



**NATION RISE WIND FARM
WATER WELL COMPLAINT RESPONSE
PROCEDURE AND CONTINGENCY PLAN**

Submitted to:
Nation Rise Wind Farm Ltd.
219 Dufferin Street, Unit 217C
Toronto, ON M6K 3J1

Prepared by:
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In collaboration with:
GL Garrad Hassan Canada Inc. (DNV GL)
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Updated 5 July 2019
Project Number 180629-04

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1 PROJECT DESCRIPTION

Nation Rise Wind Farm Limited Partnership (the “Proponent”) is proposing to develop the Nation Rise Wind Farm (the “Project”) which is subject to Ontario Regulation (O. Reg.) 359/09 (Renewable Energy Approvals (REA) under Part V.0.1 of the Ontario Environmental Protection Act (EPA)), as amended. The Proponent was awarded a contract for this Project in March 2016 from the Independent Electricity System Operator (IESO) under the Large Renewable Procurement (LRP), and has received its Renewable Energy Approval (REA) No. 0871-AV3TFM from the Ontario Ministry of the Environment, Conservation and Parks (MECP, formerly Ministry of the Environment and Climate Change) on 4 May 2018. The Project is situated in the Municipality of North Stormont within the United Counties of Stormont Dundas and Glengarry, and construction is anticipated to begin in early 2019. The Project will be owned and operated by Nation Rise Wind Farm Limited Partnership, a wholly-owned subsidiary of EDP Renewables Canada Ltd. (EDPR).

2 PURPOSE

REA No. 0871-AV3TFM was issued to the Project, in accordance with Section 47.4 of the Environmental Protection Act, on May 4, 2018. To satisfy Condition I of the REA, the Proponent is required to complete a pre-construction water well survey and sampling work program to establish baseline water supply conditions, in addition to the implementation of a complaint response procedure and contingency plan. As specified within Conditions I4 and I6 of the REA, the Proponent is required to retain a Qualified Expert (Professional Engineer or Professional Geoscientist) to undertake or approve the work described in Conditions I1 to I3 and to respond to any complaints regarding wells or well water, pursuant to Conditions I7 and I8.

GL Garrad Hassan Canada Inc. (DNV GL) and BluMetric Environmental Inc. (BluMetric™) have partnered (together “The Consultant Team”) to provide water well monitoring support services for the Project in accordance with the applicable Conditions of the REA. The Complaint Response Procedure and Contingency Plan proposed herein have been prepared by BluMetric to satisfy the requirements of REA Conditions I7, I8, I9 and I10, which have been reproduced as follows:



Condition 17

Should the Company receive a complaint about wells or well water from an owner of an active water well (i) within the Project Study Area; or (ii) outside of the Project Study Area ~~through~~ [and located] within 1 km from each individual Equipment, communication tower, and meteorological towers, the Company shall direct the qualified expert referenced in Condition 16 to undertake the following:

- 1) Forthwith, contact the well owner to collect detailed information regarding the timing and nature of the complaint, and to arrange the site visit described in Condition 17(2);*
- 2) Within 24 hours of receiving the complaint, and subject to permission from the well owner, collect a water well sample at the complainant's water well, prior to any treatment systems ("raw"), after allowing the distribution system to flow for approximately 5 minutes, and submit the water sample to a qualified laboratory for an analysis of the water quality parameters identified in Condition 13;*
- 3) Compare the results of the analysis of the water sample noted in Condition 17(2) to the pre-construction water sampling analysis results noted in Condition 13 for the subject well. If no pre-construction water quality sample was taken from the subject well, the sampling results shall be compared to the typical pre-construction water quality recorded for other wells within the Project Study Area;*
- 4) Within five business days of the site visit noted in Condition 17(2), provide the Ministry with a preliminary summary of the information and laboratory results collected under Conditions 17(1), 17(2), and 17(3).*
- 5) Within four weeks of the site visit noted in Condition 17(2), provide a detailed written opinion as to whether the water sampling analysis results demonstrate that the construction, operation, or decommissioning of the Facility caused or may have caused an Adverse Effect to the well's water supply. The opinion shall consider the results of the test-pile driving monitoring program described in Condition J1, the results of the ground-borne vibration monitoring described in Condition K1, and the results of the groundwater monitoring program described in Condition I1.*



Condition 18

Pursuant to Conditions 17(2) and 17(3) and based on the opinion of the qualified expert referenced by Condition 16, if the field observations or the results of the raw water quality sampling indicate a deterioration in water quality or quantity relative to pre-construction conditions:

- 1) Forthwith, provide an adequate quantity of potable water to the well owner until such time that the issue has been resolved to the satisfaction of the Ministry; and*
- 2) Forthwith, direct the qualified expert referenced in Condition 16 to investigate and provide a detailed written opinion regarding the specific cause of the change in well water quality. The written opinion shall be provided to the Ministry within four weeks of receiving the complaint in conjunction with the written opinion required by Condition 17(5).*

Condition 19

Pursuant to Condition 17(5), if the qualified expert determines that the construction, operation or decommissioning of the Facility caused or may have caused an adverse effect to a complainant's well or well water, the Company shall immediately implement the contingency plan described in Condition 110.

Condition 110

The contingency plan shall, at a minimum, include a sequence of remedial measures to be undertaken by the Company, at the Company's expense to resolve any impacts to wells or well water resulting from the construction, operation, or decommissioning of the facility.

3 WELL WATER COMPLAINT RESPONSE PROCEDURE

The following was developed to establish a consistent response procedure, inclusive of all requirements within Conditions 17, 18, 19 and 110 of the REA, to be implemented in the event of a water well complaint received by the Proponent and/or the Consultant Team with respect to a property located within the defined boundaries as defined within Condition 17 of the REA.

3.1 COMPLAINT REPORT AND NOTIFICATION

Property owners with any questions regarding their water wells within the Project Study Area or within 1km from each individual equipment, communication tower, or meteorological tower are instructed to contact the following Primary contact:



Nation Rise Wind Farm Limited Partnership
219 Dufferin St, Unit 217C
Toronto, ON M6K 3J1
Phone: (613) 240-0348
Email: wellsurvey@blumetric.ca

In the event a question or complaint is received either by email or phone, the individual receiving the complaint will verify the property owner's contact information and document the nature of the complaint, including the type and perceived severity of water well issue as well as the approximate date the issue was first identified. Information collected during the initial contact with the property owner will be summarized for each complaint within Form 1 (Appendix A).

The Proponent will retain a Qualified Expert (P.Geo. or P.Eng. as defined in the REA) to be available 'on call' to investigate reported water well issues. Upon receipt of a complaint, the Proponent and the Consultant Team will investigate the status of construction activities for the Project near the location of the complaint and communicate this information to the Qualified Expert. The Qualified Expert will contact the well owner to collect detailed information regarding the timing and nature of the complaint. The Qualified Expert will determine whether a site visit is required. A conservative approach is to be used in this determination that allows for possible delayed effects for receptors, while also maintaining a definition of 'recent' that is realistic and reasonable for the given hydrogeology. Where the need for a site visit is required and property owner consent is granted, reasonable effort will be made to schedule a site visit within 24 hours upon receipt of the complaint, subject to the availability of the property owner as well as laboratory services.

In addition, the District Manager of the MECP will be notified by EDPR within one (1) business day of receiving a complaint related to wells or well water, as per Condition I11 of the REA and confirm that a Qualified Expert has been retained to investigate the complaint as per the Complaint Response Procedure and Contingency Plan detailed herein.

3.2 PRELIMINARY INVESTIGATION

Prior to the completion of the site visit, the Qualified Expert will undertake the following:

- Review the baseline well survey and water quality sampling results obtained as part of the pre-construction water well survey completed as per the REA (where available);
- Review publically accessible well records from the MECP Water Well Information System (WVIS) in proximity to the subject property of the complaint, and attempt to locate the well record for the water well associated with the complaint;



- Review topographic maps to assess local surface drainage and inferred groundwater flow direction in proximity to the subject property;
- Review local geology and hydrogeology to assess the potential susceptibility of local well water supplies to construction derived impacts. This will include assessment of well construction methodology, depth to bedrock, and the identification of overburden materials for potential vertical groundwater flow and contaminant migration;
- Identify the location, nature, and timeline of the Project construction activity or activities nearest to the subject property; and,
- Print out an aerial photo image of the property parcel for on-site location of well, septic system, and other pertinent site features.

3.3 SITE VISIT

Subject to consent from the property owner, within 24 hours of receiving the complaint, or at their earliest convenience, the Qualified Expert will conduct a site visit and collect a raw (prior to any treatment systems) water well sample representative of the water well associated with the complaint. Where possible, the water quality sample will be collected from the same sampling location accessed during the pre-construction water well survey for consistency and to facilitate the comparison of results. The sample will be collected after allowing the distribution system to flow for approximately five (5) minutes, and will be submitted to an accredited laboratory for analysis. Samples will be analyzed for the same list of parameters measured during the pre-construction water well survey as per condition 17(2) of the REA, which includes:

- Electrical Conductivity
- pH
- Total Dissolved Solids
- Total Suspended Solids
- Alkalinity
- Ammonia
- Hardness
- Nitrite
- Nitrate
- Orthophosphate
- Sulphate
- Chloride
- Dissolved Organic Carbon
- E.Coli
- Total Coliform
- Total Background
- Turbidity
- Metals: Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Titanium, Uranium, Vanadium, and Zinc.

An on-site inspection of the water well will be conducted and the following information will be collected and documented within Form 2 (Appendix B):



- Visual inspection of the well cap, verify well cap is in place;
- Open well, visual check for moisture, spider webs, insects, etc., which would indicate damage to well cap or casing;
- If water surface in well is visible, record observations for debris on the water surface or on the inside of the water well casing;
- Listen for water cascading into well, potentially entering near surface at or below the well casing;
- Check topography and drainage pathways in proximity to the well, for evidence of water pooling near well or whether runoff is directed to the well;
- Measure the height of the well casing for comparison to minimum requirements under Ontario Regulation 903 (as amended);
- Complete a non-invasive check to see if well is grouted at annulus and/or whether a vertical pathway is evident through the annulus due to subsidence or erosion;
- Check for obvious sources of contamination near the well, such as downspouts which may direct water towards the well, evidence of nearby ponded surface water, manure storage, animals or animal wastes near the wellhead, etc.;
- Locate sewage system and interview owner with regards to its age, functionality maintenance, etc.; and,
- Assess the drinking water treatment system and plumbing system as possible sources of contamination if applicable.

Before leaving the site, the landowner will be provided with plain language verbal information regarding the general observations made during the inspection and of any issues considered an immediate concern for the health and safety of the property owner and/or tenants.

3.4 ANALYSIS AND REPORTING

Following completion of the site visit and receipt of the laboratory analytical report, the results will be compared to the pre-construction water well survey results for the subject well, if available. If no pre-construction water quality sample was collected at the subject well, the sampling results will be compared to the typical pre-construction water quality recorded for other wells nearby and within the Project Study Area. Results from the Ambient Groundwater Geochemistry Study for Southern Ontario completed by the Ontario Geological Survey (Hamilton, 2015) may also be referenced, where appropriate, for comparison to the sampling.

Within five business days of the site visit, the MECP will be provided with a preliminary summary of the information from the site visit, including the relevant laboratory analytical results. In addition, if the field observations or the results of the raw water quality sampling indicate a deterioration in water quality or quantity relative to pre-construction conditions, an adequate



quantity of potable water will be provided to the well owner until such time that subsequent well water quality testing indicates water quality conditions similar to, or better than, baseline quality and quantity.

Within four weeks of the site visit, the MECP will be provided with a detailed written opinion as to whether the water sampling analysis results demonstrate that the construction, operation, or decommissioning of the Project caused or may have caused an Adverse Effect to the well's water supply in accordance with Condition 17(5).

The submitted report will include:

- A site plan using available aerial photo imagery showing well and septic location and nearby surface drainage features, relative location of construction activities and other potential contaminant sources;
- Photos of the well location and of any observed issues identified on site;
- An assessment of the well construction in comparison to the current minimum requirements under Ontario Regulation 903 (as amended);
- A summary of key field observations and findings from the property owner and/or tenant interview;
- A summary of all potential contaminant sources identified;
- A summary of any recommended action(s) for correction of the well water quality issue(s) if confirmed through the review of analytical results; and,
- A final conclusions statement as to whether the issue is potentially attributable to Project construction, operation, or decommissioning activities in the opinion of the Qualified Expert.

3.5 CONTINGENCY PLAN

In the event that the results of the complaint investigation determines that the water well issue is potentially attributable to Project construction, operation or decommissioning activities in the opinion of the Qualified Expert, the Contingency Plan should be implemented immediately at the expense of the Proponent, as per condition I10 of the REA.

A temporary potable water supply will be provided to the affected property and will be maintained until the associated well water supply on the property to conditions similar to, or better than, baseline quality and quantity. If the property owner did not participate in the pre-construction water well survey, and therefore baseline water supply conditions at the property were not evaluated, the remedial measures implemented will address all water quality and quantity issues attributable to construction and to the satisfaction of the MECP.



Contingency Plan measures will be determined and evaluated by a Qualified Expert as required, and may include but not limited to the following:

- Modifications to the existing well on the property, including lowering/replacement of the well pump, flushing of the well system, and chemical and/or mechanical restoration of the existing well;
- Construction of a new drilled well;
- Installation of a well water treatment system; and,
- Connection to a local water main (where feasible).

All well modifications or new well construction will be completed by a licensed MECP well water contractor and will meet or exceed the requirements of Ontario Regulation 903, as amended.

As detailed in Condition I14 of the REA, any complaints received pursuant to Condition 17 during the construction of the Project will be resolved to the satisfaction of the MECP, as confirmed in writing by the District Manager, prior to the commencement of the commercial operation of the Project.

The Contingency Plan may be terminated prior to or during the course of implementation based on field evidence obtained by the Qualified Expert indicating that water quality/quantity conditions have returned to pre-construction conditions.

3.5.1 Monitoring

Following the implementation of remediation measures recommended by the Qualified Expert as part of the execution of the Contingency Plan, the Qualified Expert will schedule a follow-up site visit with the property owner's consent in order to assess the effectiveness of the remediation measures and confirm the restoration of the property owner's water supply. A raw water quality sample will be collected following the same procedure outlined in Section 3.3 above. Where applicable, a post-treatment water quality sample will also be collected to facilitate an assessment of the system's performance in comparison with baseline water quality results (where available), and/or in comparison with the Ontario Drinking Water Standards Objectives and Guidelines (ODWSOG) for all applicable parameters listed in the REA and reproduced herein in Section 3.3.



3.5.2 Record Keeping

In accordance with Condition I14 of the REA, the Proponent and/or BluMetric will create written records of all complaints received pursuant to Condition 17, and all investigative and remedial actions undertaken in accordance with Conditions 17 to 110 to resolve complaints regarding wells or well water. The record will be retained for the life of the Project, and will make them available for inspection by the Ministry, upon request.

4 CLOSING

This Well Water Complaint Response Procedure and Contingency Plan has been prepared for the exclusive use of the Proponent in accordance with the agreement between GL Garrad Hassan Canada Inc. (DNV GL) / BluMetric Environmental Inc (BluMetric), together “The Consultant Team” and the Proponent.

As the ‘Qualified Expert’ retained by EDPR, BluMetric agrees that it will use its professional judgement and will provide a non-biased opinion in assessing the information collected as part of the Response Procedure and Contingency Plan. The findings provided by BluMetric will be based on the conditions observed at specified dates and locations, and for the types of analysis completed. Unless otherwise stated, the findings cannot be extended to future site conditions, portions of the Project that were not investigated directly, or types of analysis not performed.

BluMetric makes no warranty as to the accuracy or completeness of the information provided by others, or of conclusions and recommendations predicated on the accuracy of that information.

Regards,

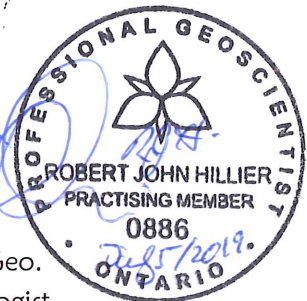
BluMetric Environmental Inc.



Karen Greer, M.Sc., P.Geo.
Hydrogeologist



Robert Hillier, P.Geo.
Senior Hydrogeologist



APPENDIX A
Well Water Complaint Response – Form 1



Form 1 - For Phone Calls

Well Water Complaint Response:

Date of Complaint: _____

Time of Complaint: _____

Name of Person Receiving Call/Complaint: _____

Confirmation of Contact Information:

Name: _____

Property Owner (If different than above): _____

Phone Number (Home): _____

Phone Number (Alternate): _____

Email (if available): _____

Complaint Interview:

Explanation of well deficiency or well water issue: _____

Date/Time issue was first noticed: _____

Is the issue on-going: _____

Do you have an alternate source of potable water (Y / N)

Permission for Site Visit to investigate issue (Y / N)

 If Yes – Date/Time of Scheduled Site Visit: _____

Alternate source of potable water required (Y / N)

Additional Notes: _____

APPENDIX B
Well Water Complaint Response – Form 2



Form 2 - Site Visit

Well Water Complaint Response:

Date: _____

Time: _____

Name of Person Conducting the Site Visit : _____

Property Address: _____

PIN #: _____

Name of Property Owner Present During Inspection: _____

Complaint:

Explanation of well water quality or quantity issue: _____

Assumed Cause as indicated by Property Owner: _____

Date/Time issue was first noticed: _____

Is the issue ongoing: _____

Alternate source of potable water required (Y / N)

Was property provided with alternate source of potable water (Y / N)

Was property owner participant of pre-construction baseline survey (Y / N)

Additional Notes: _____

Well Survey:

Well Location (collect GPS, ID: _____): _____

Well Type (Dug / Drilled): _____ Well Record Available (Y / N)

Well Diameter: _____

Well Stick up: _____

Well Construction Details: _____

Visual Inspection

Cap in place and in good condition (Y / N)

Inside well – moisture, insects etc. to indicate damaged casing or cap (Y / N)

Cascading water (Y / N)
Pooling water at base of well (Y / N)
Sloping topography to base of well (Y / N)
Well is grouted at annulus (Y / N / unknown)
Evidence of vertical pathway through annulus due to subsistence/erosion (Y / N / unknown)
Any obvious sources of contamination near the well: _____

Additional general inspection notes: _____

Plumbing System

Type of well pump: _____ Pump Depth Setting if Known: _____

Pressure Tank: Capacity: _____ Age if Known: _____ Last Service Date: _____

Drinking water treatment systems in place: (Y / N)

If Yes - Softener (Y / N) If Yes - Date installed: _____

 Iron removal (Y / N) If Yes - Date installed: _____

 Filtration (Y / N) If Yes - Date installed: _____

 Other: _____

If Yes – Any issues with function of treatment system or recent change in use: _____

Septic System

Location Relative to house and well: _____

Installed (Year): _____ Last pumped (Year): _____

Any issues with septic system: _____

Water Sample Collection:

Sampling Location: _____

Sample ID: _____

Sample Date: _____

Purge Start time: _____

Purge end time: _____

Sample time: _____

Field Measurements

Temp(°C): _____ Conductivity (uS/cm): _____ pH: _____ Turbidity (NTU): _____

Field Meter Used: _____

Other Pertinent Notes:

Outcome of Inspection – Communicated to Property Owner:
