



December 22, 2015

MON-00227824-A0/2.8

Sustainable Development, Planning & Impact Evaluation Branch
NB Department of Environment and Local Government
20 McGloin Street
PO Box 6000
Fredericton, NB E3B 5H1

**Re: Village of Memramcook 2016 Groundwater Exploration (Pump Test) Program
Environmental Impact Assessment Registration**

Dear Sir/ Madame:

The attached EIA Registration is forwarded by **exp Services Inc. (exp)** on behalf of the Village of Memramcook. The undertaking proposed in this submission is a limited groundwater pump test program to involve pump testing of at least one or possibly both of two existing test holes previously drilled by the Village as part of an EIA (NBDELG File 4561-3-1228) filed in 2009. This earlier EIA is currently nearing final approval. Under this earlier EIA it was determined that if the Village wished to test the two subject testholes, a separate EIA registration would be required; accordingly the Village is filing this current submission. Related information from the earlier 2009 registration document is included in attachments to this current submission.

We trust that this information is sufficient for your reference at this time.

Sincerely,

A handwritten signature in blue ink, appearing to read 'John Sims', is written over a faint, light blue printed signature line.

John Sims, M.Sc., P.Eng., P.Geo.
Senior Hydrogeologist - **exp**

exp Services Inc.

Attach.

cc: Eric Mallet – Village of Memramcook

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LIST OF ATTACHMENTS

Attachment A	Copy of EIA Registration and Step 2 WSSA Application re: EIA File 4561-3-1228
Attachment B	Step 2 WSSA Report on ME12-01 submitted under EIA file 4561-3-1228
Attachment C	Information on Biological Aspects in Vicinity of Project and Work Area (Copy of Response to August 4, 2015 TRC Comment re: EIA File 4561-3-1228)
Attachment D	Copy of Information re: Citizen Comments (Well Drawdown) (re: EIA File 4561-3-1228)

**ENVIRONMENTAL IMPACT ASSESSMENT REGISTRATION
(Regulation 87-83)**

1.0 PROPONENT

(i) Name of Proponent

Village of Memramcook

(ii) Address of Proponent

540 Centrale Street
Memramcook, NB
E4K 3E3

(iii) Chief Executive Officer

Donald O. LeBlanc, Mayor

(iv) Principal Contact Person for purposes of Environmental Impact Assessment

Eric Mallet, Director of Operations and Infrastructure
Village of Memramcook
Tel: 506-758-4078 (office); email: eric@memramcook.com

(v) Property Ownership

The project involves the testing of one to two existing water supply test holes installed on Village property. The test hole locations were approved during a separate EIA Registration filed with NBDELG (NBDELG File 4561-3-1228). The work proposed within this current EIA submission is to drill the test wells to larger diameter (if deemed warranted), possibly install deeper casing, and pump test the wells in accordance to the Province of New Brunswick Water Supply Source Assessment Guidelines.

The purpose of the work will be to provide for a backup water supply well to supplement an existing well (ME12-01) whose approval is currently being finalized through EIA 4561-3-1228. In practice, if the back up well is completed and approved it is planned that the wells would operate in cycles to ensure that each well is maintained in an operational status (i.e. back up well not allowed to lie dormant for extended period of time).

2.0 THE UNDERTAKING

(i) **Name of the Undertaking:** Village of Memramcook – 2016 Groundwater Exploration (Pump Test) Program

(ii) **Project Overview**

The Village of Memramcook is in the process of upgrading its existing raw water source. The purpose of the upgrade is to improve the water security and water quality by developing new groundwater capacity to replace/ supplement the existing supply of which a portion is derived from spring fed wells. The development of the new raw water source is expected to be from deeper groundwater which is intended to minimize potential for near surface contaminants to potentially impact the raw water quality.

Additional information can be found in a preceding and related EIA Registration filed with NBDELG on August 19, 2009 (File 4561-3-1228). This earlier EIA registration (a copy of the registration submission and related Step 2 WSSA application for this related EIA is provided in Attachment A) focused on drilling a number of water supply source exploration targets in the area of the Village. Of the relatively extensive work completed to assess water supply potential throughout the Village area, only one property location was found to show promise of yields deemed suitable for municipal water supply quantity requirements. Well (ME12-01) is located on this property (formerly PID70001623, now PID70607064) and was pump tested with final approval pending additional information to address TRC review comments mainly concerning environmental aspects related to the proposed water transmission main that will take water from ME12-01 to the Village's existing central water treatment and distribution system.

During the work completed on the ME12-01 property, application was made to NBDELG to drill additional test wells (TH12-01 and TH12-02) on the subject property. The two wells were subsequently drilled but not pump tested. The purpose of the current work is to allow pump testing to be completed in order to determine if one (or possibly both) wells could serve as back up to the proposed ME12-01 production well.

(iii) **Purpose/Rationale/Need for the Undertaking:**

Market Potential: Not applicable.

Benefit to Society: The undertaking will result in improved general public health safety by providing back up water supply capacity related to upgrade of the Village of Memramcook's municipal raw water source. (A portion of the Village's existing raw water source is provided by older spring fed sources which are generally a less desirable source than from deeper cased production wells).

Economic Benefits: Improve/ enhance the existing Village municipal water supply source to ensure residents and businesses have a secure potable water supply.

Job Creation Benefits: Job creation will include short term construction related jobs. One utility job will be created through expansion of the Village's water system.

Consumer and/or Industrial Demand: See above.

Discussion of Alternatives: The "do nothing" alternative is not considered to be acceptable as it would minimize potential for backup capacity for the municipal water supply.

(iv) **Project Location**

Location/PID: The work will take place on PID70607064 (a newer PID formed from a portion of former PID70001623; this newer PID was established in 2015 following procurement of the property by the Village of Memramcook).

Address: There is no civic address assigned to the property. The property's legal description in the Service New Brunswick land registry database is as follows: *All those certain pieces and parcels of land lying and being in Memramcook, in the Parish of Dorchester, in the County of Westmorland, in the Province of New Brunswick and more particularly described as follows: Parcel 2015-01 Memramcook Plan D'Expropriation/Memramcook Expropriation Plan Plan registration 34625898 Plan registered February 19, 2015 Registered in the County of Westmorland*

Location Map: The project location relative to communities, roads, environmental features, etc, is indicated on Figure 1.

(v) Siting Considerations

Siting considerations are essentially that earlier work has suggested at least one of the two test wells could be developed to provide yield sufficient to serve as backup water supply capacity. Additionally, the Village owns the property which will facilitate wellhead protection objectives.

(vi) Physical Components and Dimensions of the Project

Access to the wellheads of both proposed test wells is established by way of existing access roadway. It is anticipated that no additional site disturbance other than possible establishment of a small sediment erosion control structure and trench to direct runoff away from the well(s) during pump testing will be needed.

(vii) Construction Details

Approximate Duration: Four weeks. Pending EIA approval to proceed it is anticipated that the work will be completed in the period from February through to mid-March 2016.

Estimated Hours: The estimated working hours during the pump test program are as follows: 7:00 hr to 19:00 hr, 5 days per week, Monday to Friday.

Anticipated Equipment: Air rotary drill rig supplied and operated by a licensed well driller; generator and well pump. Snow plow if needed.

Date of First Physical Construction-Related Activity: Work to begin on receipt of EIA approval to proceed.

Potential Sources of Pollutants: Fugitive dust emissions, noise, suspended solids runoff, spillage of fluids used in equipment such as hydraulic fluid and fuels.

Fate of Wastes: No waste anticipated; there will be drill cuttings that are expected to be left on site.

Access and Traffic Management: Existing roadways and access road.

Clearing and Grubbing: No clearing activity and no grubbing activity will be required for the undertaking since the work involves pump testing of existing wells (it is possible that a runoff trench will be upgraded to direct runoff away from the well during pump testing with this runoff dispersed by overland flow through natural vegetation).

Fill Material: Not applicable.

Work Near Wetlands/Watercourses: The work will be completed setback from any watercourses or wetlands. If needed, all necessary permits and approvals will be obtained prior to initiating the work (the Village has in place a current multiple WAWA permit ALT38441'15 that should address all aspects (if any) related to WAWA requirements).

(viii) Operation and Maintenance Details

General – Assuming results of pump testing indicate acceptable well yield, the well would be commissioned as a backup to proposed production well ME12-01 (drilled and pump tested as part of the related EIA). In practice, it is expected the wells would be cycled to avoid any one well sitting dormant for an extended period of time. Operation and maintenance would be in accordance to the Village’s municipal water supply operation and maintenance plan and related Provincial approvals.

Water Supply – Yes – back up well(s).

Lifespan of Project – Ongoing operation in accordance to sustainable well yield and EIA approved yield.

Power Requirements – Three phase power suitable for operation of the well pumps, and power related to monitoring fitup (e.g. SCADA system).

Labour Requirements – Operation and maintenance by existing Village Public Works staff.

Fate of Wastes, Emissions and Effluents – Not applicable. In the event waste, emissions or effluents were relevant they would be managed in accordance to existing Village municipal operations procedures.

(ix) Future Modifications, Extensions, or Abandonment

No future modifications, extensions or abandonment are envisioned at this time.

(x) Project Related Documents

Project related documents are essentially contained within the related EIA submission NBDELG File 4561-3-1228. Copies of select related documentation from this earlier EIA have been included with this submission (see attachments).

3.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

Refer to Project Related Document, section 2 (x), above.

(i) Physical and Natural Features

Topography and Surface Water Drainage – Refer to Project Related Documents.

Geology and Hydrogeology – Refer to Project Related Documents.

Potential Adverse Environmental Conditions – None anticipated.

Watercourses and Wetlands – No watercourse or wetlands in immediate area of the work.

Significant Fish/Wildlife Populations or Habitat – As part of the related EIA File 4561-3-1228 the Atlantic Canada Conservation Data Centre (ACCDC) was requested to search their databases for the vicinity of the project and a related field walkover was completed by two biologists. A copy of this information is provided in the response to the TRC August 4, 2015 review letter (see Attachment C) re EIA file 4561-3-1228. Given that the scope of work identified in this current EIA registration submission is limited to short term pump test assessment of existing test holes which will be accessed using existing roadways, and the work is setback from watercourses, no impacts on fish or wildlife is anticipated.

Environmentally Sensitive Areas – None in vicinity of proposed test well work.

(ii) Cultural Features

There are no known cultural features at or in the immediate vicinity of the proposed work area.

(iii) Existing and Historic Land Use

Existing and Previous Uses of the Subject Property and Adjoining Lands: Treed/ forested area, previously logged and generally regrown. Possible hunting type camps in the area. NB Power transmission line.

General Description of the Existing Condition and Use of the Site: See above; access trails and roadways existing to proposed test hole sites, and test wells currently installed.

Ownership of Lands Abutting Property: A site plan identifying the four (4) individual abutting land parcels is shown on Figure 2. The Service New Brunswick (SNB) property identification number (PID) for each of these land parcels is provided below in Table 1. Lands ownership information for the abutting properties is not provided in this table in consideration of Provincial privacy related regulations, guidelines and policies.

Table 1 – PID Numbers for Abutting Property

Relative Location	PID
North	70162821
South	70221619
East	70056890
West	70261326

Type and Extent of Any Known or Suspected Contamination Resulting from Previous Uses of the Subject Property or Adjacent Property: There are no known contamination (i.e. spills and contaminated soils) incidents in the study area that are expected to impact the proposed undertaking.

4.0 SUMMARY OF ENVIRONMENTAL IMPACTS

General: Minimal potential for environmental impacts is expected given the nature of the work.

The main potential impacts are anticipated to include:

- 1) Potential for drawdown on private wells in the area. It has been reported (October 2015 – see Attachment D) that during the pump test work completed on ME12-01 (completed in August 2012) that certain residents in the area of Memramcook East Road ██████████ ██████████ thought that they had experienced drawdown effects in their wells. These wells are located on the order of 1 km from the test well site. Preliminary calculations (see information provided in Attachment D) using aquifer parameters from the well ME12-01 pump test suggest that drawdown at the end of the 72 hour pumping period in the vicinity of these residential wells could theoretically be approximately 14 cm. As part of the current proposed work on TH12-01 and TH12-02, if permission to pump test is obtained, these residents or nearby residents could be requested to give permission to access their wells for water samples (e.g. before, during and after pump testing) and possible water level measurement if the wellheads are accessible. Alternately, a monitoring well could be installed between the test well area and the residential properties located along Memramcook East Road.
- 2) Other possible environmental effects include suspended solids runoff due to suspended sediment in drill cutting or pump test discharge. This will be addressed by directing water

away from the well and dispersing/ filtering the runoff by natural vegetation filtration/ overland flow.

Climate Change and the Effects of Climate on the Project: The project is not anticipated to have climate change implications. Effects of climate on the project might include changes in groundwater recharge; if this were to develop it would be expected to occur progressively over the long term and ongoing operational monitoring would be used to document potential changes in groundwater level and incident precipitation, with well yield adjusted as required to mitigate potential impacts (e.g. unsustainable groundwater yield).

5.0 SUMMARY OF PROPOSED MITIGATION

A summary of the proposed mitigation efforts associated with the undertaking are outlined herein. A tiered approach was utilized in developing the project mitigation measures as suggested in the technical guide to EIA in New Brunswick. Under this approach, environmental impact avoidance opportunities are implemented wherever possible. If it is not possible or practical to avoid some degree of environmental impact, impact reduction measures are stipulated. Finally, in occasional instances where more extensive impacts are unavoidable and justifiable (e.g. public good, etc.), compensation measures can be proposed.

The main aspects of the work that may require mitigation include erosion control (re: suspended solids runoff); potential spills (e.g. fuel or oil leak from equipment); possible heritage resource encounters; control of noise; and fugitive dust emissions and air quality. These will be mitigated as follows.

Well Drawdown – monitor water levels in observation wells during the test.

Suspended Solids – mitigative measures will include standard erosion control measures (e.g. silt fences, check dams at well location, disperse pump discharge via overland flow) which will be employed as required during the pump test work.

Spills – spills (if any) will be addressed by applicable regulatory requirements (e.g. notification and response). On-site equipment will be required to be in good condition and free of any known fluid leaks.

Heritage Resource Encounters – in the event that any item of cultural or archaeological significance is encountered during construction, work in the affected area will immediately be halted and the Provincial Archaeological office will be notified.

Noise – the work is not expected to result in a significant increase in noise levels above ambient background levels. However, as practical, equipment will be turned off when not in use.

Fugitive Dust Emissions and Air Quality – for aspects of the work that may lead to an increase in fugitive dust emissions above ambient conditions, standard dust suppression techniques such as water application to work area/ roadways will be used, and/or dust emission generation activities will be ceased until weather conditions warrant. Regarding air quality, it is noted that an anti-idling policy will be implemented for equipment as practical.

6.0 PUBLIC INVOLVEMENT

Public Involvement: The minimum public consultation requirements outlined in Appendix C of the provincial EIA registration guide will be followed. In this regard, additional public consultation is planned for the related EIA 4561-3-1228 wherein stakeholders including the owners of the properties adjacent the pipeline alignment will be invited to an Open House. Currently the format and schedule for this additional public consultation is pending further discussion with the Village.

The proposed work outlined in this current EIA application will supplement the planned Open House session. Details concerning the timing and location of the open house and the locations to obtain project related information will be advertised in one local and one provincial newspaper in accordance with the requirements outlined in the EIA registration guide.

To expedite approval to proceed with the limited work scope outlined herein, in the event the Open House cannot be held within the preferred near term timeline (i.e. prior to mid-March 2016, and spring recharge) desired to complete field work on well(s) TH12-01/ TH12-02, it is proposed that the residents in the vicinity of Memramcook East Road as noted above and in Attachment D be notified as to when the pump test program will be completed. In this manner, the immediate public concerns of residents will be addressed, and the findings from the work will provide additional information to supplement the planned Open House session and overall response to citizen concerns.

7.0 APPROVAL OF THE UNDERTAKING

The following permits and approvals will be required for the proposed development:

- Authorization/conditional approval of the undertaking under the Provincial EIA requirements outlined in *NB Regulation 87-83*.

8.0 FUNDING

Funding for this project will be provided by the Village of Memramcook, the Province of New Brunswick and the Government of Canada.

9.0 SIGNATURE

This EIA registration document was prepared by John Sims, M.Sc., P.Eng., P.Geo. of exp Services Inc. on behalf of the Village of Memramcook.

Date: December 22nd 2015


Eric Mallet, Village of Memramcook

10.0 REFERENCES

NBDELG EIA Registration Submission 4561-3-1228 and related correspondence (select materials provided in Attachments A through D).

Village of Memramcook Groundwater Exploration (Pump Test) Program Site Location

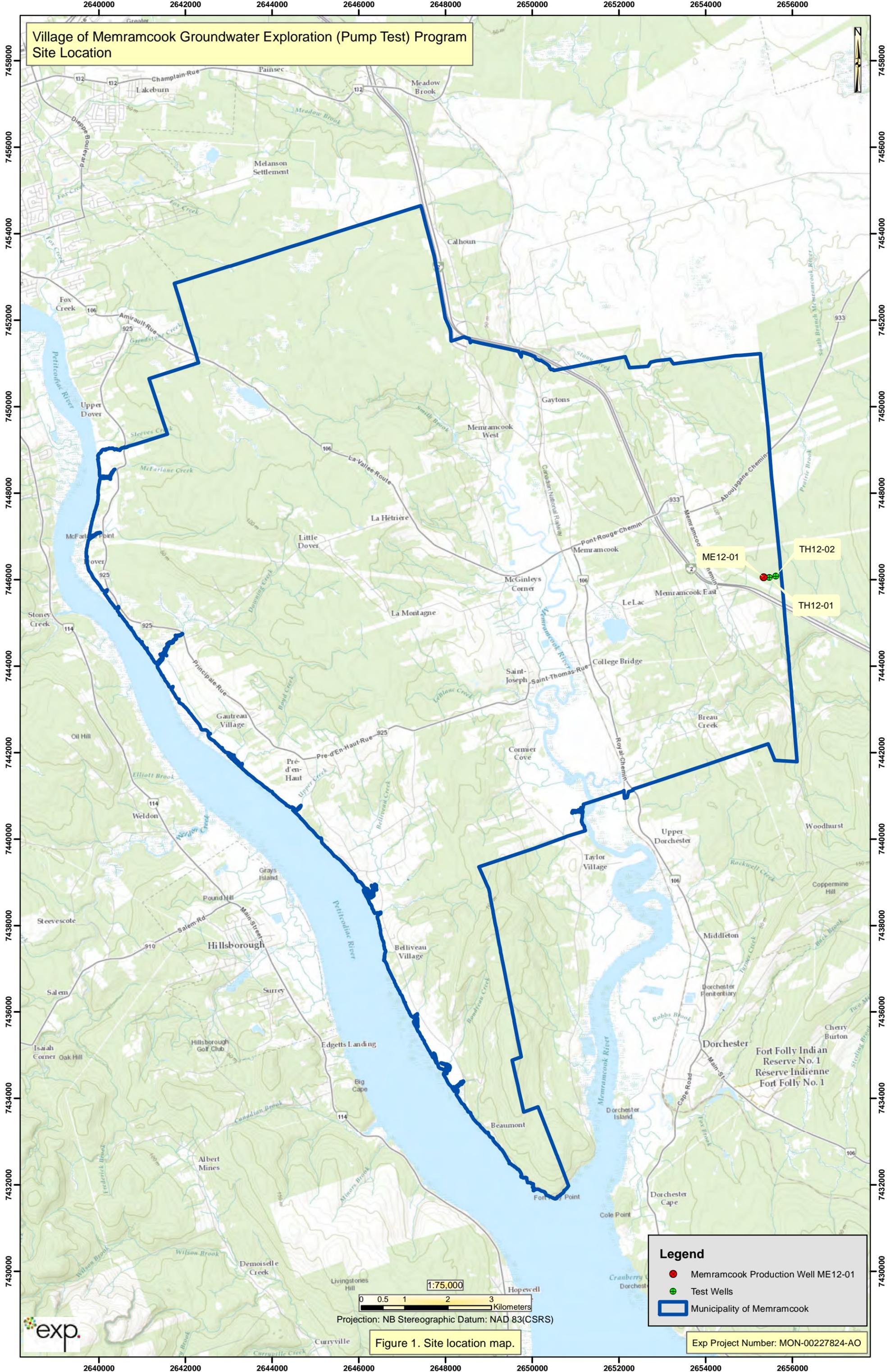
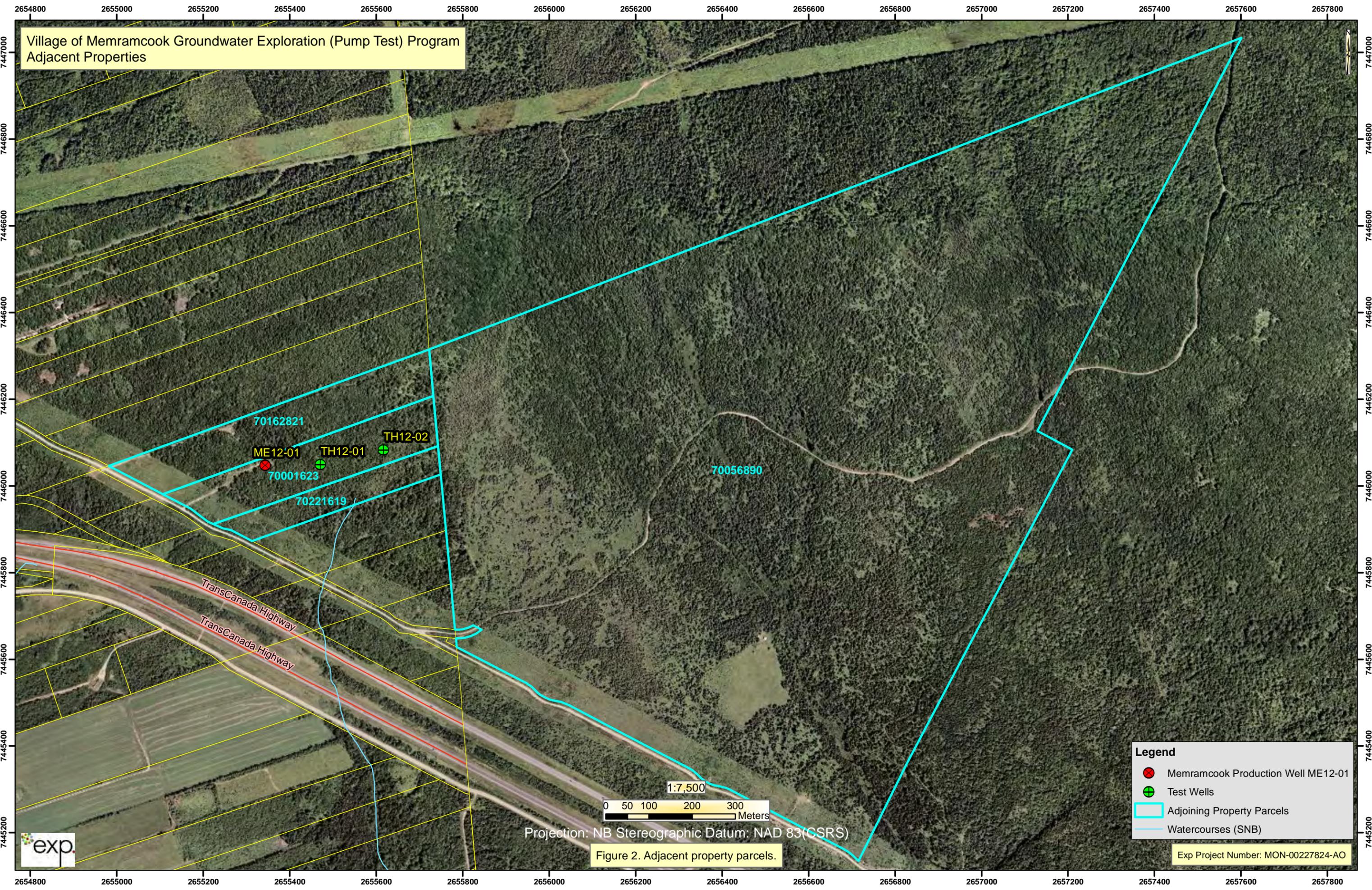


Figure 1. Site location map.

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Village of Memramcook Groundwater Exploration (Pump Test) Program
Adjacent Properties



70162821

ME12-01

TH12-01

TH12-02

70001623

70221619

70056890

TransCanada Highway

TransCanada Highway

1:7,500

0 50 100 200 300 Meters

Projection: NB Stereographic Datum: NAD 83(CSRS)

Figure 2. Adjacent property parcels.

Legend

- ⊗ Memramcook Production Well ME12-01
- ⊕ Test Wells
- ▭ Adjoining Property Parcels
- Watercourses (SNB)



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