CONESTOGA-ROVERS & ASSOCIATES

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Environmental Impact Assessment Registration

Groundwater Exploration Program
Village of Charlo, New Brunswick

Prepared for: Village of Charlo

Conestoga-Rovers & Associates
466 Hodgson Road
Fredericton, New Brunswick E3C 2G5

March 2015 • 11102209 • Report No. 1

Partners in Sustainability

CONESTOGA-ROVERS & ASSOCIATES

466 Hodgson Road
Fredericton, New Brunswick, E3C 2G5
Telephone: (506) 458-1248 Fax: (506) 462-7646
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March 26, 2015 Reference No. 11102209

Mr. Paul Vanderlan, Director
Sustainable Development, Planning & Impact Evaluation Branch
New Brunswick Department of Environment and Local Government
20 McGloin Street, P.O. Box 6000
Fredericton, New Brunswick E3B 5H1

Dear Mr. Vanderlan:

Re: Water Supply Source Assessment Environmental Impact Assessment Registration
Village of Charlo, NB

We are pleased to present a copy of the Registration Document for the above noted project. This document is being submitted on behalf of the Village of Charlo, to the New Brunswick Department of Environment and Local Government, for review as part of the initial application for a water supply source assessment.

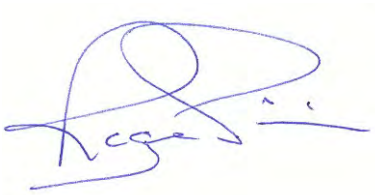
Conestoga-Rovers & Associates (CRA) has been retained by Boisonnault McGraw, on behalf of the Village of Charlo, to complete a water supply source assessment for the possible development of a back-up water supply for the municipality. The work is required to replace their current back-up water well, which is currently located under the Charlo Dam Road.

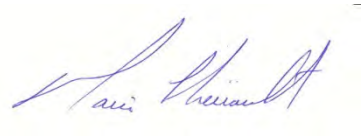
It is understood that the EIA Regulation requires that all waterworks with a capacity greater than 50 m^3/day be registered for an environmental impact assessment with your Department. The proposed undertaking consists of the construction of back-up water well, with a pumping capacity of 545 m^3/day (83 igpm) to 1,635 m^3/day (250 igpm).

There are no significant environmental impacts predicted from the construction, operation and maintenance of this undertaking. We look forward to working with your staff in reviewing this application and securing the necessary approvals. If you have any questions, do not hesitate to contact the undersigned at 506-458-1248.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES





Roger Poirier, P.Eng. Mario Theriault, Ctech.

RP/ad (1)
Encl.

cc: André Boisonnault
Johanne McIntyre Levesque

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List of Figures
(Following Text)

List of Attachments

Section 1.0 The Proponent

1.1 Name of the Proponent

Village of Charlo, New Brunswick

1.2 Address of Proponent

Village of Charlo
614 Chaleur Street
Charlo, NB E8E 2G6

1.3 Chief Executive Officer

Johanne McIntyre Levesque
Administrator/Clerk, Village of Charlo NB
Tel: 506-684-7850
Fax: 506-684-7855
jleves@villagecharlo.com

1.4 Principal Contact Person for Purposes of Environmental Impact Assessment

Roger Poirier, P.Eng.
Conestoga Rovers & Associates
466 Hodgson Road
Fredericton, NB E3C 2G5
Tel: 506-458-1248
Fax: 506-462-7646
rpoirier@craworld.com

1.5 Property Ownership

PID #50258771
Charlo Regional Airport Authority Inc.

The proposed drilling target area is located within the Charlo Airport property.

Section 2.0 The Undertaking

2.1 Introduction

This document is for work related for the completion of a Water Supply Source Assessment (WSSA) for the Village of Charlo, NB. A copy of the WSSA application is presented as Attachment A.

2.2 Name of the Undertaking

Water supply source assessment for the Village of Charlo, NB.

2.3 Project Overview

Complete a water supply source assessment for the possible development of a back-up water supply for the municipality. The proposed back-up well would be located approximately 80 metres east of the current back-up well and within Zone A of the wellfield protection area for the Charlo wellfield. The work is desired to replace their current back-up water well, which is currently located under the Charlo Dam Road. Recent issues with the equipment in the well prompted the municipality to look for a possible alternative back-up water supply.

The proponent would like to undertake the proposed testing work as soon as possible following approval of the undertaking, as they currently have no operational back-up water capabilities for the municipality.

2.4 Purpose/Rational/Need for the Undertaking

The current back-up water well for the municipality is located under the Charlo Dam Road. This makes accessing the well for maintenance difficult, and also can lead to contamination of the water supply from road traffic and maintenance activities. Recent issues with the equipment in the well prompted the municipality to look for a possible alternative back-up water supply.

The purpose for the undertaking is to provide the Village of Charlo with a replacement back-up water supply. The back-up supply is intended to provide mechanical duplication with the existing municipal well, and would extract water from the same aquifer as the municipal well. This well would not operate at the same time as the current municipal well, therefore well interference is not a concern.

The project details are presented in Item 6 of the attached WSSA application. In summary, one 150 mm diameter well will be constructed and preliminary testing completed. If the test results are positive, a 200 or 250 mm diameter production well would be constructed and pump tested.

Once the well is successfully constructed and tested, additional information pertaining to the connection to the water supply system will be provided to your department for evaluation prior to undertaking the construction activities.

2.5 Project Location

The proposed back-up well drill target is located at the Charlo Airport on property PID #50258771. The drill target is approximately 60 metres to the southeast of the existing groundwater production well (Figures 1 and 2). The coordinates for the target area are 47° 59’ 15.0” north, 66° 20’ 09.9” west.

2.6 Sitting Considerations

Previous drilling in this area identified a significant gravel aquifer. In addition, the well would be located close to existing water storage and distribution infrastructure, thereby minimizing cost and potential impacts of connecting the well to the water supply system. This location was selected in consultation with representatives of the Village of Charlo and Boissonault McGraw.

Watercourses or wetlands have not been identified within 60 metres of the proposed drill target area. Details on the location of nearby watercourses and wetlands are provided in Item 9 of the attached WSSA application. The wetland and watercourses are also identified on Figures 1 and 2.

2.7 Physical Components of the Project

The drill target is located approximately 60 metres to the southeast of the existing groundwater production well (Figure 2). The location of the existing production well and storage tank are identified on Figure 2.

The undertaking pertains to the construction and testing of wells in the study area. Once the wells have been developed, additional information pertaining to related infrastructure requirements (pipeline connections, pump house construction, etc.) will be provided to your department prior to undertaking the work.

It is not expected that the undertaking will require work within 30 metres of a watercourse or wetland. Should work be required within this 30 metre buffer, a watercourse alteration application will be submitted prior to undertaking this work.

There will be minimal increases in vehicle traffic due to the undertaking. Some temporary storage of materials may be required on-Site during the construction activities, but minimal storage will be required during the drilling and testing activities.

2.7.1 Construction Details

The construction of the proposed back-up well and pump test activities, as per the New Brunswick Clean Water Act, will be carried out by a licensed Well Driller under the supervision of CRA personnel.

The following describes the work that is to be completed for the drilling of the back-up well:

- Complete underground clearances prior to commencing drilling activities.
- Install and maintain sediment and erosion control structure over the course of well construction, development and pump testing (if required).
- Construction of one 150 mm diameter test well at the target site using standard drilling method (air rotary) to an approximate depth of 35 metres below ground surface (mbgs), with a 150 mm steel casing installed into to the gravel formation. The well will be logged by an experienced CRA professional.
- A preliminary yield estimate will be completed based on airlift volumes following construction of the test well. Preliminary groundwater samples will be collected after initial development and analyzed for general chemistry and metals.
- If the estimated yield and preliminary chemistry results are acceptable, a 200-250 mm diameter test well with stainless steel screen will be constructed near the initial well. A three 30 minute step tests will be completed on the test well, followed by a 72 hour pump test, to evaluate the aquifer yield. The water will be discharged in a drainage ditch located along the Charlo Dam Road. Water levels will be measured in the 200-250 mm diameter test well, the 150 mm diameter monitoring well and the existing production well during the pump test. Water samples will be collected at 24 hour interval during the test for chemical analysis.
- A detailed report on the hydrogeological investigation will be submitted to the NB Department of Environment office upon completion of the testing program. The report will meet the requirements outlined in NBDELG's Water Supply Source Assessment Guidelines, and will include well logs, pump test information, chemistry data and yield estimate.

- The drilling activities will be completed during daytime hours.
- Pump testing activities will be completed for a continuous 72 hour period.
- Refueling of the equipment used during the construction activities will either be completed off-site or at a designated on-site location.

2.7.2 Operation and Maintenance

Periodic maintenance of the well will be required from time to time, and may include removing/replacing the pump, well re-development activities, etc. Operation and maintenance of the well is not expected to cause significant environmental impacts.

2.7.3 Future Modification, Extensions, or Abandonment

Details on any construction activities necessary to connect the new well to the existing water supply (pipeline installation, pump house construction, etc.) will be provided for approval prior the proceeding with the work.

2.7.4 Project Related Document

The Water Supply Source Assessment – Initial Application document is presented as Attachment A.

Section 3.0 Description of Existing Environment

3.1 Physical and Natural Features

The site topography near the target area is relatively flat, with an approximate elevation of 40 metres above sea level. The regional groundwater flow is expected to be north, toward the Baie des Chaleurs, which is located approximately 1.8 km from the target area.

Watercourses or wetlands have not been identified within 60 metres of the proposed drill target area. There are two NBDELG regulated wetlands located approximately 100 metres and 350 metres southeast of the drill target area and one NBDELG regulated wetland located approximately 500 m northwest of the drill target area. An unnamed stream is located approximately 150 metres south of the target area, which drains toward the Charlo River (located approximately 1,300 metres to the east of the target area).

The existing Charlo municipal well is located within 100 metres of the target area. The target area is therefore located within Zone A of the wellfield. The back-up supply is intended to provide mechanical duplication with the existing municipal well, and would extract water from the same aquifer as the municipal well. This well would not operate at the same time as the current municipal well, therefore well interference is not a concern.

3.2 Cultural Features

The target area is located on the Charlo Airport property. There are no cultural features identified near the target area.

3.3 Existing and Historic Land Use

The target area is located on the Charlo Airport property. A description of the neighbouring land uses are provided as Item 7 of the attached WSSA application.

Section 4.0 Summary of Environmental Impacts

Environmental impacts related to the construction and testing of the proposed wells will be minimal, as described above. If the estimated yield and water chemistry results are acceptable, the new well will be connected to existing underground piping and details for this work will be provided to your department prior to undertaking the work.

Section 5.0 Summary of Proposed Mitigation

- The drill site will be equipped with spill kit
- Equipment will be inspected daily to ensure it is in good working order and free of leaks
- Vehicle fuelling and maintenance must occur at least 30 m away from any watercourse, either off-site or at a designated on-site location
- Sediment and erosion controls will be installed and maintained over the course of the well construction, development and pump testing (if required)
- All work (except for the pump testing) will be completed during daylight hours, to minimize disturbance to the local area

Section 6.0 Public Involvement

The Village of Charlo will seek and consider public input in relation to the proposed project. Individuals, companies, agencies, organized interest groups, and others that may be affected by the project will be contacted, made aware of the undertaking, explained the details of the project and asked for comments, related to the project.

A report documenting the public involvement process will be submitted to the Department of the Environment within 60 days of this registration.

Section 7.0 Approval of the Undertaking

The following permits, licenses, approvals, and permissions are required for this undertaking:

a) Water Supply Source Assessment Initial Application Approval by NBDELG

Section 8.0 Funding

This project is being funded by the Village of Charlo, NB.

Section 9.0 Signature

Please accept this EIA Registration for the construction of a back-up well.

Johanne McIntyre Levesque — March 27th /2015

Signature of Chief Executive — Date

Johanne McIntyre Levesque,
Administrator/Clerk, Village of Charlo

Figure 1

SITE LOCATION
ENVIRONMENTAL IMPACT ASSESSMENT REGISTRATION
WATER SUPPLY SOURCE ASSESSMENT
Village of Charlo, New Brunswick

LEGEND:

- ZONING - HIGHWAY COMMERCIAL LAND USE (HC2)
- 500 METRE RADIUS FROM PROPOSED BACK-UP WELL
- REGULATED WETLANDS (NB DELG)
- ⊕ POTABLE WATER SUPPLY WELL LOCATION
- ⊕ PROPOSED NEW POTABLE WATER SUPPLY WELL LOCATION

Figure 2

SITE PLAN
ENVIRONMENTAL IMPACT ASSESSMENT REGISTRATION
WATER SUPPLY SOURCE ASSESSMENT
Village of Charlo, New Brunswick

Attachment A

Water Supply Source Assessment – Initial Application, Village of Charlo, NB

CONESTOGA-ROVERS & ASSOCIATES

466 Hodgson Road
Fredericton, New Brunswick, E3C 2G5
Telephone: (506) 458-1248 Fax: (506) 462-7646
www.CRAworld.com

March 26, 2015 Reference No. 11102209

Mr. Pierre Doucet
Environmental Planner
Department of Environment and Local Government
20 McGloin Street, 3rd Floor North Wing
PO Box 6000
Fredericton, NB E3A 5T8

Dear Mr. Doucet:

Re: Water Supply Source Assessment
Initial Application
Village of Charlo, NB

Conestoga-Rovers & Associates (CRA) has been retained by Boisonnault McGraw, on behalf of the Village of Charlo, to complete a water supply source assessment for the possible development of a back-up water supply for the municipality.

The current back-up water well for the municipality is located under Charlo Dam Road. This makes accessing the well for maintenance difficult, and also can lead to contamination of the water supply from road traffic and maintenance activities. Recent issues with the equipment in the well prompted the municipality to look for a possible alternative back-up water supply. The proponent would like to expedite the testing program as the municipality no longer has a back-up supply. It is our intention to complete the proposed testing work as soon as possible following receipt of NBDELG approval, as the Village currently does not have an operational back-up water supply.

The current back-up well is located approximately 16 metres to the southwest of the production well (Figure 1). The production well and the back-up well were constructed in 1975. The proposed back-up well would be located approximately 80 metres east of the current back-up well (Figure 1). The proposed test location would be located within Zone A of the wellfield protection area for the Charlo wellfield.

This letter is an application to initiate a water supply source assessment project for the Village of Charlo, as defined in the "Water Supply Source Assessment Guidelines" document dated March 14, 2014.

Name of proponent:

Village of Charlo.

1) Location of drill targets and purpose of the proposed water supply:

The potential drill target is located on property PID 50258771, approximately 60 metres to the southeast of the existing groundwater production well (Figure 1). This location was selected due to the close proximity to existing water infrastructure (pipeline and storage tank), and the anticipated presence of a significant gravel aquifer in the area.

The purpose for the undertaking is to provide the Village of Charlo with a replacement back-up water supply. The back-up supply is intended to provide mechanical duplication with the existing municipal well, and would extract water from the same aquifer as the municipal well. This well would not operate at the same time as the current municipal well, therefore well interference is not a concern.

Once the back-up well is constructed, tested, approved and commissioned, the existing back-up well under Charlo Dam Road will be decommissioned according to NBDELG protocol.

2) Required water quantity (in m^3/day) and/or required pumping rate:

The volume of water currently required by the municipality fluctuates seasonally, with pumping rates ranging between 340 m^3/day to 545 m^3/day. The Charlo municipal well was rated at 1,635 m^3/day (250 igpm) during a pump test completed in 1975.

Ideally, the back-up water supply would have a similar yield to the existing municipal well, although a smaller yield would still provide adequate back-up capabilities for the municipality. Based on the above information, the estimated minimum water requirement for the proposed back-up well is 545 m^3/day (83 igpm), with a preferred yield in the range of 1,635 m^3/day (250 igpm).

3) List alternate water supply sources in area (including municipal systems):

The nearby Charlo River is currently used to supply the Town of Dalhousie. The water is transported to Dalhousie via an aboveground pipeline, which passes through the northern part of the Village of Charlo. There are no other known municipal water supplies in the area.

4) Area hydrogeology:

The stratigraphy intersected during drilling of the municipal well in 1975 includes sand and gravels from surface to 14 metres, which is underlain by silt and clay units to 23 metres below grade. The gravel aquifer, which supplies the Charlo municipal well, is located below the confining silt and clay unit, from 23 metres to 34 metres below grade.

A study completed by MGI in 1994 established that the local hydraulic gradient was approximately 0.5%, with a local groundwater flow direction generally to the west. The regional groundwater flow is expected to be north, toward the Baie des Chaleurs.

5) Proposed hydrogeological testing and work schedule:

Following approval of the undertaking from NB Department of Environment and Local Government, CRA will supervise the drilling of one 150 mm diameter test well at the target site (Figure 1). The well will be logged by an experienced CRA professional and the drilling contractor will be a licensed well driller.

A preliminary yield estimate will be completed based on airlift volumes following construction of the test well. Preliminary groundwater samples will be collected after initial development and analyzed for general chemistry and metals.

If the estimated yield and preliminary chemistry results are acceptable, a 200-250 mm diameter test well will be constructed near the initial well. A step test will be completed on the test well, followed by a 72 hour pump test, to evaluate the aquifer yield. Water levels will be measured in the 200-250 mm diameter test well and the 150 mm diameter monitoring well during the pump test. Water samples will be collected at 24 hour interval during the test for chemical analysis.

A detailed report on the hydrogeological investigation will be submitted to the NB Department of Environment office upon completion of the testing program. The report will meet the requirements outlined in NBDELG's Water Supply Source Assessment Guidelines, and will include well logs, pump test information, chemistry data and yield estimate.

The proponent would like to undertake the proposed testing work as soon as approval to proceed is received.

6) Existing pollution or contamination hazards within a (minimum) 500 m radius of the proposed drill targets.

The following constraints have been identified within 500 metres of the proposed target area:

a) The target area is located within the Charlo Airport property, which hosts an airplane fuelling station and potential furnace oil tank for terminal heating system. The airport likely uses ethylene glycol for deicing purposes. It is noted that the airport property (PID 50258771) is listed on Service New Brunswick Land Gazette as a former municipal dumpsite. A petroleum storage site is also registered for this property under the New Brunswick Remediation Management program. The airport property is located within the Wellfield Protection Area for the existing municipal well.
b) A gravel pit is located approximately 150 metres south of the target area.
c) Charlo Dam Road is located approximately 70 metres west of the target area and Morris Street (access road to airport) is located approximately 100 metres to the north of the target area.

Although the land uses listed above represent potential contamination hazards, the municipal aquifer is protected with approximately nine metres of silt and clay in the area. The current municipal well is located in the same target area, and has not been affected by the activities listed above.

7) Groundwater use problems (quantity or quality) that have occurred in the area.

The water chemistry for the current municipal well is included as Appendix A. All parameters analyzed for meet the Canadian Drinking Water Guidelines. The water is a calcium carbonate type water with a hardness of 212 mg/L.

There has been no quantity or quality issues reported for the current municipal well. The water chemistry for the proposed back-up well would be expected to be similar to the chemistry for the municipal well.

8) Watercourse(s) within 60 m of the proposed drill targets.

Watercourses or wetlands have not been identified within 60 metres of the proposed drill target area. There are two NBDELG regulated wetlands located approximately 100 metres and 350 metres southeast of the drill target area and one NBDELG regulated wetland located approximately 500 m northwest of the drill target area. An unnamed stream is located approximately 150 metres south of the target area, which drains toward the Charlo River (located approximately 1,300 metres to the east of the target area).

9) Site supervisory personnel involved in the source development (municipal officials, consultants and drillers).

- Client Contact:
  - Johanne McIntyre Levesque (Administrator/Clerk, Village of Charlo NB)
  - Email: jleves@nb.aibn.com
  - Phone: 506-684-7850

- Project Manager/Senior Hydrogeologist: Roger Poirier (Vice President – Senior Hydrogeologist, CRA)
  - email: rpoirier@craworld.com
  - Phone: 506-458-1248

- Site Supervisors: Mario Theriault / Mike Gaines / Mike Graves (Senior Technicians, CRA)

- Licensed Well Driller: A qualified licensed well driller will be identified to complete the drilling and pump test activities.

10) 1:10,000 map and/or recent air photo identifying:

- **Proposed location of drill targets and property PID**
- **Domestic or production wells within a 500 m radius from the drill target**
- **Any potential hazards identified in Question 7**

A 1:10,000 site plan identifying the potential drill target is attached as Figure 1. Other than the Village of Charlo production well adjacent to the drilling target, there are no other known water supplies within a 500 m radius of the target area. The features discussed in Question 7 above are also identified on Figure 1 for reference purposes.

11) Land use/zoning map of the area. Superimpose drill targets on this map.

A zoning map for the Village of Charlo, NB (obtained on-line) is attached as Figure 2. This plan identifies the target area as being zoned Highway Commercial Land Use (HC2).

12) Contingency plan for open loop earth energy systems.

Not applicable to this project.

We trust this information is sufficient for your evaluation at this time. Please contact our office should there be questions.

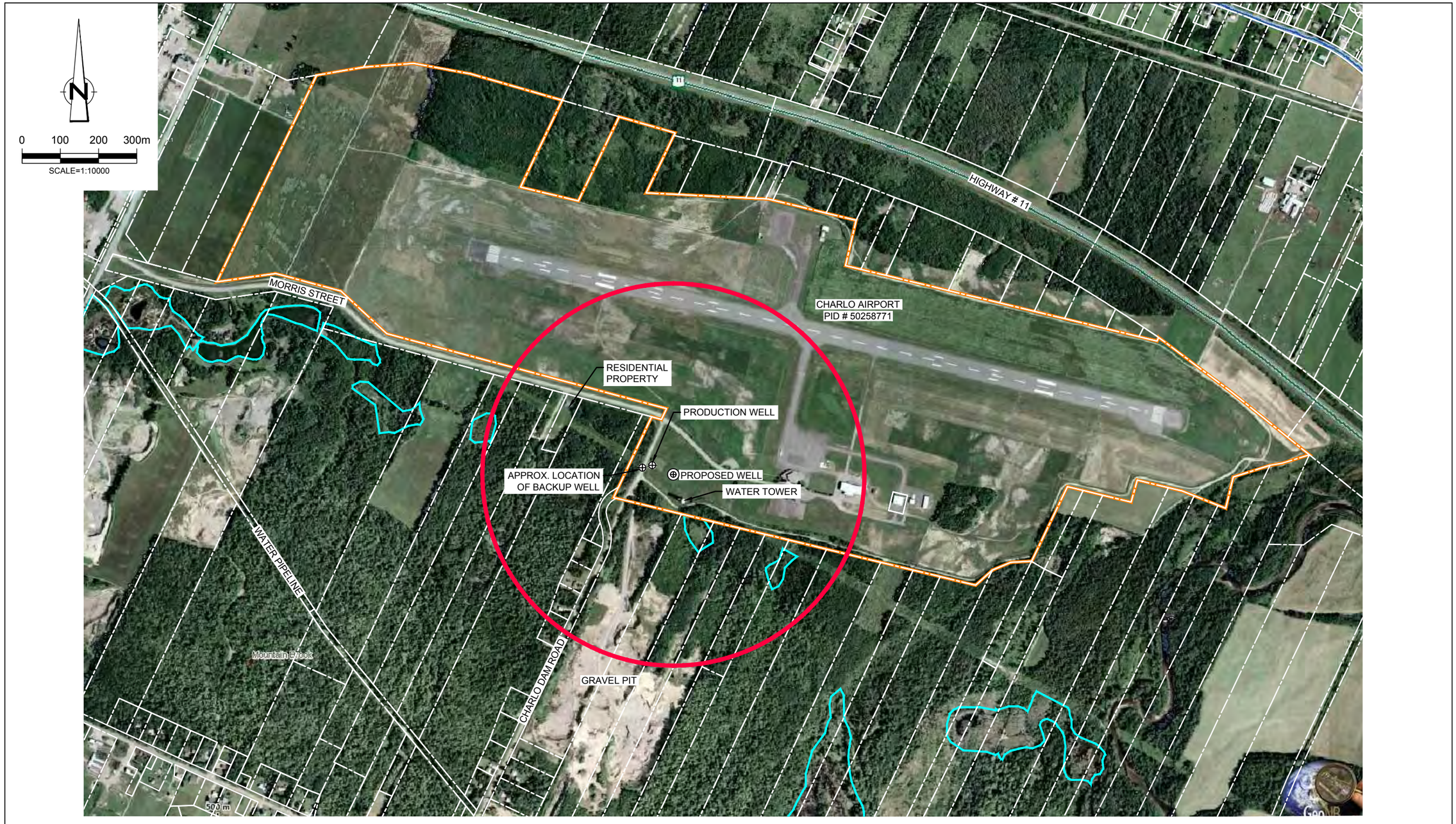
Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Roger Poirier, P.Eng. Mario Theriault, Ctech.

RP/ad/1
Encl.

cc: Andre Boisonnault
Johanne McIntyre Levesque



LEGEND:

- ZONING - HIGHWAY COMMERCIAL LAND USE (HC2)
- 500 METRE RADIUS FROM PROPOSED BACK-UP WELL
- REGULATED WETLANDS (NB DELG)
- ⊕ POTABLE WATER SUPPLY WELL LOCATION
- ⊕ PROPOSED NEW POTABLE WATER SUPPLY WELL LOCATION

Figure 1

SITE PLAN
WATER SUPPLY SOURCE ASSESSMENT
Village of Charlo, New Brunswick

Appendix A

Water Chemistry

VILLAGE de / of CHARLO

614 rue Chaleur St.
CHARLO, NB E8E 2G6

Tel.: (506) 684-7850
Télécopieur/Fax: (506) 684-7855

FACSIMILE TRANSMITTAL COVER SHEET
BORDEREAU DE TRANSMISSION DU TÉLECOPIEUR-FAX

NUMBER/NUMERO: 684-7855

MESSAGE TO:
MESSAGE POUR: Boissonnault Mc Graw

FROM:
DE: Village of Charlo
Larry

NO. OF PAGES INCLUDING COVER SHEET
NOMBRE DE PAGE INCLUANT LE BORDEREAU DE TRANSMISSION 4

INSTRUCTIONS: a copy of our last Organic & Inorganic testing (2013) No #1 well 110' best est.

* *

IF YOU DO NOT RECEIVE ALL OF MESSAGE, PLEASE CALL THE OFFICE AT (506)684-7850
SI VOUS NE RECEVEZ PAS LE MESSAGE AU COMPLET, VEUILLEZ APPELER AU BUREAU, NUMERO DE TELEPHONE (506)684-7850

Larry
OPERATED BY - OPERE PAR

March 16 2015
DATE

Environment

New Nouveau Brunswick

Environnement

Analytical Services Laboratory/Laboratoire des services analytiques
12, rue McGloin Street, Fredericton, NB E3A 5T8

Organic Report / Rapport organique
Clean Water Act / Loi sur l Assainissement de l Eau

Date Finalized/Finalisée: 2013/06/10

Client Information du Client:

Organization/Organisation: Village de Charlo
Attention: Adolphe Goulette

Prop. No./No. de Projet: 0731
Lab No./No. de Lab. : 166695 - 201303769
Authorization/Authorité: Roland Gaudet
Title/Titre: Manager/Gérant

Matrix/Matrice: Drinking Water/Eau Potable

Client Sample Identifier/ No. d'Échantillon du client	Municipal Building, 614 rue Chaleur Street
Site Code/Code du Site:	05-04-50062421-01
SID:	11198
Date Collected/Date de prélèvement:	2013/05/28

Parameter/ Paramètre	Flag	Results/ Résultats	Units/ Unités	L.O.Q./ L.D.Q.	H.A.L./ L.A.S.
Benzene / Benzène	Not Detected./Non détecté.		µg/L	1.0	5.0
Carbon tetrachloride / Tetrachlorure de carbone	Not Detected./Non détecté.		µg/L	1.0	5.0
1,2-Dichlorobenzene / 1,2-Dichlorobenzène	Not Detected./Non détecté.		µg/L	1.0	200
1,4-Dichlorobenzene / 1,4-Dichlorobenzène	Not Detected./Non détecté.		µg/L	1.0	5.0
1,2-Dichloroethane / 1,2-Dichloroéthane	Not Detected./Non détecté.		µg/L	1.0	5.0
Dichloromethane / Dichlorométhane	Not Detected./Non détecté.		µg/L	1.5	50
Ethylbenzene / Éthylbenzène	Not Detected./Non détecté.		µg/L	1.0	2.4
Tetrachloroethylene / Tétrachloroéthylène	Not Detected./Non détecté.		µg/L	1.0	30
Total Xylenes / Xylènes totaux	Not Detected./Non détecté.		µg/L	1.5	300
Toluene / Toluène	Not Detected./Non détecté.		µg/L	1.0	24
Trichloroethylene / Trichloroéthylène	Not Detected./Non détecté.		µg/L	1.0	5.0
Vinyl Chloride / Chlorure de vinyle	Not Detected./Non détecté.		µg/L	1.0	2.0
Total Trihalomethanes / Trihalométhanes totaux	Less than L.O.Q./Moins de L.D.Q.		µg/L		100
Chloroform / Chloroforme	Not Detected./Non détecté.		µg/L	1.0	
Bromodichloromethane / Bromodichlorométhan	Less than L.O.Q./Moins de L.D.Q.		µg/L	1.0	
Dibromochloromethane / Dibromochlorométhan	Less than L.O.Q./Moins de L.D.Q.		µg/L	1.0	
Bromoform / Bromoforme	Not Detected./Non détecté.		µg/L	1.0	
Benzo(a)pyrene / Benzo(a)pyrène	Not Detected./Non détecté.		µg/L	0.005	0.010
Pentachlorophenol / Pentachlorophénol	Not Detected./Non détecté.		µg/L	5.0	60

Quality Control Parameters/Paramètres controles de qualité

4-Bromofluorobenzene / 4-Bromofluorobenzène	100	%
1,2-Dichlorobenzene-D4 / 1,2-Dichlorobenzène-D4	103	%
Benzo(a)pyrene-D12 / Benzo(a)pyrène-D12	50	%
Pentachlorophenol-C13 / Pentachlorophénol-C13	106	%

[LOQ] Limit of quantitation
[HAL] Health Advisory Level (Drinking water only)

[LDQ] Limite de quantification
[LAS] Limites acceptables pour la santé (Eau potable seulement)

Results reported refer only to the sample(s) as received.

Les résultats fournis ne se rapportent qu'aux échantillons dans l'état où ils ont été

All results have been rounded to two significant figures or one decimal place.

Tous résultats sont rapportés à deux chiffres significatifs ou un chiffre après le point décimal.

Environment

New Nouveau Brunswick

Environnement

Analytical Services Laboratory/Laboratoire des services analytiques
12, rue McGloin Street, Fredericton, NB E3A 5T8
Inorganic Report / Rapport inorganique

Client Information du Client:

Organization/Organisation: Village de Charlo
Attention: Adolphe Goulette

Prop. No./No. de Projet: 0731
Lab No./No. de Lab. : 167025 - 201304351
Authorization/Authorité: Lori Lamey
Title/Titre: Manager/Gérant
Matrix/Matrice: Drinking Water/Eau Potable

Date Finalized/Finalisée: 2013/06/19

Client Sample Identifier/ No. d'Echantillon du client:	Puits - Well #1, 13 chemin Dam Road
Site Code/Code du Site:	05-04-50339506-01
SID:	11176
Date Collected/Date de prelevement:	2013/06/04

Parameter/ Paramètre	Flag	Result/ Résultats	Units/ Unités	L.O.Q./ L.D.Q.	H.A.L./ L.A.S.
Alkalinity / Alcalinité		179	mg/l		
Aluminum / Aluminium	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.025	
Antimony / Antimoine	Less than L.O.Q. / Moins de L.D.Q.		µg/l	1.0	6.0
Arsenic	Less than L.O.Q. / Moins de L.D.Q.		µg/l	1.5	10.0
Barium / Baryum		0.056	mg/l	0.010	1.0
Boron / Bore		0.025	mg/l	0.010	5.0
Cadmium	Less than L.O.Q. / Moins de L.D.Q.		µg/l	0.5	5.0
Calcium		68.3	mg/l	0.10	
Chloride / Chlorure		7.34	mg/l	0.050	250
Chromium / Chrome	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.010	0.050
Conductivity / Conductivité		409	µS/cm		
Copper / Cuivre	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.010	1.0
Fluoride / Florure	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.100	1.5
Iron / Fer	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.010	0.300
Lead / Plomb	Less than L.O.Q. / Moins de L.D.Q.		µg/l	1.0	10
Magnesium / Magnésium		11.2	mg/l	0.10	
Manganese / Manganèse	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.005	0.05
Mercury / Mercure	Less than L.O.Q. / Moins de L.D.Q.		µg/l	0.05	1.0
Nitrate-nitrogen / Nitrate-azote		0.53	mg/l	0.05	10.0
Nitrate/nitrite / Nitrates/nitrite		0.58	mg/l	0.05	10.0

Calculated Parameters\Paramètres calculés

Sum of Cations	4.508	Sum of Anions	4.205	% Difference	-3.481
Saturation Index @ 25°C	0.750	CO3(as CaCO3)	1.7	HCO3(as CaCO3)	177.2

Results reported refer only to the sample(s) as received.
Les résultats fournis ne se rapportent qu'aux échantillions dans l'état où ils ont été reçus.

[LOQ/LDQ] Limit of quantitation/Limite de quantification
[HAL/LAS] Health Advisory Level (Drinking water only)/Limites acceptables pour la santé (Eau potable seulement)

Environment

New Nouveau Brunswick

Environnement

Analytical Services Laboratory/Laboratoire des services analytiques
12, rue McGloin Street, Fredericton, NB E3A 5T8
Inorganic Report / Rapport Inorganique

Client Information du Client:

Organization/Organisation: Village de Charlo
Attention: Adolphe Goulette

Prop. No./No. de Projet: 0731
Lab No./No. de Lab. : 167025 - 201304351
Authorization/Authorité: Lori Lamey
Title/Titre: Manager/Gérant
Matrix/Matrice: Drinking Water/Eau Potable

Date Finalized/Finalisée: 2013/06/19

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SID:	11176
Date Collected/Date de prelevement:	2013/06/04

Parameter/ Paramètre	Flag	Result/ Résultats	Units/ Unités	L.O.Q./ L.D.Q.	H.A.L./ L.A.S.
Nitrite	Less than L.O.Q. / Moins de L.D.Q.		mg/l	0.05	1.0
pH		8.01			
Potassium		1.0	mg/l	0.10	
Selenium / Sélénium	Less than L.O.Q. / Moins de L.D.Q.		µg/l	1.5	10
Sodium		5.70	mg/l	0.10	200
Sulfate		17.3	mg/l	0.050	500
Thallium	Less than L.O.Q. / Moins de L.D.Q.		µg/l	1.0	
Total Hardness / Dureté totale		212	mg/l	0.67	
Turbidity / Turbidité	Less than L.O.Q. / Moins de L.D.Q.		NTU	0.2	1.0
Uranium	Less than L.O.Q. / Moins de L.D.Q.		µg/l	0.5	20
Zinc		0.018	mg/l	0.005	5.0

Calculated Parameters\Paramètres calculés					
Sum of Cations	4.508	Sum of Anions	4.205	% Difference	-3.461
Saturation Index @ 25°C	0.750	CO3(as CaCO3)	1.7	HCO3(as CaCO3)	177.2

Results reported refer only to the sample(s) as received.
Les résultats fournis ne se rapportent qu'aux échantillons dans l'état où ils ont été reçus.

[LOQ/LDQ] Limit of quantification/Limite de quantification
[HAL/LAS] Health Advisory Level (Drinking water only)/Limites acceptables pour la santé (Eau potable seulement)