CONSORTIUM

NORDA STELO

Stantec

1032, 3rd Ave., Val d'Or, QC, J9P 1T6

Ref. no. : 115726.003-950-003

REPORT

SOCIÉTÉ DE DÉVELOPPEMENT DE LA BAIE-JAMES

Construction of a steel arch structure at km 19.8 of LA1 Road to the Laforge 1 Dam - Phase 2

Application for exemption from the environmental assessment procedure of the Environment Quality Act

Preliminary information presented to the ministère de l'Environnement et de la Lutte contre les changements climatiques

MARCH 2019

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Norda Stelo / Stantec

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Société de développement de la Baie-James
Québec

CONSORTIUM
NORDA STELO Stantec
1032, 3rd Ave., Val d'Or, QC, J9P 1T6

Société de développement de la Baie-James

Construction of a steel arch structure at km 19.8 of Road LA1 to the Laforge 1 Dam (Phase 2)

Ref. No.: 115726.003-950-003

Application for exemption from the environmental assessment procedure of the Environment Quality Act – Preliminary information presented to the Ministère de l'Environnement et de la Lutte contre les changements climatiques

Prepared by:

Anne-Marie Leclerc, M.Sc., Geographer-Geomorphologist

Approved by:

Vital Boulé, M.Sc., biologist
Project Lead, Environment

March 1st, 2019

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1 APPLICANT'S IDENTIFICATION AND CONTACT INFORMATION

1.1 Promoter's Identification

Name:	Société de développement de la Baie-James (SDBJ)
Municipal address:	110 Boulevard Matagami, P.O. Box 970
	Matagami, Québec J0Y 2A0
Postal address (if different):	
Name and position of the signatory (signatories) authorized to submit the application	Émil Tagho, eng., Projet Director
Phone:	819-739-4717 ext. 1265
Email:	etagho@sdbj.gouv.qc.ca

1.2 Enterprise Number

Not applicable.

1.3 Municipal Council Resolution

Not applicable.

1.4 Identification of the Consultant Mandated by the Promoter

Name:	Consortium Norda Stelo/Stantec Person responsible for the application: Anne-Marie Leclerc
Municipal address:	1032, 3e Avenue Val-d'Or, Québec J9P 1T6
Postal address (if different):	
Phone:	514-393-9110, ext. 40215
Email:	anne-marie.leclerc@norda.com
Description of the mandate:	Preparation and presentation of environmental authorization applications in the context of various road infrastructure maintenance, repair or reconstruction projects.

2 PROJECT LOCATION AND SCHEDULE

2.1 Identification of the Project and its Activities

The project is located in the sprawling territory of the Eeyou Istchee-James Bay Municipality (Administrative Region no. 10).

According to the James Bay and Northern Quebec Agreement, the worksite is located on Category III lands, i.e., a free public territory with no exclusive usage by Indigenous communities.

The arch will be located at km 19.8 of the unpaved "LA1" Road to the Laforge 1 Dam, at the following approximate central coordinates: 54.0641° N; -72.5077° W (NAD83). Map 2.1 shows the general location of the site of the projected work.

2.2 Description of the Site Covered by the Project

2.2.1 Biophysical Environment

The section of the LA1 Road affected by the project is located in the lichen spruce bioclimatic domain. According to the Nord-du-Québec eco-forestry map data, the west (or left) bank of the nameless stream located at the project is occupied by softwood stands on a bed of lichens and mosses with 26% to 40% cover. The east (or right) bank is occupied by softwood stands on a bed of lichens and mosses or mosses and ericaceous shrubs with 10% to 40% cover. The stands on both banks are at a more than 95-year development stage. Surface deposits are of glacial origin.

Ducks Unlimited's detailed wetlands cartography does not cover the Nord-du-Québec administrative region. However, several minerotrophic peatlands can be distinguished through photo-interpretation (shown in brown in Figure 2.1). Nord-du-Québec eco-forestry map data also identifies these peatlands. In light of this data, there will be no peatland encroachment.

The stream crossed by the LA1 protected arch does not have an official name in the registries of the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC). It is located in the La Grande Rivière natural watershed, which has an area of 97,600 km^2. The area of the watershed of the stream in question is estimated at approximately 62 km^2.

The land was surveyed on July 1, 2018, to determine the upper width of the banks, the thalweg elevation, and the high water mark (HWM). The stream crossing site was characterized based on these surveys and photos. Generally speaking, the stream in question presents riffle and pool facies. Nevertheless, it forms a cascade immediately upstream from the crossing. The cascade is associated with a slope break with an average inclination on the order of 2.7% over approximately 90 metres.

At the crossing site itself, there is a riffle facies and the substrate mainly consists of cobble, boulders and pebbles. The longitudinal slope of the stream at and downstream from the crossing is very shallow and locally negative. It is estimated to be 0.2% at about 100 m downstream from the crossing.

The upper bank limit width (bankfull discharge width or BDW) is 13.6 m and the HWM is about 20 metres wide. The average and maximum water depths during the surveys were 0.4 m and 0.8 m, respectively.

Since this stream is located within the La Grande River watershed, several fish species are found, including brook trout, northern pike, lake trout, lake whitefish, etc. Fish species potentially present in the stream are brook trout and northern pike. Pike can mainly be found in the calmer flow zones upstream and downstream from the crossing site. However, brook trout, white sucker and Northern sucker use the faster flow sections such as those observed directly at the crossing site. The authorized period from June 1 to September 15 for work in the aquatic environment was established according to the dates prescribed in Schedule 5 of the *Regulation respecting the sustainable development of forests in the domain of the State* (RADF) based on the presence of brook trout.

At the crossing site, the stream is mainly used by fish for feeding and as a transit corridor between water bodies located downstream and upstream from the site. The primary function of the habitat immediately at the crossing site is feeding and migration for brook trout.

There is no regulated wildlife habitat near the construction site, and the stream crossing site is not included in any protected area recorded in the MELCC registry.

Figure 2.1 Satellite image of the natural environment at the LA1 projected arch crossing site (source: Google Earth). The top of the image is oriented northward.

2.2.2 Human Environment

Primarily used by Hydro-Québec employees, the LA1 Road represents the only land link between the infrastructures of this state-owned corporation and the road network ultimately connecting to Route de la Baie-James. This road thus represents the only road evacuation corridor in case of emergency at the Laforge 1 infrastructures.

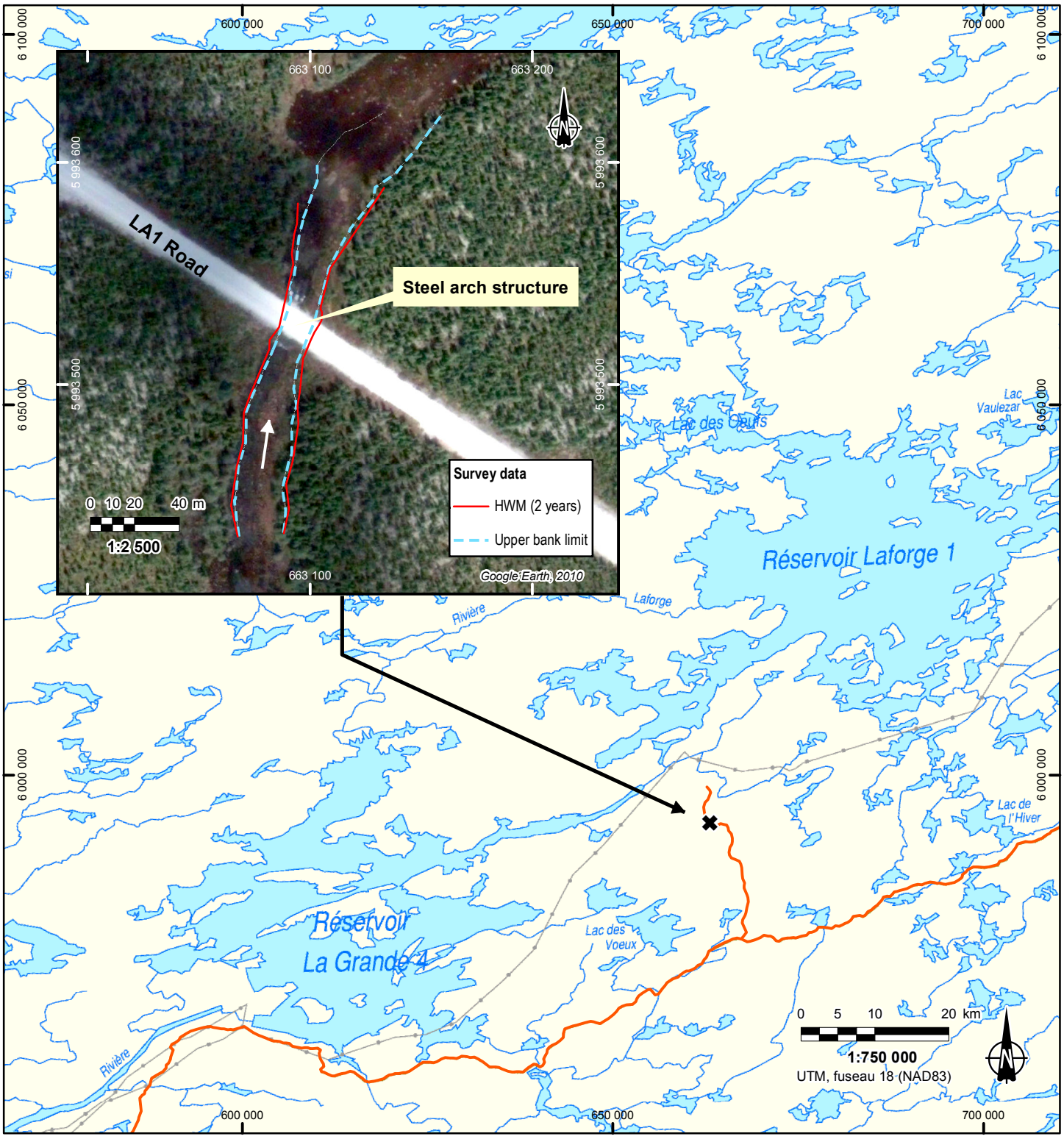
Apart from trips related to Hydro-Québec personnel, the road is used primarily by the traditional users of the territory and vacationers. As mentioned above, the work site is located on Category III lands, i.e., a free public territory with no exclusive usage by Indigenous communities. Reconstruction of the LA1 Road at km 19.8 will have no impact on neighbouring community hunting and fishing rights. The site is located in the CH26 trapline where the tallyman is Bobby Pashagumeskum from the Chisasibi community. Moreover, there are probably no Cree camps located nearby or any infrastructure other than the road itself.

2.3 Work Schedule

The earthmoving work will begin in the end of May 2019 and the work in the aquatic environment will be carried out within the authorized period for protection of brook trout, from June 1 to September 15. Commissioning of the new arch is scheduled for mid-August 2019, on condition that the work can start at the beginning of May. Work at the site should be fully completed by the end of September.

2.4 Location Plan

Map 2.1 shows the general location of the site of the projected work.



Société de développement de la Baie-James

Construction of a steel arch structure at km 19.8
of the LA1 Road to the Laforge 1 Dam (Phase 2)

Application for exemption
to Section 154 of the EQA - MELCC

Location of work

115726_Map2-1_Location Pont LA1_MELCC_190228.mxd
Base map : Jamesie.tif
February 2019

Map 2.1

CONSORTIUM NORDA STELO Stantec
1032, 3e avenue, Val d'Or, QC, J9P 1T6

Prepared : ÉT Drawn : YR Verified : AML

Emplacement: Q:\115726.001\200-CONTENU\26-Geomatique\Donnees\MXD_WOR\MXD\115726_Map2-1_Location Pont LA1_MELCC_190228.mxd

3 GENERAL PRESENTATION OF THE PROJECT

3.1 Project Title

Construction of a steel arch structure at km 19.8 of the LA1 Road to the Laforge 1 Dam (Phase 2).

3.2 Subjection

The project site is located within the territory of application of Division III of the *Environment Quality Act* (EQA). In conformance with section 154 of the EQA, any project proponent wanting to carry out a project in a northern region who is neither subject to (Schedule A of the EQA) nor specifically exempted from the environmental assessment procedure (Schedule B of the EQA) must first apply for an exemption from the MELCC. Construction or reconstruction on an existing road, which is the subject of this project, is an activity that falls in the “grey area”.

Let us recall that the project, in its initial design, was already the subject of an application for exemption submitted in August 2018 to the MELCC, and the notice of exemption (your ref. : 3214-05-081) was issued on September 21, 2018.

However, after the notice of exemption was issued, during analysis of the contractor's tender, the SDBJ revised the project and the work schedule. Phase 1 corresponds to the construction of the Acrow (or Mabey) temporary bridge, as described in the August 2018 application for exemption. This phase was carried out in fall 2018. Phase 2 corresponds to the construction of the permanent arch structure, which was postponed to summer 2019 (and incidentally, the relocation and dismantling of the temporary bridge).

On October 23, 2018, Consortium Norda Stelo/Stantec informed the MELCC of these changes. The MELCC responded that the work related to Phase 2 should be the subject of a new application for exemption. The purpose of this application is to comply with this regulatory obligation.

It should be noted that a *Demande de permis d'intervention en milieu forestier* (forest management permit application) will be submitted to the MFFP and a request for review to the Department of Fisheries and Oceans is in preparation. These two applications will be filed shortly.

3.3 Summary Description of the Project and the Performance Variants

3.3.1 Design Criteria

The preliminary plans dated February 15, 2019 are attached to this application. The design of the new structure will meet the standards and criteria indicated in the following reference documents:

- *Regulation respecting the sustainable development of forests in the domain of the State*.(RADF), of the Ministère des Forêts, de la Faune et des Parcs du Québec (MFFP);
- The standards of Ouvrages routiers, Tome III – Ouvrages d'art, of the Ministère des Transports (MTQ)[1];
- Manuel de conception hydraulique des ponts, of the MTQ[2];
- Canadian Highway Bridge Design Code, published by the Canadian Standards Association (CSA Group)[3].

According to the hydraulic analysis performed for construction of the proposed structure, the following criteria were used for the hydraulic design of the replacement structure:

- Arch span: about 19 metres;
- Arch length > 80% of the thalweg length of the segment disturbed by construction;
- 75-year flood design increased by 20% to take climate change into account;
- Opening (14.0 m horizontal clearance) with a minimum width equal to the BDW (13.6 m) at the crossing, perpendicular to the longitudinal axis of the stream;
- No permanent reduction in the stream width with respect to the upper bank limit;
- Minimal requirement of 300 mm freeboard over the design high water (DHW) or ≥ 15% of the water depth at the upstream face of the structure (the larger of the two values), considering that the stream is not used for navigation and there is no significant jam formation potential;
- No permanent encroachment of the structure in the stream bed (bottom and banks);
- Adequate protection of walls, footings and foundations with flood-resistant riprap;

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[1] MTMDET. Tome III – Ouvrages d'art, 2017. Les Publications du Québec, collection Normes – Ouvrages routiers.

[2] Ministère des Transports du Québec, 2005. Manuel de conception hydraulique des ponts. Direction des structures. Les Publications du Québec.

[3] CSA Group/Canadian Standards Association, 2017. CAN-CSA S6-F06 : Canadian Highway Bridge Design Code, 11rth edition. Canadian National Standard

- 17.5 degree bias for the structure opening at the level of the footings, since this structure is rectilinear;
- Minimum soffit elevation of 430.34 m to ensure that the design high water line, estimated to be 430.01 m, is less than or equal to 85% of the structure freeboard;
- Maximum potential washout depth at the stream bed: 0.59 metre. The potential washout depth at the base of the abutment varies from 0.25 and 0.37 metre;
- Replacement structure extremities protected with 300-500 mm riprap 800 mm thick, placed up to 430.31 metres elevation. From there, a 500 mm thickness of 200-300 mm riprap will be placed;
- The riprap protection should not reduce the flow section under the structure beyond the existing state at the projected arch (flow section area of 13.52 m², under elevation 429.60 m);
- Residual fill material from the old culvert that is impeding the stream will be removed to restore the stream to a more natural flow section and to allow for placement of the protective riprap without obstructing the flow;
- Protective riprap at the approaches to the new structure will be extended to the limit of the construction work to stabilize the banks.

The design and deployment of the structure will conform to the requirements of the *Regulation respecting the sustainable development of forests in the domain of the State*, more specifically Division III "Bridges, Culverts, Removable Structures and Rudimentary Structures" of the Regulation.

Sheet 2 of the preliminary plans shown in Schedule 1 presents the state of the site, i.e. the Phase 1 temporary bridge. The other sheets show a plan view and sections of the projected arch, in particular.

3.3.2 Projected Work and Anticipated Work Methods

From the start of Phase 2 of the project, the work will consist of rebuilding the bypass road from the upstream side of the existing temporary bridge. In fact, the temporary bridge must be relocated to allow construction of the permanent arch in the current road axis. The temporary bridge will be relocated based on the new axis of the temporary bypass road. Details on the exact location of the bypass road could be confirmed later during the work, because it will be up to the contractor to establish the route according to the space constraints and the temporary retaining structures required. However, as mentioned in the contract documents, the contractor's work area must be circumscribed within the wooded limits. The restoration of the natural section of the stream toward the temporary bypass road could be accomplished prior to the relocation of the temporary bridge or during its dismantling, depending on the water management methods adopted by the contractor.

In a second stage, the steel multi-plate arch structure will be built. This arch's foundation units will be located beyond the upper bank limits (equivalent to the bankfull discharge width (BDW), which is estimated at about 13 metres. The arch opening will be approximately 19 m and the structure will be implemented according to the LA1 road axis. The 19 m opening is required to allow clearance of the stream banks, which has a bias of 17.5 degrees in relation to the arch opening. Except for the riprap for protection of the foundations and stabilization of the banks, there will be no other permanent encroachment outside the limits of the banks, since the arch foundation units will be located outside these limits. However, the foundation units will be partially located below the high water mark (HWM), estimated at 20 m wide, and below the stream bed, as required by the RADF.

A temporary encroachment, estimated at 330 m², is apprehended during development of the foundation units (alternating bank riprap and cofferdams). Cofferdams will be necessary to isolate and dewater the work areas. Prior to deployment of the first cofferdam, the contractor will have to proceed, on the opposite bank, to remove a hydraulic restriction caused by the remaining road fill encroaching in the stream, in order to ensure water management. In accordance with section 93 of the RADF, the cofferdams will not narrow the watercourse by more than one third of its width. The narrowed width of the watercourse is measured at the upper bank limit. To comply with this requirement, only one cofferdam will be deployed at a time. Thus, once the work is completed on a bank, the cofferdam will be dismantled, the bank will be stabilized and the environment will be restored. Then the second cofferdam will be constructed.

The steps needed to install the permanent structure essentially consist of:

- Preparing the foundation units for the proposed structure;
- Backfilling the foundation units;
- Installing the protective riprap (stones of 300-500 mm minimum gauge) up to level 430.45 m corresponding to the elevation of the banks.
- Installing the prefabricated arch and lattice walls;
- Raising the level of the existing road at the arch approaches (± 2.4 m). The rise will slope off gradually away from the arch until it meets the existing LA1 Road profile, approximately 100 m on either side of the arch.

Finally, at the end of the work, once the arch has been commissioned the Phase 1 temporary bridge will be dismantled.

For the duration of the work and as execution proceeds, the disturbed banks will be stabilized. The stream bed will be profiled to restore its natural characteristics and bankfull discharge width.

The shop drawings, work methods and equipment will be determined by the contractor. Specifications will be produced by Consortium Norda Stelo/Stantec, including specifications for protection of the environment, and the site supervisor will ensure they are respected. The usual machinery will be employed (crane, hydraulic excavator, dump trucks, compactors, etc.).

3.3.3 Project Variants

The analysis of the permanent structure type variants was already presented to the MELCC in the context of Phase 1 of the project. The arch structure was manufactured in the past few months and is stored temporarily during the winter period for delivery to the project site at the beginning of the work.

The only variant currently under study depends on the choice of foundations, either cast-in-place concrete or prefabricated concrete elements. Each of these choices involves its own issues related to quality and cost control. No environmental issue is generated directly by choosing either method.

3.4 Project Objectives and Justification

There used to be a battery of three culverts in the stream under LA1 Road at km 19.8. An exceptionally high flood that occurred in the late spring of 2018 caused the battery of culverts to give way. They were completely swept away by the current, and the road collapsed. A temporary bridge was constructed urgently in the following days, and in fall 2018, another temporary bridge of higher capacity was built in the Road LA1 axis.

Due to technical and operational constraints cited by the contractor, which caused the costs of the initial project to rise, the SDBJ decided to split the work contract into two phases spaced over time. The life of the temporary bridge was extended to cover the period from fall 2018 to summer 2019, and construction of the permanent structure was postponed to summer 2019.

3.5 Related Activities

As previously described, the activities related to construction of the arch structure are the development of a temporary bypass road (over a period of a few weeks), relocating the current bridge on the bypass road and dismantling this road at the end of the work. In addition, a partial diversion of the stream (one bank at a time) be necessary for installation of the foundation units. This diversion will be carried out by deployment of cofferdams, which will have to meet the requirements of the RADF and special specification 185 − Protection of the Environment.

4 PUBLIC INFORMATION AND CONSULTATION PROCESS

4.1 Information and Consultation Activities Performed

No consultation is scheduled in the context of performance of this project for the following reasons:

- Because it does not change the current and future use of this very low traffic road in any way;
- Because it is limited in time and space (a few weeks);
- And because no Indigenous rights or encampments are impacted by this project.

No other information or consultation measure appears to be necessary since road traffic will be maintained at all times during construction, apart from a short period (12 h maximum) related to relocation of the temporary bridge.

Regarding information for road users, signs warn them they are approaching the construction site. Traffic will be managed throughout the construction period. The permanent signage at the arch's approaches will comply with MFFP standards.

5 DESCRIPTION OF THE MAIN ISSUES AND APPREHENDED IMPACTS OF THE PROJECT ON THE RECEIVING ENVIRONMENT

5.1 Description of the Main Issues of the Project

In the development and construction phase, the environmental issues are:

- Protection of the aquatic environment (authorized period, water management, erosion and sediment transport control, cofferdams).

The human issues are:

- The necessity of ensuring user safety at all times and maintaining the road link at all times, except in case of absolute necessity and for a period that may not exceed twelve hours.

From the originator's point of view, the operational issues are:

- The work schedule related to the different components of the project: design, environmental authorizations, ordering materials and quality control, site mobilization, constraints related to remoteness, contractor's phasing, construction, etc.

During the operating phase, no special issue is anticipated, because the arch's presence will reduce the vulnerability of Road A1 to another breakdown in case of an exceptional flood, while improving user safety, the hydraulic conditions of the stream and the quality of the fish habitat.

5.2 Description of the Apprehended Impacts of the Project on the Receiving Environment

Since the work involves replacing a temporary bridge with a steel arch structure over an existing road, no additional impact is anticipated on the natural and human environments.

Free movement of fish will be ensured at all times during construction, and measures will be put in place to prevent and minimize downstream sediment transport. The work necessary for installation of the foundation units will be performed "in-the-dry" after development of the cofferdams.

Part of the structure's protective riprap will be located in the fish habitat. Overall, the situation will be improved in relation to the initial conditions, i.e. a battery of three culverts under fill. The construction of the arch structure with a 19 m span will result in a fish habitat gain relative to the initial conditions. In

addition, it will allow the free passage of fish at all times, compared to the former battery of culverts, which probably was not designed originally (several years or even a few decades ago) to ensure free passage.

No Indigenous rights or privileges will be infringed upon by construction of the structure in question. Since there are no encampments nearby, no noise nuisance is anticipated. Automobile traffic will only be improved compared to existing conditions.

A number of measures will be included in specification 185 - Protection of the Environment during the work including, among others:

Erosion and sediment transport control

- Delimiting the work area and the stream access points in advance;
- Carrying out the work in minimum flow periods as much as possible;
- Deploying effective measures to limit transport of sediment from the worksite into the aquatic environment, and maintaining them (e.g.: sediment barrier, berms, sediment trap, settling pond, temporary talus stabilization, diverting water toward areas of vegetation). These measures must remain effective during flood periods, heavy rains, and frost periods;
- Diverting upstream runoff before it reaches disturbed ground (e.g. dissipation pit to areas of vegetation);
- Temporarily stabilizing and protecting disturbed ground that presents a risk of eroding and transporting sediment into the aquatic environment using methods adapted to the site, time until site closing, and period of the year;
- Disposing of cut and fill materials outside the HWM. If necessary, containing or stabilizing these materials (e.g. impermeable tarp, sediment barrier) to prevent sediment transport into the aquatic environment;
- When work must be carried out in the water, isolating the work area so that the work can be done "in-the-dry", or limit sediment transport into the aquatic environment;

Machinery movement and waste management

- Ensuring that machinery will be working from the bank and will not cross into the stream. Intervention in the stream itself will be kept to a strict minimum;
- Ensuring that machinery is in good condition before it is used to prevent accidental leaks;
- Not cleaning machinery in or near the stream;

- Refuelling (filling up) vehicles and machinery more than 60 m away from a stream or drainage ditch, and in locations appropriate for the purpose;
- Immediately recovering any contaminant spilled in the environment;
- Permanently having on hand a complete petroleum product recovery kit to deal with small accidental spills, and ensuring that contaminated soil and materials are stored and recovered;
- Providing a place for properly identified watertight containers to hold waste and petroleum products;
- Placing cans or containers with hydrocarbons and other hazardous products in a tank or on a thick tarp large enough to collect any leaks;
- Disposing of waste in accordance with existing regulations;
- Prohibiting the burial of waste and scrap materials on the site;
- Performing a general cleanup of the worksite on completion of construction;
- Not disposing of any debris in the aquatic environment. Any debris accidentally introduced shall be removed as soon as possible.

Temporary structures

- Complying with the authorized period for the work in the water from June 1 to September 15;
- Ensuring sufficient water supply and circulation at all times to maintain fish habitat functions (feeding, fry rearing, spawning) downstream from the construction area. Taking steps needed to prevent impacts upstream and downstream from the work area (e.g. flooding, dewatering, erosion, suspended particulate matter);
- Installing cofferdams conforming to the RADF and the contract documents;
- The water from dewatering of the excavations and the cofferdams must be discharged into a settling pond or an area of vegetation;
- Using temporary bridges or crossing structures that minimize encroachment in fish habitat and ensure free passage of fish;
- Using clean aggregate for the construction of the road and temporary detour, excluding the riding surface and portions of the road situated above the HWM.

Site restoration

- Restoring the stream bed and banks of the aquatic environment impacted by the work (substrate grain size distribution, bed profile, etc.) following site demobilization on all the affected areas (temporary structures, accesses, etc.);
- During dismantling, removing all equipment deployed;
- Limiting riprapping of the littoral to the HWM;
- Restoring ditches damaged by machinery (flow slopes, talus shoulders, etc.).

6 GREENHOUSE GAS EMISSIONS

6.1 Greenhouse Gas Emissions

The presence on the site of mobile equipment used for the construction work will result in greenhouse gas emissions due to combustion of fossil fuels (diesel, gasoline) in the engines of this equipment. The greenhouse gases likely to be emitted are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O).

7 OTHER RELEVANT INFORMATION

It is relevant to point out that one activity in water mentioned in the application for exemption of the initial project will not be carried out, i.e. the removal of fill sediments that were transported downstream from the bridge when the culverts failed. Additional information had also been presented to the MELCC on this subject on August 28, 2018.

Please note that a notice from the *Direction régionale de l'analyse et de l'expertise de l'Abitibi-Témiscamingue et Nord-du-Québec* was issued in December 2018. The MELCC decision, in conjunction with the MFFP, is to the effect that the promoter will not be required to perform this work, given the few positive impacts that eventually could result from the removal of the sediment nearly one year after the initial release of the sediments. The SDBJ thus will not perform any activity downstream from the project site. The MELCC notice email is presented for information in Appendix 2.

8 DECLARATION AND SIGNATURE

8.1 Declaration and Signature

I declare that the documents and information provided in this preliminary information form are accurate to the best of my knowledge.

Any misstatement may result in penalties under the EQA. All the information provided will be an integral part of the application and will be published on the website of the Evaluating Committee (COMEV) or the Kativik Environmental Quality Commission (KEQC) and in the Registre des évaluations environnementales.

Anne-Marie Leclerc, M. Sc., Geographer-Geomorphologist
In charge of execution – Environment, Consortium Norda Stelo/Stantec
March 1st, 2019

Appendix 1

Preliminary Plans (issued on 2019-02-15)

CONSTRUCTION D'UNE STRUCTURE ARCHE AU KM 19,8 DU CHEMIN LA1

Société de développement de la Baie-James

Québec

TABLE DES MATIÈRES

TOTAL DES FEUILLES = 7

Route: CHEMIN LAFORGE 1

Kilomètre	Tronçon	Section
19,8	S/O	S/O

Feuillet cartographique	Latitude	Longitude
S/O	54,064134	-72.507836

Municipalité	Code
GOUVERNEMENT RÉGIONAL D'EEYOU ISTCHEE BAIE-JAMES	99060

Municipalité régionale de comté	Code
HORS MRC	000

Circonscription électorale	Code
UNGAVA	938

Centre de services	Code
S/O	S/O

AAAA-MM-JJ	Statut	Par
2019-02-15	PRÉLIMINAIRE	Philippe Morin OIQ: 5017503

Mandataire — CONSORTIUM

NORDA STELO — Stantec

1032, 3e avenue, Val d'Or, QC, J9P 1T6

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NARA LIMA SAMPAIO, ing
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Technicien(s)
YVON BELLAVANCE, techn.
ÉRIC TREMBLAY, techn.

Sceau

Société de développement de la Baie-James — Québec

Unité administrative: SOCIÉTÉ DE DÉVELOPPEMENT DE LA BAIE JAMES

Titre: LOCALISATION ET DESCRIPTION GÉNÉRALE

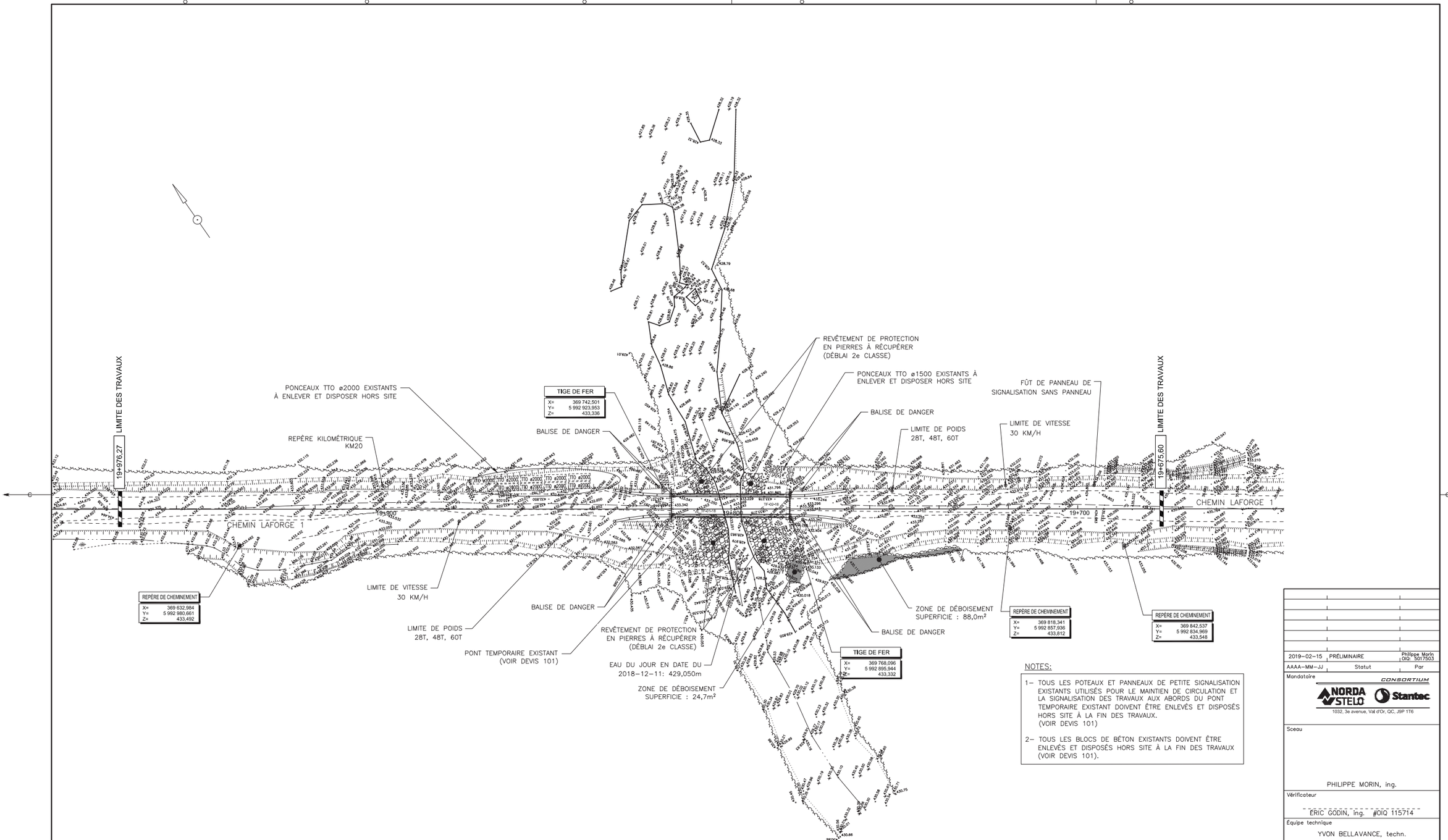
Identification du dossier: SD19-5015-1

Identification du projet:

Numéro de plan: SD19-5015-1 — 1

Identification de regroupement:

FORMAT ISO A1



PLAN

ÉCH. 1:500

NOTES:

1– TOUS LES POTEAUX ET PANNEAUX DE PETITE SIGNALISATION EXISTANTS UTILISÉS POUR LE MAINTIEN DE CIRCULATION ET LA SIGNALISATION DES TRAVAUX AUX ABORDS DU PONT TEMPORAIRE EXISTANT DOIVENT ÊTRE ENLEVÉS ET DISPOSÉS HORS SITE À LA FIN DES TRAVAUX. (VOIR DEVIS 101)

2– TOUS LES BLOCS DE BÉTON EXISTANTS DOIVENT ÊTRE ENLEVÉS ET DISPOSÉS HORS SITE À LA FIN DES TRAVAUX (VOIR DEVIS 101).

AAAA–MM–JJ	Statut	Par
2019–02–15	PRÉLIMINAIRE	Philippe Morin OIQ: 5017503

Mandataire

CONSORTIUM NORDA STELO Stantec

1032, 3e avenue, Val d'Or, QC, J9P 1T6

Sceau

PHILIPPE MORIN, ing.

Vérificateur

ÉRIC GODIN, ing. #OIQ 115714

Équipe technique

YVON BELLAVANCE, techn.

Société de développement de la Baie-James

Québec

Titre

CHEMIN LAFORGE 1
ÉTAT DES LIEUX
ET DÉMOLITION

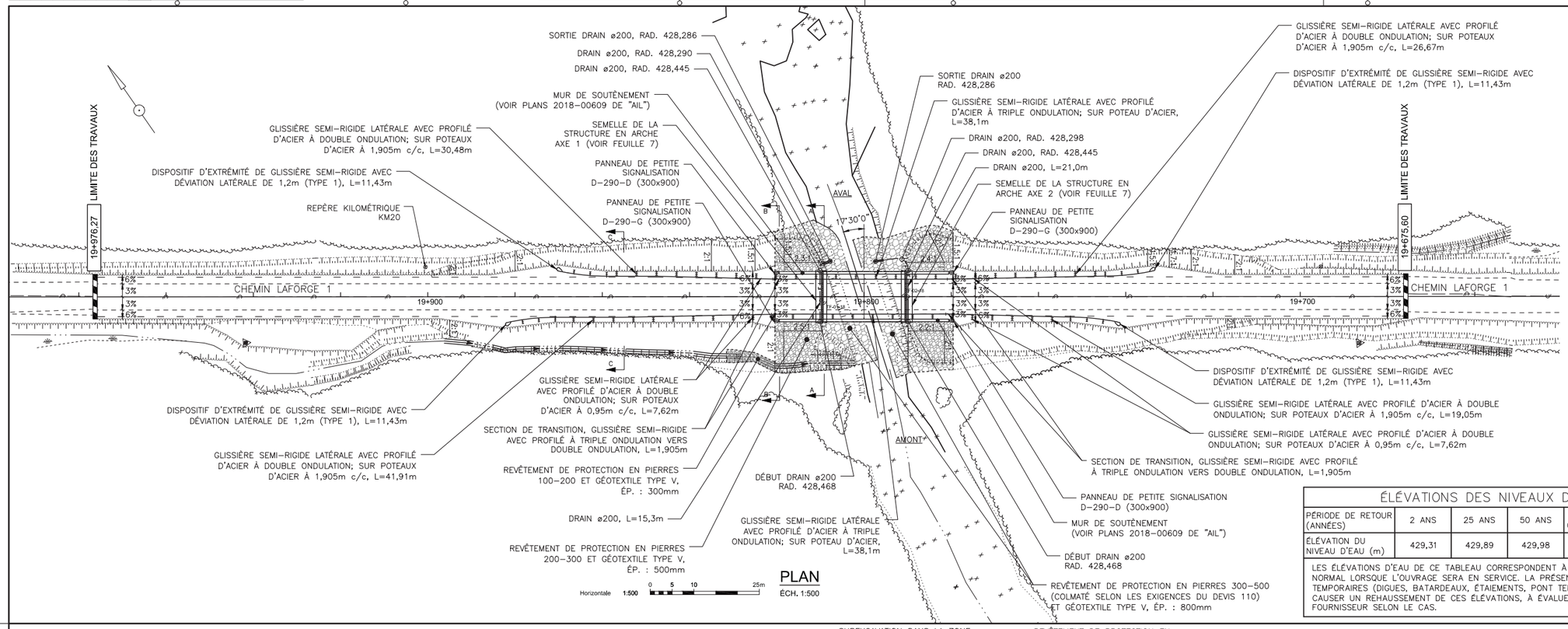
Numéro de plan

SD19–5015–1

2

Identification de regroupement

FORMAT ISO A1

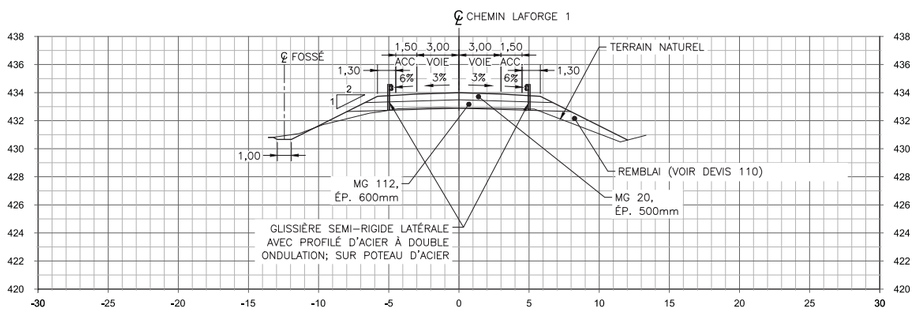


PLAN

ÉCH. 1:500

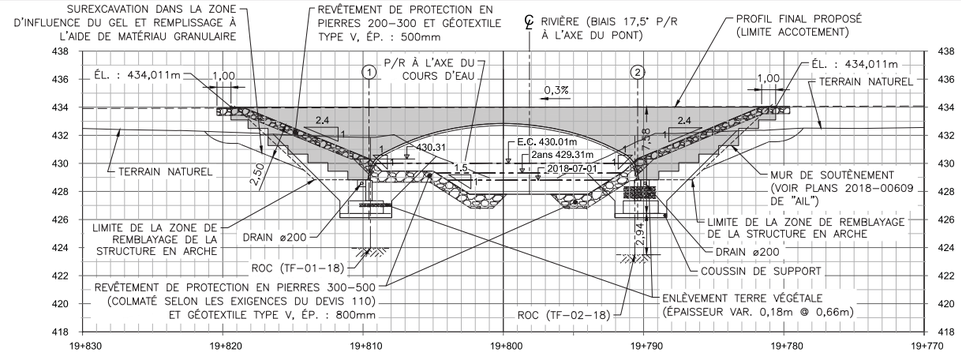
ÉLÉVATIONS DES NIVEAUX D'EAU					
PÉRIODE DE RETOUR (ANNÉES)	2 ANS	25 ANS	50 ANS	75 ANS CONCEPTION	100 ANS
ÉLÉVATION DU NIVEAU D'EAU (m)	429,31	429,89	429,98	430,01	430,06

LES ÉLÉVATIONS D'EAU DE CE TABLEAU CORRESPONDENT À L'ÉCOULEMENT NORMAL LORSQUE L'OUVRAGE SERA EN SERVICE. LA PRÉSENCE D'OUVRAGES TEMPORAIRES (DIGUES, BATARDEAUX, ÉTAIEMENTS, PONT TEMPORAIRE, ETC.) PEUT CAUSER UN REHAUSSEMENT DE CES ÉLÉVATIONS, À ÉVALUER PAR LE FOURNISSEUR SELON LE CAS.



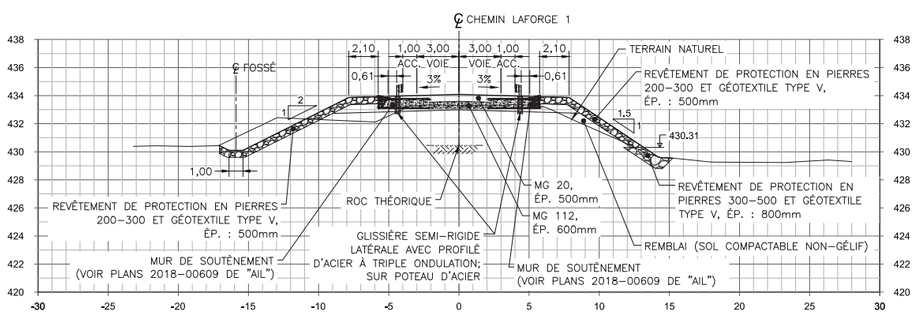
COUPE C-C

ÉCH. 1:200



ÉLÉVATION - AMONT

ÉCH. 1:200



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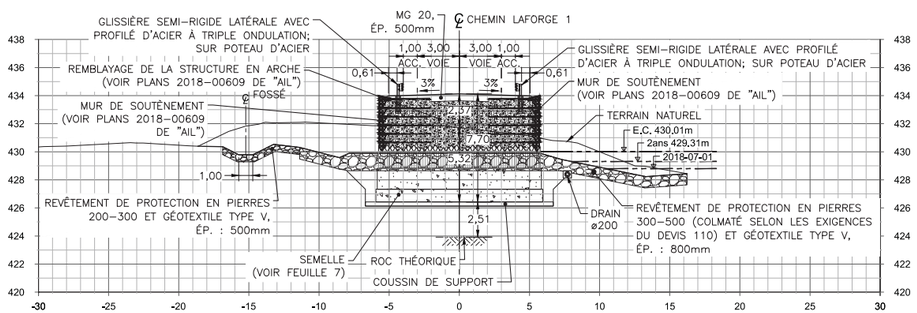

COUPE A-A

ÉCH. 1:200

2019-02-15	PRÉLIMINAIRE	Philippe Morin OIQ: 5017503
AAAA-MM-JJ	Statut	Par

Mandataire

CONSORTIUM NORDA STELO / Stantec

1032, 3e avenue, Val d'Or, QC, J9P 1T6

Sceau

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Équipe technique

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Société de développement de la Baie-James

Québec

Titre

CHEMIN LAFORGE 1
PLAN, COUPES ET ÉLÉVATION AMONT

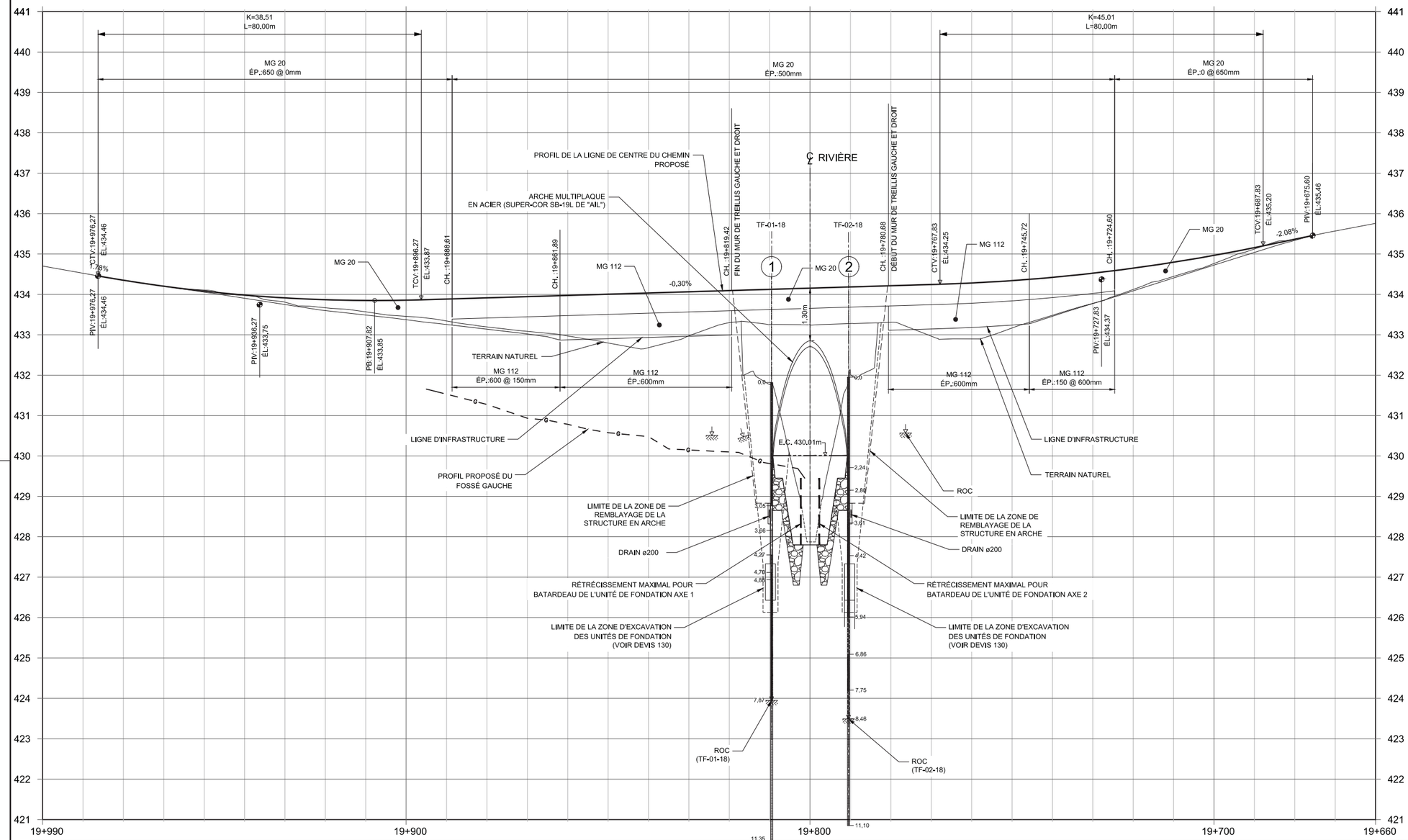
Numéro de plan

SD19-5015-1

3

Identification de regroupement

FORMAT ISO A1



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		434.35	434.20	434.08	433.98	433.91	433.87	433.85	433.86	433.88	433.91	433.94	433.97	434.00	434.03	434.06	434.09	434.12	434.15	434.18	434.21	434.24	434.28	434.34	434.42	434.52	434.65	434.80	434.97	435.16	435.36			LIGNE D'OPÉRATION

Horizontale 1:500 — 0 5 10 25m
Verticale 1:50 — 0 0,5 1 2,5m

2019-02-15	PRÉLIMINAIRE	Philippe Morin OIQ: 5017503
AAAA-MM-JJ	Statut	Par

Mandataire

CONSORTIUM

NORDA STELO — Stantec

1032, 3e avenue, Val d'Or, QC, J9P 1T6

Sceau

PHILIPPE MORIN, ing.

Vérificateur

ERIC GODIN, ing. #OIQ 115714

Équipe technique

YVON BELLAVANCE, techn.

Société
de développement
de la Baie-James

Québec

Titre

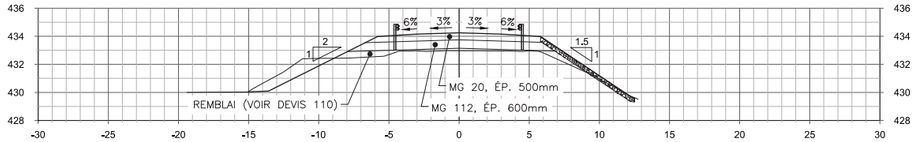
CHEMIN LAFORGE 1
PROFIL

Numéro de plan
SD19-5015-1

4

Identification de regroupement

FORMAT ISO A1



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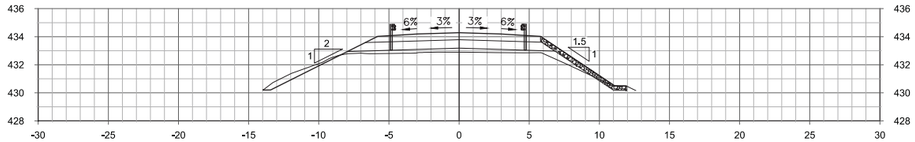

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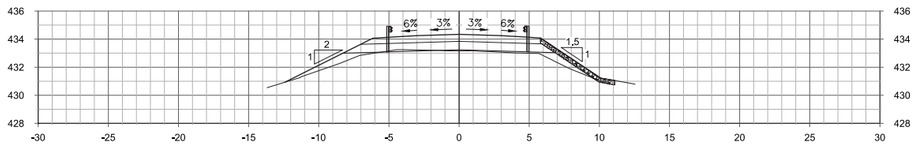

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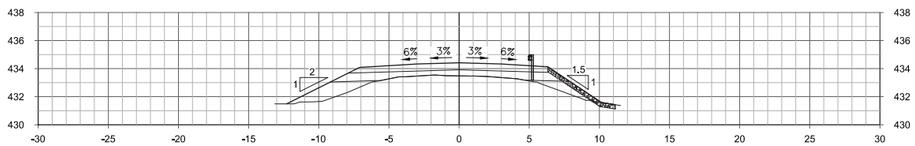

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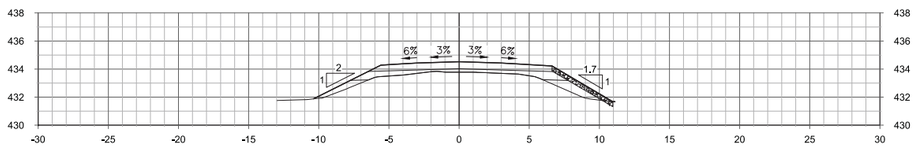

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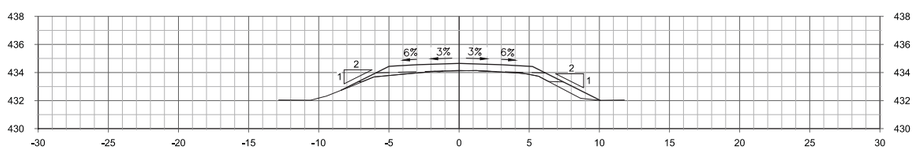

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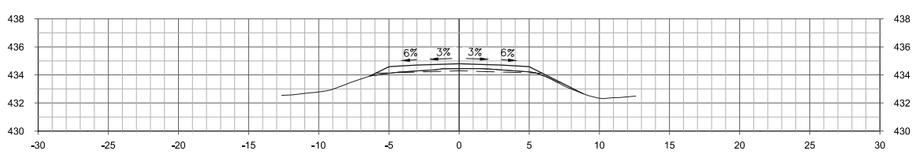

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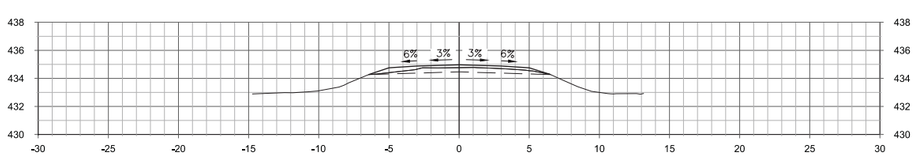

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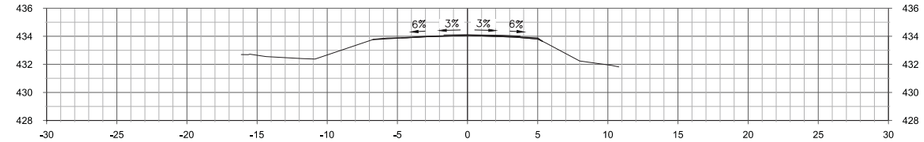

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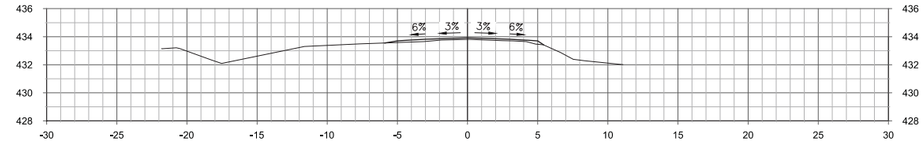

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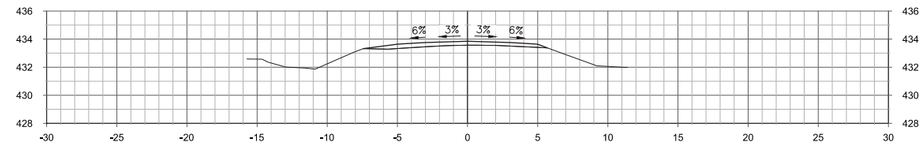

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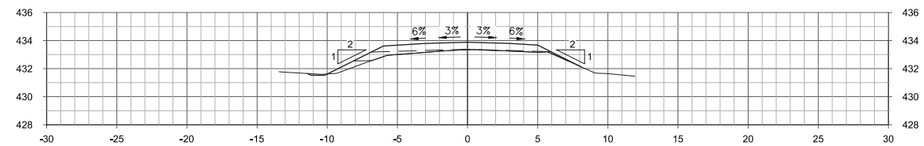

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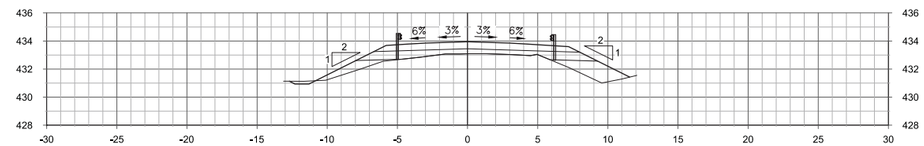

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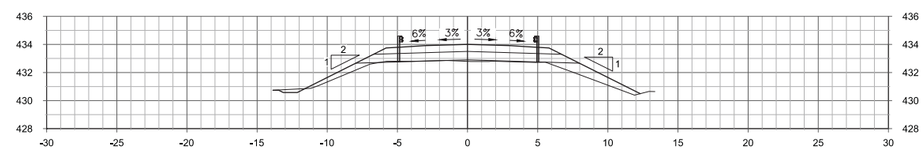

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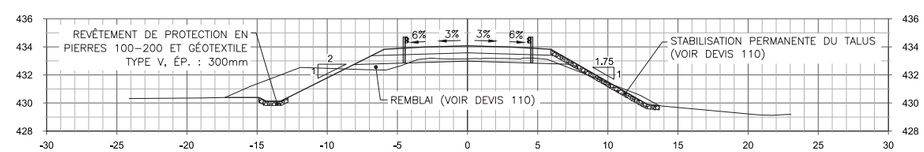

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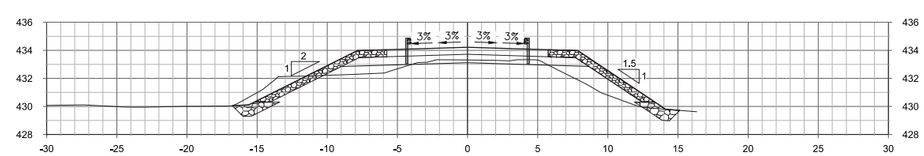

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2019-02-15	PRÉLIMINAIRE	Philippe Morin OIQ: 5017503
AAAA-MM-JJ	Statut	Par

Mandataire

CONSORTIUM NORDA STELO Stantec

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Sceau

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Vérificateur

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Équipe technique

YVON BELLAVANCE, techn.

Société de développement de la Baie-James

Québec

Titre

SECTIONS

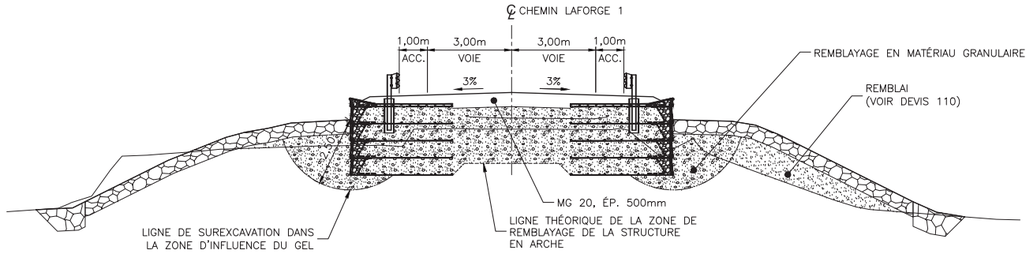
Numéro de plan

SD19-5015-1

5

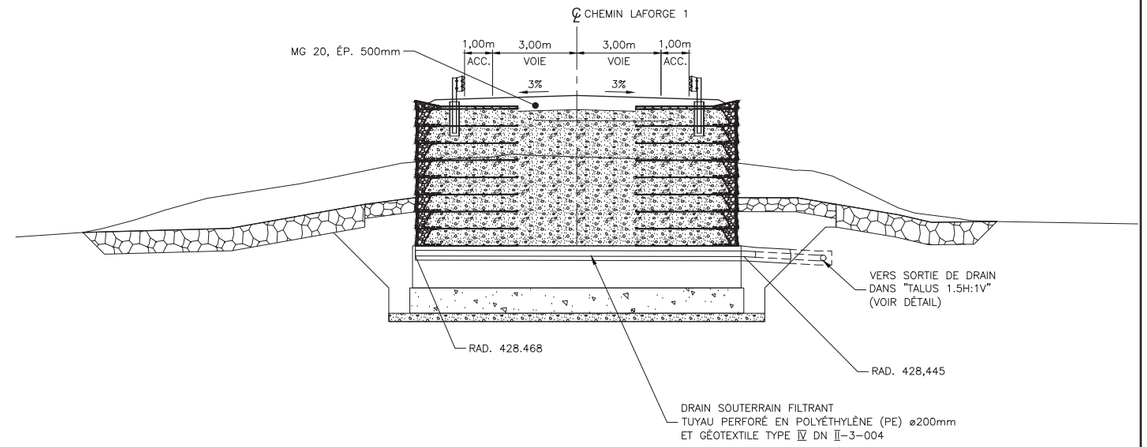
Identification de regroupement

FORMAT ISO A1



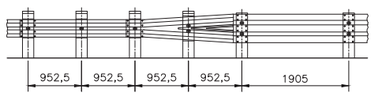
SECTION TYPIQUE
SUREXCAVATION DES MURS DE SOUTÈNEMENT

ÉCH. 1:100



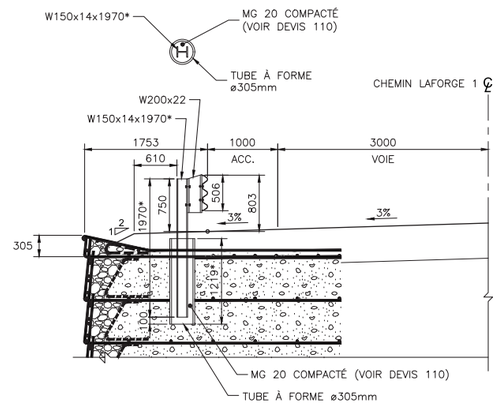
SECTION - DRAIN MUR DE SOUTÈNEMENT

ÉCH. 1:100



GSR LATÉRALE TRANSITION TRIPLE À DOUBLE ONDULATION

ÉCH. 1:50

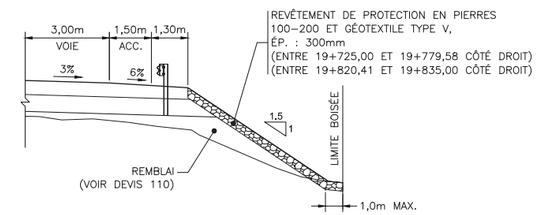


* LES POTEAUX LOCALISÉS AU CENTRE DE LA STRUCTURE EN ARCHE SONT CONFORMES AU DÉTAIL DE LA FEUILLE 6 ET COMPORTENT UNE DALLE D'ANCRAGE DE 1530mm X 1530mm AINSI QU'UNE PLAQUE D'ACIER SOUDÉE À LA BASE DES POTEAUX POUR PERMETTRE L'ANCRAGE. L'UTILISATION D'UN POTEAU W150x14 DE 1220mm DE LONGUEUR EST REQUISE.

LES POTEAUX (4) ADJACENTS AUX DEUX POTEAUX COMPORTANT UNE DALLE D'ANCRAGE ONT UNE LONGUEUR DE 1830mm ET LA LONGUEUR DE L'ENCASTREMENT DANS LE SOL EST DE 1080mm.

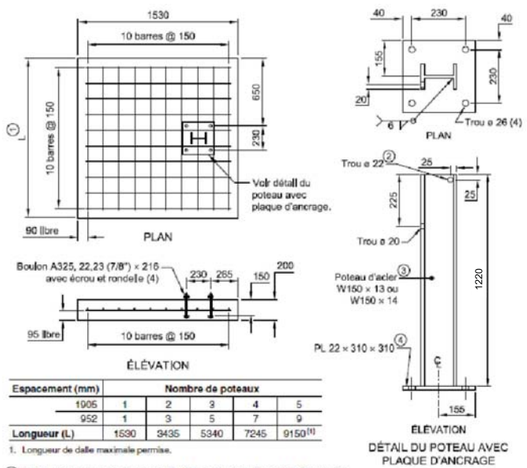
COUPE - GSR AVEC LISSE À TRIPLE ONDULATION

ÉCH. 1:40



SECTION TYPIQUE - TALUS 1,5H : 1 V

ÉCH. 1:100



Espacement (mm)	Nombre de poteaux				
1905	1	2	3	4	5
952	1	3	5	7	9
Longueur (L)	1590	3435	5340	7245	9150 [1]

1. Longueur de dalle maximale permise.

(1) La longueur de la dalle d'ancrage (L) varie en fonction du nombre de poteaux ne pouvant pas être installés à leur pleine longueur et de leur espacement.
(2) Ce trou est requis aux fins de la galvanisation de la pièce.
(3) Limite élastique minimale 350 MPa.
(4) Limite élastique minimale 260 MPa.

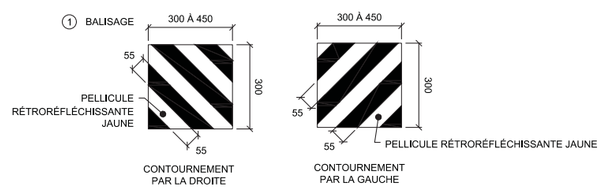
Notes :
- le diamètre des barres d'armature est 15M;
- toutes les pièces métalliques doivent être galvanisées;
- les cotes sont en millimètres.

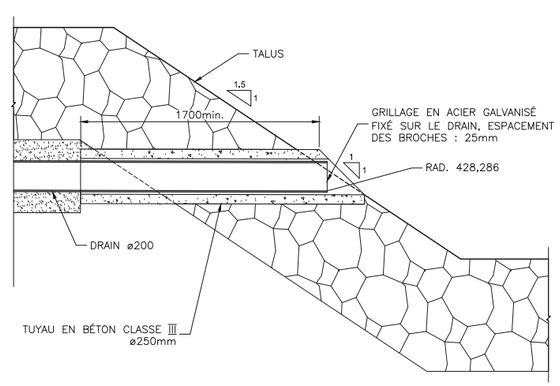
MATERIAUX — NORMES APPLICABLES

Aciers de construction, type W	Tome VII, norme 6101	Boulons, tiges d'ancrage, écrous et rondelles	Tome VII, norme 6201
Armature galvanisée, type W, limite élastique minimale 400 MPa	Tome VII, norme 5101	Galvanisation	ASTM A123/A123M
Béton, types IV, V, V-P et XIV-C	Tome VII, norme 3101		

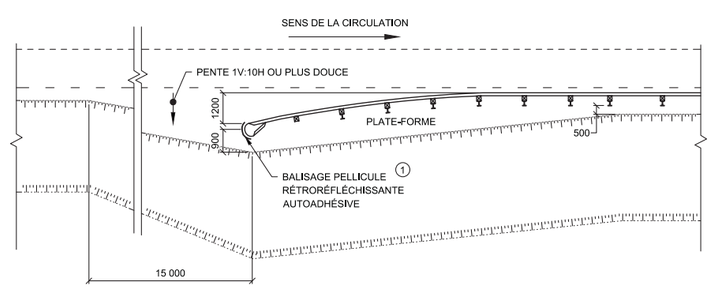
DÉTAIL DALLE D'ANCRAGE ET POTEAU
(DN-VIII-3-GSR 028D MODIFIÉ)

ÉCH. : AUCUNE





SORTIE DRAIN



AMÉNAGEMENT DE LA PLATE-FORME DES DISPOSITIFS D'EXTRÉMITÉ (TYPE 1)

ÉCH. 1:100

2019-02-15	PRÉLIMINAIRE	Philippe Morin OIQ: 5017503
AAAA-MM-JJ	Statut	Par

Mandataire
CONSORTIUM NORDA STELO / Stantec
1032, 3e avenue, Val d'Or, QC, J9P 1T6

Sceau

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Vérificateur
ÉRIC GODIN, ing. #OIQ 115714

Équipe technique
YVON BELLAVANCE, techn.

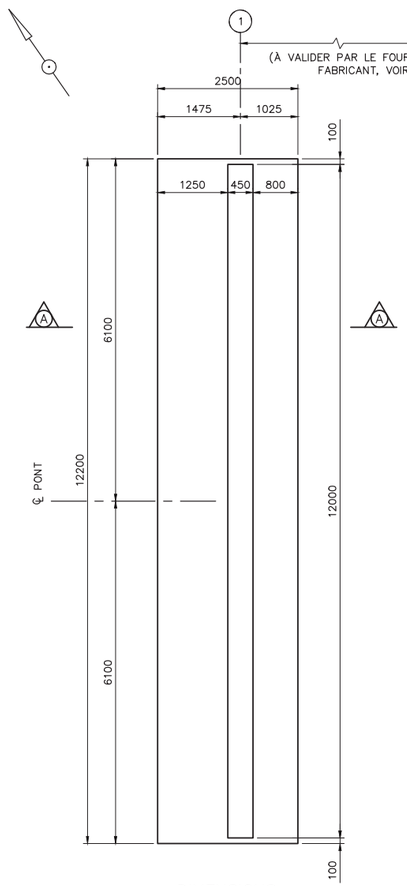
Société de développement de la Baie-James
Québec

Titre
DÉTAILS

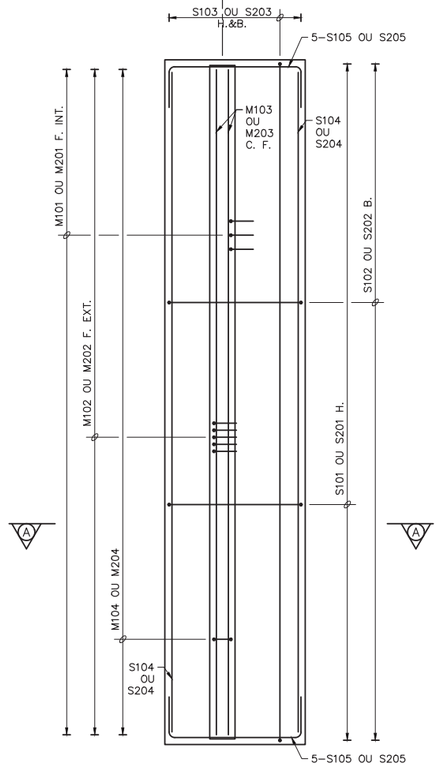
Numéro de plan
SD19-5015-1
6

Identification de regroupement

FORMAT ISO A1



DIMENSIONS



ARMATURE

VUE EN PLAN

ÉCH. 1:50

NOTES DU CONCEPTEUR :

1-LA CONCEPTION DES SEMELLES A ÉTÉ RÉALISÉE À PARTIR DES CHARGES DE CONCEPTION (NON-PONDÉRÉES) FOURNIES PAR "AIL" SOIT:

REMBLAI (KN/m)		CHARGES VIVES (KN/m)	
VERT.	HORIZ.	VERT.	HORIZ.
630	210	140	60

TOUTE MODIFICATION DE CONCEPTION DE "AIL" DOIT ÊTRE COMMUNIQUÉE AUX CONCEPTEURS DES SEMELLES POUR VALIDATION.

2-LES DIMENSIONS DES SEMELLES ONT ÉTÉ ÉTABLIES EN FONCTION DE L'ÉTUDE GÉOTECHNIQUE " RECONSTRUCTION DU PONT LA-1 BAIE-JAMES" PRÉPARÉE PAR ENGLOBE (SEPTEMBRE 2018).

3-LA CONCEPTION DES SEMELLES CONSIDÈRE UNE CAPACITÉ PORTANTE À L'ÉLUT DE 700kPA DU SOL EXISTANT POUR UN TASSEMENT DIFFÉRENTIEL MAXIMAL DE 50mm.

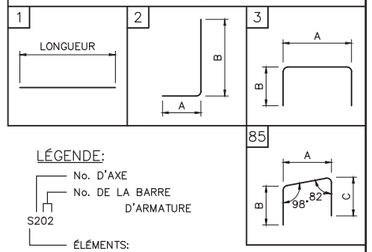
4-ACIER D'ARMATURE NUANCE 400w, NORME G30.18-M.

5-BÉTON TYPE V-S, 35MPa (LE BÉTON UTILISÉ DOIT ÊTRE CONFORME À LA NORME 3101 DU MTMDET).

BORDEREAU D'ARMATURE

Identification	TYPE	A	B	C	Longueur	NO	Acier	Nombre	Masse
S101	3	2350	700		3750	20	n	50	**442**
S102	3	2350	700		3750	25	n	50	**736**
S103	3	12050	700		13450	15	n	26	**549**
S104	1	12050			12050	15	n	6	**114**
S105	3	2350	440		3230	15	n	10	**51**
M101	2	250	2180		2430	15	n	49	**187**
M102	2	400	2140		2540	25	n	98	**977**
M103	1	11850			11850	15	n	14	**260**
M104	85	300	440	440	1180	15	n	49	**91**
S201	3	2350	700		3750	20	n	50	**442**
S202	3	2350	700		3750	25	n	50	**736**
S203	3	12050	700		13450	15	n	26	**549**
S204	1	12050			12050	15	n	6	**114**
S205	3	2350	440		3230	15	n	10	**51**
M201	2	250	2180		2430	15	n	49	**187**
M202	2	400	2140		2540	25	n	98	**977**
M203	1	11850			11850	15	n	14	**260**
M204	85	300	440	440	1180	15	n	49	**91**

TYPE



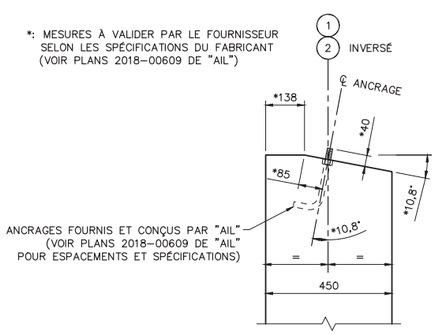
LÉGENDE:

S202
- No. D'AXE
- No. DE LA BARRE D'ARMATURE

ÉLÉMENTS:
S = SEMELLE
M = MUR

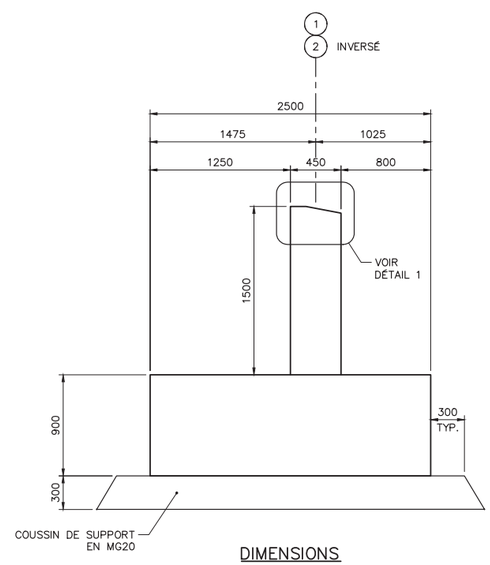
C. F. = CHAQUE FACE
F. EXT. = FACE EXTÉRIEURE
F. INT. = FACE INTÉRIEURE
H. = HAUT
B. = BAS
H. & B. = HAUT ET BAS

*: MESURES À VALIDER PAR LE FOURNISSEUR SELON LES SPÉCIFICATIONS DU FABRICANT (VOIR PLANS 2018-00609 DE "AIL")

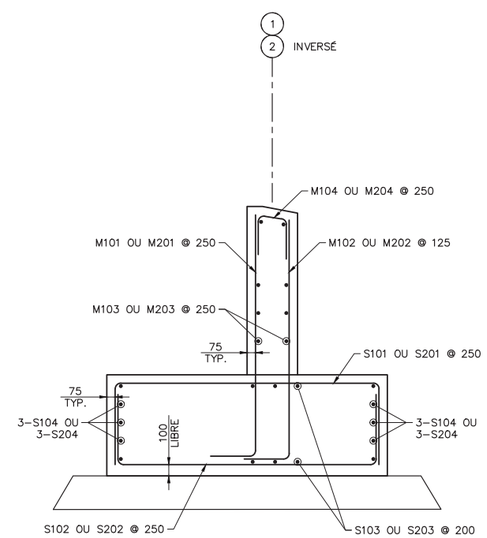


DÉTAIL 1

ÉCH. 1:10



DIMENSIONS



ARMATURE

COUPE A-A

ÉCH. 1:25

2019-02-15	PRÉLIMINAIRE	NARA SAMPAIO OIQ: 146255
AAAA-MM-JJ	Statut	Par

Mandataire

CONSORTIUM NORDA STELO Stantec

1032, 3e avenue, Val d'Or, QC, J9P 1T6

Sceau

NARA SAMPAIO, ing.

Vérificateur

SYLVAIN BÉLAND, ing. #OIQ 122578

Équipe technique

ÉRIC TREMBLAY, techn.

Société de développement de la Baie-James

Québec

Titre

DÉTAILS SEMELLES
DIMENSIONS ET ARMATURE

Numéro de plan

SD19-5015-1

7

Identification de regroupement

FORMAT ISO A1

Appendix 2

MELCC Notice Concerning Removal of Fill Materials

Downstream from the Site of the Projected Arch

Anne-Marie Leclerc

De: Isabelle.Dorion@environnement.gouv.qc.ca
Envoyé: 14 décembre 2018 15:54
À: Anne-Marie Leclerc
Cc: Émilie Tremblay; Julien.Second@mffp.gouv.qc.ca; Georges.Dion@mffp.gouv.qc.ca
Objet: RE: Société de développement de la Baie-James: demande d'avis - assujettissement à une autorisation art. 22 LQE

Bonjour Madame Leclerc,

Ce courriel fait suite à votre demande d'avis règlementaire du 3 octobre dernier, transmise par courriel, concernant l'assujettissement des travaux projetés par la SDBJ, volet récupération des sédiments dans le cours d'eau en aval de la traverse au km 19,8 du chemin LA1 (coordonnées centrales approximatives suivantes : 5 993 522 m N; 663 099 m E (NAD83, UTM zone 18)). Il est à rappeler que le volet de votre demande liée au retrait des ponceaux a déjà été réalisé sur glace.

Il importe tout d'abord de souligner que l'entraînement de sédiments dans un cours d'eau, même après une situation qualifiée d'«exceptionnelle», peut correspondre à un apport de contaminant en milieu aquatique, visé à l'article 20 de la Loi sur la qualité de l'environnement (LQE):

> *Nul ne peut rejeter un contaminant dans l'environnement ou permettre un tel rejet au-delà de la quantité ou de la concentration déterminée conformément à la présente loi.*
>
> *La même prohibition s'applique au rejet de tout contaminant dont la présence dans l'environnement est prohibée par règlement ou est susceptible de porter atteinte à la vie, à la santé, à la sécurité, au bien-être ou au confort de l'être humain, de causer du dommage ou de porter autrement préjudice à la qualité de l'environnement, aux écosystèmes, aux espèces vivantes ou aux biens.*

Dans le cas actuel du km 19,8 du chemin LA1, le secteur Faune du MFFP a été consulté et les éléments suivants ont été analysés : type de milieu aquatique touché, potentiel d'habitat aquatique, type de sédiments entraînés, la période où l'entraînement a eu lieu, etc.. Ainsi, à la lumière de ces éléments, il s'avère que les impacts qui seraient engendrés par la réalisation des travaux de récupération des sédiments en cours d'eau, même avec mesures de mitigation appropriées, seraient plus dommageables que les impacts engendrés par l'entraînement des sédiments. Donc, pour le cas actuellement visé par votre demande, le MELCC n'exigera pas le retrait des sédiments.

Toutefois, il s'avère nécessaire de préciser qu'en tout temps, lors de tout projet, les mesures de prévention doivent être appliquées de façon rigoureuse pour éviter que des sédiments ne soient entraînés en milieux aquatiques. De plus, en ce qui a trait aux infrastructures de traverses de cours d'eau qui ont été aménagées antérieurement, leur état doit être surveillé régulièrement afin de prévenir la répétition d'un tel événement. En terminant, il est à rappeler l'article 21 de la LQE :

> *Quiconque est responsable d'un rejet accidentel dans l'environnement d'un contaminant visé à l'article 20 doit, sans délai, faire cesser le rejet et aviser le ministre.*

Urgence-Environnement doit donc être contacté (1-866-694-5454) sans délai dans un tel cas.

Il est à noter que le présent avis et sa conclusion ne s'appliquent qu'au cas précis visé par votre demande et ne peut être appliqué à un cas autre.

Espérant que ceci répond adéquatement à votre questionnement. N'hésitez pas à me contacter pour toute information complémentaire.

Salutations.

Isabelle Dorion, biologiste
Service municipal, hydrique et milieu naturel
Ministère de l'Environnement et de la Lutte contre les changements climatiques
Direction régionale de l'analyse et de l'expertise de l'Abitibi-Témiscamingue et Nord-du-Québec
180, boul. Rideau, local 1.04, Rouyn-Noranda (Québec) J9X 1N9 Tél. : (819) 763-3333 poste 225

De : Dorion, Isabelle
Envoyé : 20 novembre 2018 14:41
À : 'Anne-Marie Leclerc' <Anne-Marie.Leclerc@norda.com>
Cc : Émilie Tremblay <Emilie.Tremblay@norda.com>
Objet : RE: Société de développement de la Baie-James: demande d'avis - assujettissement à une autorisation art. 22 LQE

Bonjour madame Leclerc,

Pour faire suite à votre demande concernant les deux projets décrits dans le courriel ci-dessous, nous devons vous informer que nous ne sommes pas en mesure actuellement d'y donner suite. En fait, nous devons préalablement réaliser une demande d'avis auprès du ministère des Forêts, de la Faune et des Parcs, secteur Faune. Le délai requis a été estimé à environ trois semaines.

Nous vous reviendrons donc dès que possible avec une réponse claire. Nous sommes désolés de ce délai, qui s'avère toutefois nécessaire pour le traitement adéquat de votre demande.

N'hésitez pas à me contacter pour toute information complémentaire.

Salutations.

Isabelle Dorion, biologiste
Service municipal, hydrique et milieu naturel
Ministère de l'Environnement et de la Lutte contre les changements climatiques
Direction régionale de l'analyse et de l'expertise de l'Abitibi-Témiscamingue et Nord-du-Québec
180, boul. Rideau, local 1.04, Rouyn-Noranda (Québec) J9X 1N9 Tél. : (819) 763-3333 poste 225

De : Anne-Marie Leclerc [mailto:Anne-Marie.Leclerc@norda.com]
Envoyé : 3 octobre 2018 15:24
À : Dorion, Isabelle <Isabelle.Dorion@mddelcc.gouv.qc.ca>
Cc : Émilie Tremblay <Emilie.Tremblay@norda.com>
Objet : Société de développement de la Baie-James: demande d'avis - assujettissement à une autorisation art. 22 LQE

Bonjour madame Dorion,

Le présent courriel constitue une demande d'avis réglementaire auprès MDDELCC quant à la nécessité d'obtenir une autorisation en vertu de l'article 22 de la *Loi sur la qualité de l'environnement* (LQE) pour les travaux décrits ci-après.

Le promoteur est la Société de développement de la Baie-James (ce qui justifie que je me tourne vers vous concernant cette demande d'avis).

Pour vous mettre en contexte, à la fin du printemps 2018, une crue exceptionnelle a fait céder une batterie de 3 ponceaux qui était présente dans le cours d'eau sous la route au km 19,8 du chemin LA1 (voir la localisation du site en pièce jointe; coordonnées centrales approximatives suivantes : 5 993 522 m N; 663 099 m E (NAD83, UTM zone 18)).

Dans le cadre du projet de reconstruction du site de traversée (arche structurale), il est prévu aller retirer du cours d'eau les ponceaux emportés par la crue. Il est également prévu procéder à la récupération des sédiments du remblai de l'ancienne batterie de ponceaux qui ont été emportés par le courant un peu plus loin en aval du cours d'eau.

La présente demande vise donc, de manière individuelle, les deux activités suivantes :

1. **Récupération des ponceaux sur le lit du cours d'eau et les berges;**
2. **Récupération des sédiments sur le lit du cours d'eau.**

Pour vous aider à analyser cette demande, les figures 1, 2 et 3 vous sont présentées à la fin de ce courriel. De plus, voici les détails des méthodes de travail pour chacune des activités :

1. <u>Récupération des ponceaux (méthode préliminaire)</u>

Les travaux seront effectués en période d'étiage (en juin 2019) afin de limiter le contact de la machinerie avec l'eau. Un accès en rive aval du côté nord, fait directement à partir du chemin existant (voir figure 3), permettra à une excavatrice hydraulique de rouler sur la berge et d'aller se placer sur l'accumulation de sédiments en aval, à même le lit du cours d'eau exondé en étiage. Des câbles seront placés de part et d'autres des ponceaux afin de pouvoir les tirer à l'aide de l'excavatrice. Celle-ci transportera les ponceaux jusqu'au chemin LA1 pour être mis à bord de camions de transport et disposés hors site. Les berges perturbées seront stabilisées.

2. <u>Récupération des sédiments (méthode préliminaire)</u>
    1. Les travaux seront effectués en période d'étiage pour limiter la mise en suspension des sédiments et le contact de la machinerie avec l'eau;
    2. La machinerie utilisée sera une excavatrice hydraulique sur chenilles;
    3. Du côté nord du cours d'eau, les étapes de récupération seront les suivantes :
        a. Passage sur le matériel déplacé du chemin (tracé vert à la figure 1);
        b. Excavation du sable et du gravier sous le tracé, en circulant avec l'excavatrice (de l'aval vers l'amont);
        c. Déplacement du matériel vers le chemin LA1 à l'aide de l'excavatrice;
        d. Stabilisation des berges par enrochement (en bleu à la figure 1).
    4. Du côté sud du cours d'eau, les étapes de récupération des sédiments seront les suivantes :
        a. Utilisation d'un chemin sans mise en forme pour accéder à la deuxième zone de récupération avec l'excavatrice (tracé en noir à la figure 1);
        b. Excavation par-dessus les berges pour préserver celles-ci;
        c. Installation de gros blocs dans le lit du cours d'eau pour limiter le contact de la machinerie avec l'eau.

Nous demandons donc votre avis sur la nécessité d'obtenir une autorisation en vertu de l'article 22 de la LQE pour l'une ou l'autre, ou les deux, activités visées.

NOTE : La construction de l'arche structurale dans l'axe du chemin LA1 a déjà reçu l'approbation de tous les ministères concernés (MDDELCC-Direction des projets nordiques, avis du MPO et permis d'intervention du MFFP).

N'hésitez pas à communiquer avec nous pour toutes questions supplémentaires concernant l'analyse de cette demande.
Merci de votre attention et bon retour de vacances,

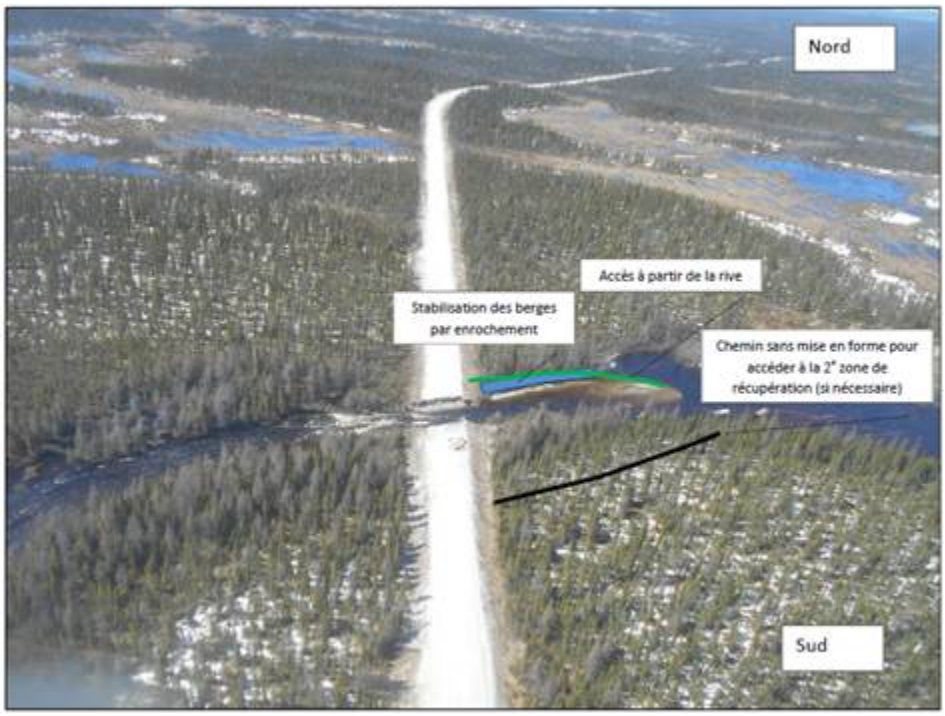


Figure 1. Aires de circulation de la machinerie et accès en rive.

Figure 2. Zone d'excavation du matériel (vue depuis le chemin LA1).

Figure 3. Zone d'excavation du matériel (vue depuis l'aval).

Anne-Marie Leclerc, **M.Sc., géographe-géomorphologue**
Responsable de projets
Acceptabilité sociale et Environnement

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