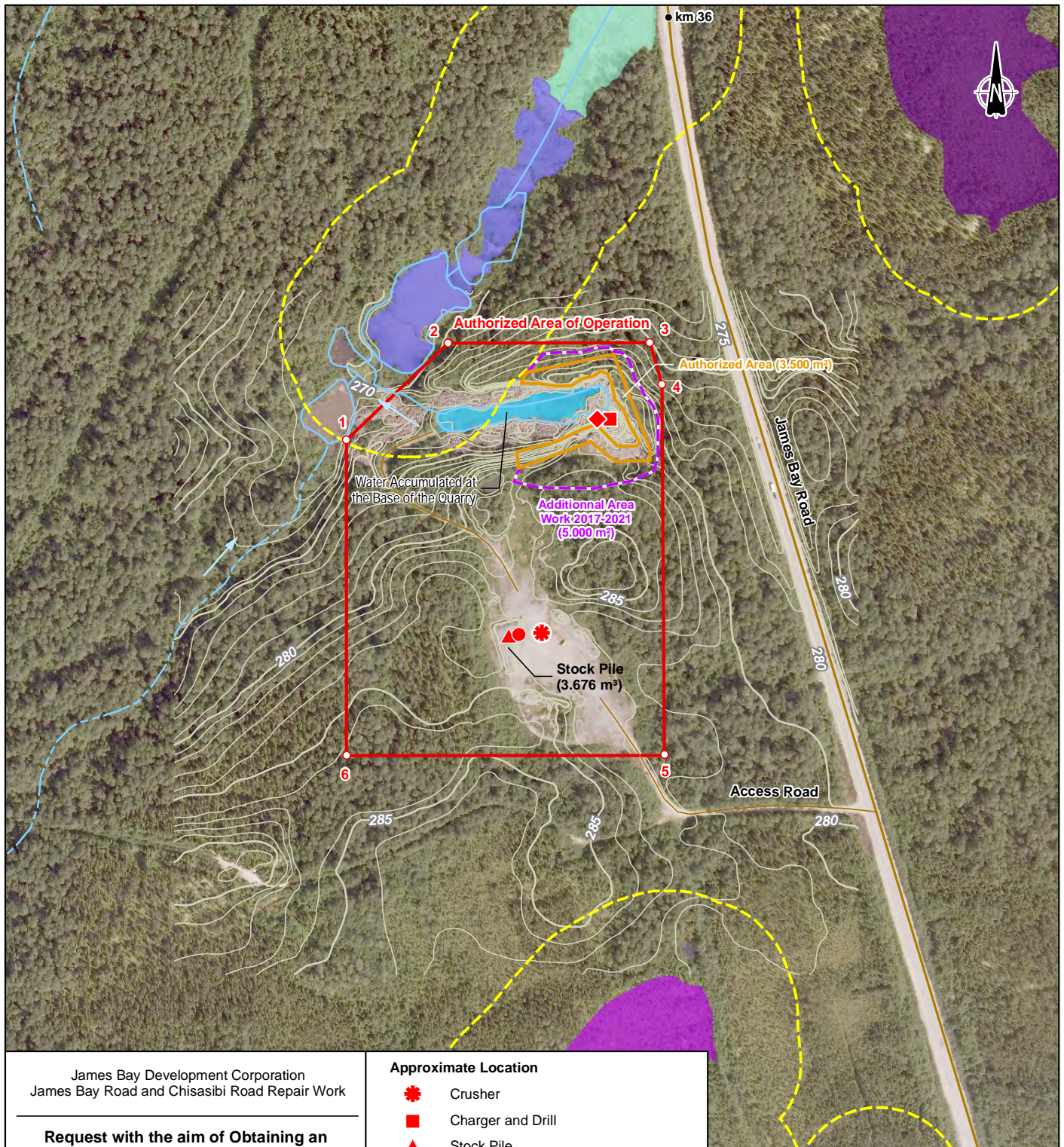


- Approximate Location of the Crusher
- Approximate Location of the Stock Pile
- Intermittent Stream
- Shubby Swamp
- Buffer Zone (75 m)

Coordinates of the Exploitation Area (UTM, Zone 18, NAD83)		
Point	X	Y
1	311 311	5 619 388
2	311 394	5 619 458
3	311 481	5 619 377
4	311 598	5 619 348
5	311 578	5 619 279
6	311 547	5 619 262
7	311 372	5 619 299

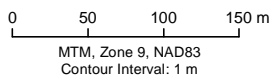
Appendix 4

LOCATION OF THE EXISTING QUARRY AND DATA
SHEETS



James Bay Development Corporation
James Bay Road and Chisasibi Road Repair Work

Request with the aim of Obtaining an Exemption for the Operation of the Quarry Located at Kilometer 35.5



Source :
Imagery, MRNF Québec, 2010, © Gouvernement du Québec
BDTQ, 1/20 000, MERN Québec
Wetland, WSP, 2015
Contour Interval, WSP, 2015
File: 141_23211_DP_MODELCC_DEE_2017_km35_wspq_170308a.mxd

March 2017

Project: 141-23211-07



Approximate Location

- Crusher
- Charger and Drill
- Stock Pile
- Loading Site
- Unloading Site

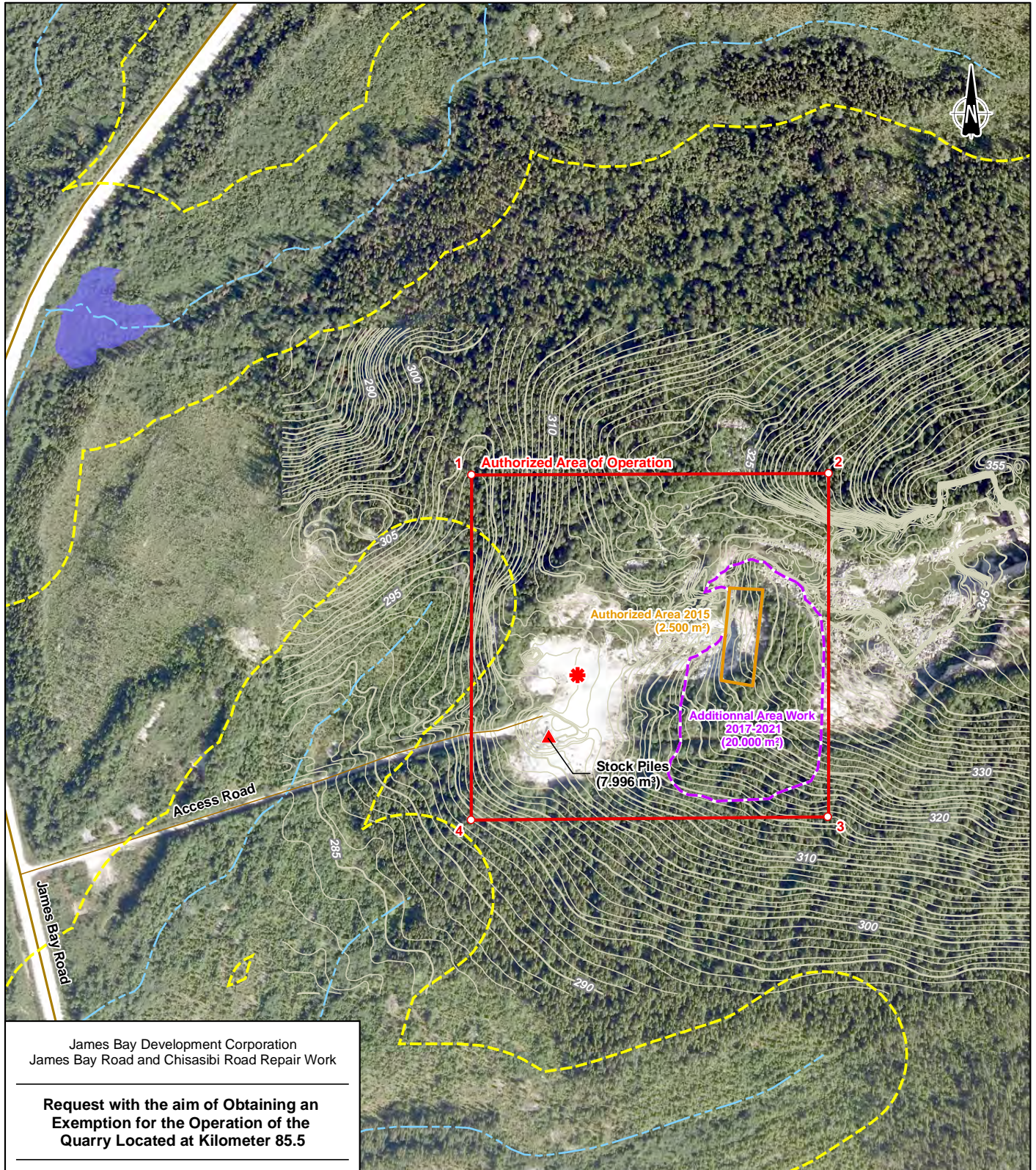
Wetlands

- Beaver Pond
- Pond
- Swamp
- Open Bog
- Treed Bog
- Buffer Zone (75 m)



Coordinates of the Exploitation Area
(UTM, Zone 18, NAD83)

Point	X	Y
1	337 695	5 526 728
2	337 786	5 526 811
3	337 963	5 526 808
4	337 973	5 526 771
5	337 969	5 526 446
6	337 690	5 526 451



James Bay Development Corporation
James Bay Road and Chisasibi Road Repair Work

Request with the aim of Obtaining an Exemption for the Operation of the Quarry Located at Kilometer 85.5

0 50 100 150 m
MTM, Zone 9, NAD83
Contour Interval: 1 m

Source:
Imagery, MRNF Québec, 2010, © Gouvernement du Québec
BDTO, 1/20 000, MERN Québec
Wetland, WSP, 2015
Contour Interval, WSP, 2015
File: 141_23211_DP_MODELCC_DEE_2017_km85_wspg_170308a.mxd

March 2017

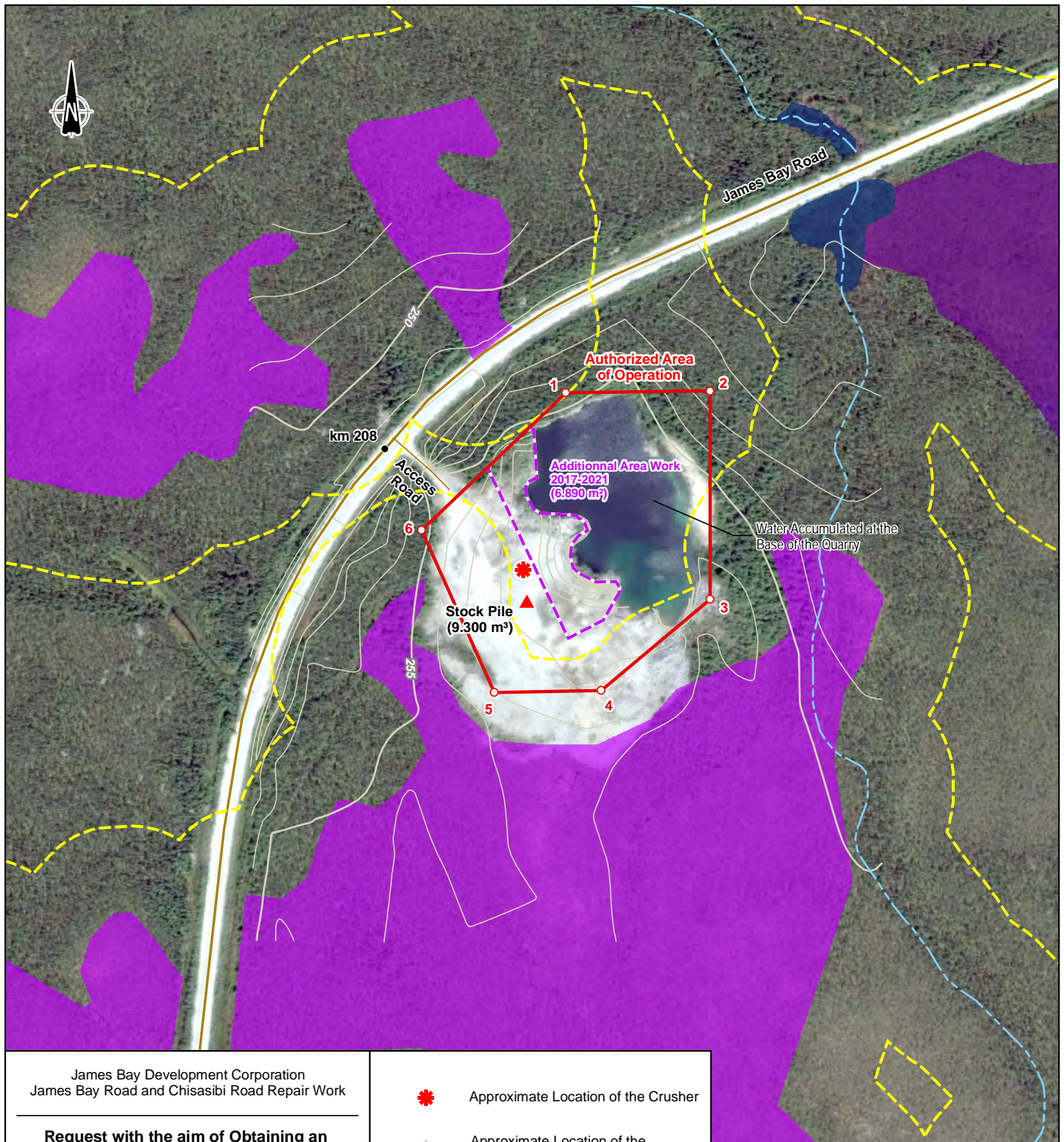
Project: 141-23211-07



- Approximate Location of the Crusher
- Approximate Location of the Stock Piles
- Intermittent Stream
- Beaver Pond
- Buffer Zone (75 m)

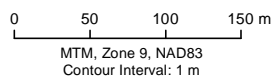
Coordinates of the Exploitation Area
(UTM, Zone 18, NAD83)

Point	X	Y
1	350 405	5 565 245
2	350 727	5 565 240
3	350 720	5 564 930
4	350 398	5 564 934



James Bay Development Corporation
James Bay Road and Chisasibi Road Repair Work

Request with the aim of Obtaining an Exemption for the Operation of the Quarry Located at Kilometer 207.9



Sources :

Imagery: Google Earth Pro, 2013
BDTQ, 1/20 000, MERN Québec
Wetland, WSP, 2015
Contour Interval, WSP, 2015

File: 141_23211_DP_MDELC_C_DEE_2017_km207.9_wspq_170308a.mxd

March 2017

Project: 141-23211-07



Approximate Location of the Crusher

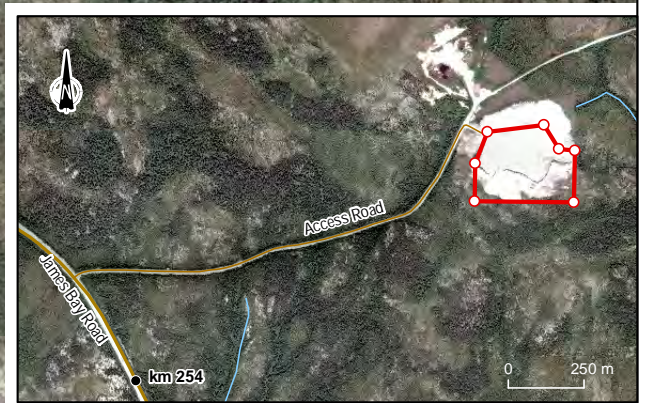
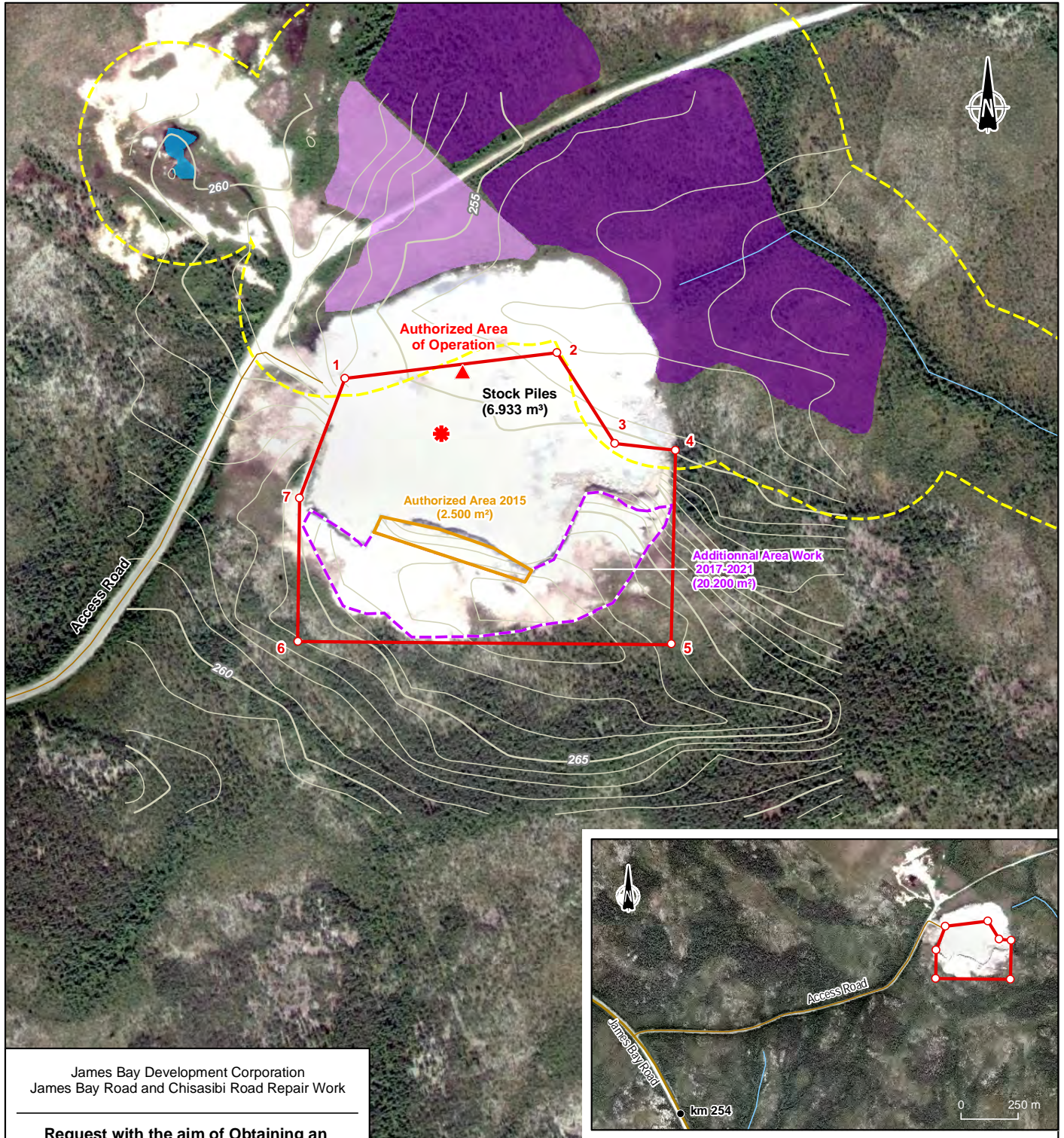
Approximate Location of the
Stock Pile

Wetlands

- Flooded
- Open Bog
- Treed Bog
- Intermittent Stream
- Buffer Zone (75 m)

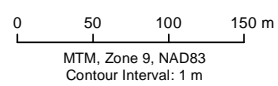
Coordinates of the Exploitation Area (UTM, Zone 18, NAD83)

Point	X	Y
1	316 513	5 654 041
2	316 642	5 654 159
3	316 769	5 654 158
4	316 765	5 653 975
5	316 668	5 653 897
6	316 574	5 653 897



James Bay Development Corporation
James Bay Road and Chisasibi Road Repair Work

Request with the aim of Obtaining an Exemption for the Operation of the Quarry Located at Kilometer 254.4



Sources :
Imagery: Google Earth Pro, 2013
BNDT, 1/50 000, RNCan, 2007
Wetland, WSP, 2015
Contour Interval, WSP, 2015
File: 141_23211_DP_MDDDELCC_DEE_2017_km254_4_wspq_170308a.mxd

March 2017

Project: 141-23211-07



- Approximate Location of the Crusher
- Approximate Location of the Stock piles
- Wetlands**
- Pond
- Open Bog
- Treed Bog
- Intermittent Stream
- Buffer Zone (75 m)

Coordinates of the Exploitation Area (UTM, Zone 18, NAD83)		
Point	X	Y
1	335 174	5 691 206
2	335 361	5 691 225
3	335 410	5 691 144
4	335 463	5 691 137
5	335 456	5 690 967
6	335 128	5 690 976
7	335 132	5 691 102

Rehabilitation of the James Bay Road
Quarry Lease Application

A. IDENTIFICATION

- 1) **Number:** Km 35,5
- 2) **Location:** geographical coordinates 337 832 E 5 526 355 N
UTM coordinates, NAD83 zone 18
- | | m. E. | m. N. |
|-----|--------|---------|
| - 1 | 337695 | 5526728 |
| - 2 | 337786 | 5526811 |
| - 3 | 337963 | 5526808 |
| - 4 | 337973 | 5526771 |
| - 5 | 337969 | 5526446 |
| - 6 | 337690 | 5526451 |
- 3) **Location - with respect to the road** Located 90 m west of the James Bay Road, between km 34 and 35.
- 4) **Maps:** 32F/14

B. CHARACTERIZATION – ENVIRONMENT

- 5) **Surface area of the operation area:** 10 ha
- 6) **Average thickness:** 10 m
- 7) **Maximum thickness:** 16 m
- 8) **Volume of additional material (non aerated):** 50 000 m³
- 9) **Average annual production rate:** 50 000 m³ (in 2020)
- 10) **Type of material:** Coarse-grained and angular rock (monzodiorite), porphyritic feldspar with 5-10% of mafic fragments (garnetiferous amphibolite) decimetric. Mineral alignment and fragment elongation oriented at 255°.
Four joint families:
065/76 Decimetric – metric sequences
180/89 Decimetric – metric sequences
255/35 Decimetric – metric sequences
340/78 Metric sequence
- 11) **Use:** Production of crushed stones for the base course and the wearing course of the James Bay Road (aggregates for asphalt [0 to 14 mm], MG-20 and stones for correction [5-20 mm]).
- 12) **Depth of the body of water:** 16 m

Rehabilitation of the James Bay Road
Quarry Lease Application

13) Distance from the hydrous environment:

> 75 m

14) Distance from the road:

About 90 m west of the James Bay Road

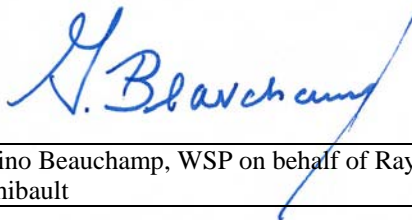
C. DESCRIPTION AND COMMENTS

Renewal to a certificate of authorization (Ref #: 7610-10-01-84043-00 401266037) for the operation of a quarry.

A reserve of crushed stones of about 4,800 m³ is available on site.

D. APPLICANT

Signature:



Requested by:

Gino Beauchamp, WSP on behalf of Raymond Thibault

Position:

Director

Initiator:

James Bay Development Corporation

Date:

March 10th 2017

Rehabilitation of the James Bay Road
Quarry Lease Application

A. IDENTIFICATION

- 1) **Number :** Km 85,5
- 2) **Location:** geographical coordinates 350 563 E 5 565 087 N
UTM coordinates, NAD83 zone 18
- | | m. E. | m. N. |
|-----|---------|-----------|
| - 1 | 350 405 | 5 565 245 |
| - 2 | 350 727 | 5 565 240 |
| - 3 | 350 720 | 5 564 930 |
| - 4 | 350 398 | 5 564 934 |
- 3) **Location - with respect to the road** Located 400 m east of James-Bay road,
between km 85 and 86
- 4) **Maps:** 32K/3

B. CHARACTERIZATION – ENVIRONMENT

- 5) **Surface area of the operation area:** 10 ha
- 6) **Average thickness:** 11 m
- 7) **Maximum thickness:** 15 m
- 8) **Volume of additional material (non aerated):** 200 000 m³
- 9) **Average annual production rate:** 50 000 m³/an
- 10) **Type of material:** Rock - Diorite with intrusion pegmatique with
distribution of 50 % of every type of rock
- 11) **Use:** Production of crushed stones for the base course
and the wearing course of the James Bay Road
(aggregates for asphalt [0 to 14 mm], MG-20 and
stones for correction [5-20 mm]).
- 12) **Depth of the body of water:** > 30 m
- 13) **Distance from the hydrous environment:** > 75 m
- 14) **Distance from the road:** Located 400 m east of James-Bay road,
between km 85 and 86

Rehabilitation of the James Bay Road
Quarry Lease Application

C. DESCRIPTION AND COMMENTS

Modification to a certificate of authorization (N/Réf. : 7610-10-0184 003-00_200 041 561) for the operation of a quarry..

A reserve of crushed stones of about 7 996 m³ is available on site.

D. APPLICANT

Signature :



Requested by :

Gino Beauchamp, WSP on behalf of Raymond
Thibault

Position :

Director

Initiator :

James Bay Development Corporation

Date :

March 10th 2017

Rehabilitation of the James Bay Road
Quarry Lease Application

A. IDENTIFICATION

1) Number : Km 207,9

2) Location: geographical coordinates 316 639 E 5 653 993 N

UTM coordinates, NAD83 zone 18

	m. E.	m. N.
- 1	316513	5654041
- 2	316642	5654159
- 3	316769	5654158
- 4	316765	5654975
- 5	316668	5654897
- 6	316574	5654897

3) Location - with respect to the road Located 65 m east of James-Bay road, between km 207 and 208.

4) Maps : 32N/4

B. CHARACTERIZATION – ENVIRONMENT

5) Surface area of the operation area: 8,5 ha

6) Average thickness: 15 m

7) Maximum thickness: 18 m

8) Volume of additional material (non aerated): 103 350 m³

9) Average annual production rate: 20 670 m³

10) Type of material: Rock-Granodiorite, gneiss granodioritique and dykes granitic and pegmatiques

11) Use: Production of crushed stones for the base course and the wearing course of the James Bay Road (aggregates for asphalt [0 to 14 mm], MG-20 and stones for correction [5-20 mm]).

12) Depth of the body of water: ND

13) Distance from the hydrous environment: < 75 m

14) Distance from the road Located 65 m east of James-Bay road, between km 207 and 208.

Rehabilitation of the James Bay Road
Quarry Lease Application

C. DESCRIPTION AND COMMENTS

Modification to a certificate of authorization (N/Réf. : 7610-10-01-84009-00_200041862) for the operation of a quarry.

A reserve of crushed stones of about 9 300 m³ is available on site.

D. APPLICANT

Signature:



Requested by:

Gino Beauchamp, WSP on behalf of Raymond
Thibault

Position:

Director

Initiator:

James Bay Development Corporation

Date:

March 10th 2017

Rehabilitation of the James Bay Road
Quarry Lease Application

A. IDENTIFICATION

1) **Number :** Km 254,4

2) **Location:** geographical coordinates 335 298 E 5 691 138 N

UTM coordinates, NAD83 zone 18

	m. E.	m. N.
- 1	335174	5691206
- 2	335361	5691225
- 3	335410	5691144
- 4	335463	5691137
- 5	335456	5690967
- 6	335128	5690976
- 7	335132	5691102

3) **Location - with respect to the road** Located 1 500 m east of James-Bay road, between km 254 and 255.

4) **Maps :** 32N6

B. CHARACTERIZATION – ENVIRONMENT

5) **Surface area of the operation area:** 11 ha

6) **Average thickness:** 10 m

7) **Maximum thickness:** 18 m

8) **Volume of additional material (non aerated):** 202 000 m³

9) **Average annual production rate:** 40 400 m³/an

10) **Type of material:** Rock - Paragneiss in biotite and in hornblende injected by granite

11) **Use:** Production of crushed stones for the base course and the wearing course of the James Bay Road (aggregates for asphalt [0 to 14 mm], MG-20 and stones for correction [5-20 mm]).

12) **Depth of the body of water:** N/A

13) **Distance from the hydrous environment:** < 75 m

14) **Distance from the road:** Located 1 500 m east of James-Bay road, between km 254 and 255.

Rehabilitation of the James Bay Road
Quarry Lease Application

C. DESCRIPTION AND COMMENTS

Renewal to a certificate of authorization (N/Réf. : 7610-10-01-84020-00_200041463) for the operation of a quarry.

A reserve of crushed stones of about 3 676 m³ is available on site.

D. APPLICANT

Signature:



Requested by:

Gino Beauchamp, WSP on behalf of Raymond
Thibault

Position:

Director

Initiator:

James Bay Development Corporation

Date:

March 10th 2017

Appendix 5

RESOLUTION OF THE JBDC BOARD OF DIRECTORS



No de résolution
ou annotation

SOCIÉTÉ DE DÉVELOPPEMENT DE LA BAIE-JAMES

CONSEIL D'ADMINISTRATION

Extrait de la résolution des administrateurs tenant lieu de la cinq cent soixantième (560^e) séance extraordinaire du conseil d'administration de la Société de développement de la Baie-James, adoptée en date du 5 février 2015.

Travaux d'entretien et de réfection de la route de la Baie-James Désignation de représentants de la SDBJ auprès de certains ministères

Après étude et considération de ladite recommandation, il est unanimement résolu :

Résolution n° 560.01

D'AUTORISER messieurs Gino Beauchamp et Denis Blais de la firme WSP ou monsieur Raymond Thibault de la SDBJ à signer au nom de la SDBJ toute demande d'autorisation ou de certificat d'autorisation au ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques en vertu de la Loi sur la qualité de l'environnement ainsi que toute autre demande qui pourrait être requise par toute autre loi ou tout autre règlement gouvernemental ou municipal, notamment en vertu de la Loi sur la conservation et la mise en valeur de la faune et de la Loi sur l'aménagement durable en territoire forestier.

COPIE CONFORME,

ce 17 février 2015

Josée Roy, CPA, CA
Secrétaire-trésorière



