



PARAGRAPH 35(2)(b) *FISHERIES ACT* AUTHORIZATION

Authorization issued to

Ontario Power Generation Inc.: Pickering Nuclear Generating Facility (*hereafter referred to as the "Proponent"*)

Attention to: Randy Lockwood
1675 Montgomery Park Road
PO Box 160
Pickering, ON
L1V 2R5

Location of Proposed Project

Nearest community (city, town, village): City of Pickering
Municipality, district, township, county: Regional Municipality of Durham
Province: Ontario
Name of watercourse, waterbody: Lake Ontario
Decimal Degrees: Latitude 43.81666, Longitude -79.0666

Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

The proponent is seeking approvals for the ongoing operation of a nuclear facility and the rehabilitation of a wetland.

The proponent owns and operates the Pickering Nuclear Generating Station (PNGS) located on the north shore of Lake Ontario. The PNGS typically runs six CANDU reactors producing 3,100 Megawatts of energy for the electrical grid, and requires continual water intake for the condenser cooling water system. The valid Authorization period is intended to coincide with the Continued Operations phase and the Stabilization phase of the site. It is acknowledged that to remain in compliance with the *Fisheries Act*, the proponent will be required to maintain a valid Authorization beyond the current Authorization period if either of the phases are extended.

Additionally, OPG will execute the rehabilitation of Simcoe Point Wetland, located at the mouth of Duffins Creek, on the north shore of Lake Ontario. In order to improve the Simcoe Point Wetland area a levee, and a fish gate and water control structure will be installed in the south east corner.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in serious harm to fish

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in serious harm to fish, are:

- Water taking from Lake Ontario at the PNGS for the operation of the CANDU reactors, resulting in the impingement and entrainment of fish.
- Construction of a levee, and a fish gate and water control structure at the Simcoe Point Wetland.

The serious harm to fish likely to result from the proposed work(s), undertaking(s), or activity(ies), and covered by this authorization includes

- Death of fish through impingement and entrainment resulting in loss of approximately 6,300 kilogram/year (kg/yr) of Age 1 equivalents, that does not include any aquatic species at risk listed under *Species at Risk Act* and species listed in the Aquatic Invasive Species Regulations.
- Infilling of Simcoe Point Wetland for the levee and fish and water control structure installation, resulting in the destruction of a maximum 150 square metres (m²) of fish habitat.

Conditions of Authorization

The above described work, undertaking or activity that is likely to result in serious harm to fish must be carried on in accordance with the following conditions:

1. **Conditions that relate to the period during which the work, undertaking or activity that will result in serious harm to fish can be carried on**

The work, undertaking or activity that results in serious harm to fish is authorized to be carried on during the following period:

From Date of Issuance to December 31, 2028.

If the Proponent cannot complete the work, undertaking or activity during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above time period. DFO may, where appropriate, provide written notice that the period to carry on the work, undertaking or activity has been extended.

The periods during which other conditions of this authorization must be complied with are provided in their respective sections below. DFO may, where appropriate, provide written notice that these periods have been extended, in order to correspond to the extension of the period to carry on a work, undertaking, or activity.

2. **Conditions that relate to measures and standards to avoid and mitigate serious harm to fish**

- 2.1 List of measures and standards to avoid and mitigate serious harm to fish, in concurrence with Application for Authorization under Paragraph 35(2)(b) of the *Fisheries Act*, Pickering Nuclear Generating Station, December 20, 2017 (herein referred to as Pickering Nuclear Application), and in addition to:

- 2.1.1 Related to the operation of Pickering Nuclear Generating Station:

- 2.1.1.1 Installation of the main Fish Diversion System (FDS) barrier net shall be completed by May 1st of each year. Installation of the secondary net shall be completed by June 1st of each year.

- 2.1.1.2 The FDS, in its entirety, shall remain in place and functioning until November 1st of each year.
- 2.1.1.3 If the FDS needs to be removed prior to November 1st, OPG will notify DFO in writing that the removal date needs to be adjusted. DFO will be notified 14 business days prior to the proposed removal date. A written rationale will be provided for the proposed adjustment along with a fisheries impact assessment; predicting fish impingement and entrainments impacts. DFO will assess this request and discuss with OPG within 5 business days.
- 2.1.1.4 Ongoing maintenance of FDS, including removal of algae and net repair, shall occur while installed to endeavour it remain an effective barrier to fish movement into the intake channel.
- 2.1.2 Related to the Simcoe Point Wetland:
 - 2.1.2.1 No in-water works shall be carried out from **March 15th to July 15th**, the restricted activity period.
 - 2.1.2.2 Sediment and erosion control measures shall be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work.
- 2.2 Contingency measures: (described below and outlined in the Pickering Nuclear Application) shall be put in place if monitoring required in condition 3 below indicates that the measures and standards to avoid and mitigate serious harm to fish are not successful.
 - 2.2.1 Related to the operation of Pickering Nuclear Generating Station:
 - 2.2.1.1 Should the FDS fail in any capacity, a repair shall be implemented as soon as possible. An increase in visual inspections (surveillance cameras and/or in person visual) shall occur until the repair is completed and for the following week to ensure the FDS repair is functioning as intended.
 - 2.2.2 Related to the Simcoe Point Wetland:
 - 2.2.2.1 Should the sediment and erosion control methods initially installed fail to prevent sediment loading into the water, alternative methods shall be employed.
- 2.3 Dates by which these measures and standards shall be implemented: Measures and standards to avoid and mitigate serious harm to fish:
 - 2.3.1 Related to the operation of Pickering Nuclear Generating Station:
 - 2.3.1.1 Measures described under condition 2.1.1 and 2.2.1 shall continue for the duration of the Authorization.
 - 2.3.2 Related to Simcoe Point Wetland:
 - 2.3.2.1 Measures described in Pickering Nuclear Application, and as noted in condition 2.1.2 shall be implemented prior to commencement of, and during, in-water works.
- 3. **Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate serious harm to fish**
 - 3.1 Monitoring of avoidance and mitigation measures: The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO and to the Canadian Nuclear Safety Commission (CNSC), and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization. This shall be done **annually until 2028** (submitted June 1st for the previous year), by:

- 3.1.1 Demonstration of effective implementation and functioning: Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the serious harm to fish to what is covered by this authorization.
- 3.1.2 Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.
- 3.2 Other monitoring and reporting conditions: Related to the operation of Pickering Nuclear Generating Station.
- 3.2.1 Conduct impingement monitoring and report on an annual basis until 2028, unless directed otherwise from DFO, as described in section 6.1.2.1 and 6.1.2.3 of the Pickering Nuclear Application. Annual report to be submitted by June 1st for the previous year.
- 3.2.1.1 Should the annual reported biomass of fish impinged have two consecutive years where average annual weight of fish is above 3619 kg, then OPG shall engage DFO in discussions to determine potential follow up requirements. Requirements may include a technical report, additional mitigation measures, and/or offsetting.
- 3.2.2 Modeling of Age 1 Equivalent biomass using annual impingement monitoring results shall be completed in years 2021, 2025 and 2029, as described in section 6.1.2.1 and 6.1.2.3 of the Pickering Nuclear Application. Reports shall be submitted by June 1st of the given year.
- 3.2.3 Provide DFO the Entrainment Sampling Work Plan, following the study components outlined in Appendix C of the Pickering Nuclear Application, for review and approval by November 1st, 2020. The finalized and approved entrainment monitoring shall be undertaken over a 12 month period spanning 2021 and 2022. The results of the entrainment monitoring shall be modelled to an Age 1 equivalency, reported by November 31st, 2022. These Age 1 equivalency results shall be used to estimate entrainment losses, and adjust the actual annual, and cumulative, residual impacts of PNGS for 2018 to 2028.
- 3.2.4 Incidental death of any individual aquatic species at risk (SAR) as listed on Schedule 1 of Species At Risk Act, fish or mussel, resulting from activities authorized herein, shall be reported within 72 hours from confirming the identification to:
- Fisheries and Oceans Canada
Attention: Fisheries Protection Program
867 Lakeshore Road
Burlington, ON, L7S 1A1
Caroline.Boros@dfo-mpo.gc.ca
- 3.2.5 If a listed aquatic SAR, fish or mussel, is impinged or entrained they shall be preserved in 95% ethanol and forwarded to the Royal Ontario Museum with field sheets. Vouchers for all baitfish species and digital vouchers (ie. digital photographs) of other taxa must be taken with distinguishing characteristics clearly photographed (see photographic instructions for fish SAR in Portt et al. (2008)). A report identifying all species caught by site (including number caught, date of capture, latitude, and longitude), a SARA reporting spreadsheet and a map clearly indicating all collection sites shall be sent to the Fisheries Protection Program Burlington Office to the attention of Caroline Boros within one month of the SAR being discovered.
- 3.2.6 Should monitoring indicate that an aquatic SAR, fish or mussel, be impinged or entrained the Proponent shall enter into discussions with DFO to determine if there are additional measures that can be employed to avoid and mitigate the impact to the SAR.

4. **Conditions that relate to the offsetting of the serious harm to fish likely to result from the authorized work, undertaking or activity**
 - 4.1 Letter of credit: DFO may draw upon funds available to DFO as the beneficiary of the letter of credit provided to DFO [REDACTED] as part of the application for this authorization, to cover the costs of implementing the offsetting measures required to be implemented under this authorization, including the associated monitoring and reporting measures included in section 5, in instances where the Proponent fails to implement these required measures.
 - 4.2 Scale and description of offsetting measures: offsetting measures shall be carried out in accordance with the measures set out in the Proponent's offsetting plan Pickering Nuclear Application, including:
 - 4.2.1 Draw on the existing Big Island Wetland complex habitat bank, where OPG will use approximately 7.6 ha of the remaining available channels and ponds, as part of the overall offsetting requirements.
 - 4.2.2 Rehabilitation of Simcoe Point Wetland to create a 4.6 ha dynamically stable coastal wetland, for which OPG will use 1.22 ha as part of the overall offsetting requirements.
 - 4.2.3 Stocking approximately 1,500 kg of Age 1 equivalent Atlantic Salmon into Duffins Creek, as part of the Bring Back the Salmon Program, for 2017, 2018, 2019 and 2020.
 - 4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting measures: All fish and fish habitat offsetting measures shall be completed and functioning according to the criteria below and as set out in the Pickering Nuclear Application, including:
 - 4.3.1 The overall gain of fish biomass (in kg/yr of Age 1 equivalents), through the offsetting efforts, shall exceed the overall loss of fish biomass from entrainment and impingement at the PNGS site (in kg/yr of Age 1 equivalents) by 2028.
 - 4.3.2 Related to Big Island Wetland complex habitat bank:
 - 4.3.2.1 Total area of all open water areas created as ponds and channels is a minimum of 16 ha.
 - 4.3.2.2 Production, as monitored by the offset monitoring plan described in Appendix E of Pickering Nuclear Application, is expected to be approximately 723 kg/ha/yr of Age 1 equivalents.
 - 4.3.3 Related to Simcoe Point Wetland restoration:
 - 4.3.3.1 Collected data and HEAT modeling indicates a minimum increase of 40% of weighted suitable area (WSA). This is expected to be a minimum value of 23, 000 post WSA.
 - 4.3.4 Related to Bring Back the Salmon Program:
 - 4.3.4.1 Stocking occurs in each year as identified in condition 4.2.3.
- 4.4 Contingency measures: If the results of monitoring as required in condition 5 indicate that the offsetting measures are not completed by the date specified and/or are not functioning according to the above criteria in 4.3, the Proponent shall give written notice to DFO and shall implement the contingency measures and associated monitoring measures, as contained within the approved offsetting plan (attached to this authorization or referenced in section 4.2), to ensure the

implementation of the offsetting measures is completed and/or functioning as required by this authorization.

4.4.1 Should the overall gains of fish biomass through the offsetting measures be less than the overall loss of fish biomass at PNGS site through entrainment and impingement by 2029, then 7.6 ha of the Big Island Wetland complex habitat bank will remain allocated to this authorization until 4.3.1 is achieved.

4.4.2 Scale and description of contingency measures for Big Island Wetland complex habitat bank:

4.4.2.1 Should the total open water areas in Big Island Wetland complex be less than 16 ha, OPG shall request guidance from DFO to determine if re-excavation will be required.

4.4.2.2 Should production, as monitored by plan described in Appendix E of Pickering Nuclear Application, be less than 723 kg/ha/yr of Age 1 equivalents, OPG will engage with DFO to determine if additional monitoring and analysis is required.

4.4.3 Scale and description of contingency measures for Simcoe Point Wetland restoration:

4.4.3.1 Should the HEAT model indicate less than a 40% increase of post WSA, then OPG shall engage DFO in discussions on potential additional monitoring.

4.4.4 Monitoring measures to ensure overall offsetting contingency is completed and/or functioning as required:

4.4.4.1 Continue the effectiveness monitoring plan as, outlined in Appendix E of the Pickering Nuclear Application, of Big Island Wetland complex until condition 4.3.1 is met.

4.4.5 Monitoring measures to ensure offsetting contingency is completed and/or function as required as related to Big Island Wetland complex habitat bank:

4.4.5.1 Will be determined through discussions with DFO.

4.4.6 Monitoring measures to ensure offsetting contingency is completed and/or functioning as required for Simcoe Point Wetland restoration:

4.4.6.1 Will be determined through discussions with DFO.

4.5 The Proponent shall not carry on any work, undertaking or activity that will adversely disturb or impact the offsetting measures.

4.6 Other conditions related to offsetting: *Not applicable.*

5. Conditions that relate to monitoring and reporting of implementation of offsetting measures (described above in section 4):

5.1 Schedule(s) and criteria: The Proponent shall conduct monitoring of the implementation of offsetting measures according to the timeline and criteria in the offsetting plan, Pickering Nuclear Application, approved by DFO, and as described below:

5.1.1 List of timeline(s) and monitoring and reporting criteria:

5.1.1.1 Related to Big Island Wetland complex habitat bank (found in Appendix E of Pickering Nuclear Application):

- 1) Take photographs of the ponds and channels in years 2019 and 2024;
- 2) Complete perimeter assessments in years 2020 and 2024;
- 3) Complete vegetation encroachment survey 2018, 2020, and 2024;
- 4) Complete HEAT parameter surveys in years 2018 and 2024;

- 5) Complete boat electrofishing surveys in spring, summer and fall of years 2018, 2019 and 2020;
- 6) Complete larval fish tow surveys in mid-spring and mid-summer in years 2018, 2019 and 2020.

5.1.1.2 Related to the Simcoe Point Wetland restoration:

- 1) Provide pre- and post-construction photographs of the project area;
- 2) Provide as-built drawings and descriptions of the restoration works;
- 3) Collect habitat variables data required to generate polygons that can be used for running the HEAT model (variables include water depths, substrates, aquatic vegetation cover) in years 2019, 2023, and 2025;
- 4) Complete a fall fish community assessment through boat electrofishing in years 2019, 2021, 2023, and 2025.

5.1.1.3 Related to the Lake Ontario Atlantic Salmon stocking program:

- 1) Obtain the number and life stage of the Atlantic Salmon that are stocked into Duffins Creek for years 2018, 2019, and 2020;
- 2) Complete Age 1 equivalency modeling in 2021 to determine biomass of the stocked individuals that will contribute to the overall offsetting value.

5.2 List of reports to be provided to DFO: The Proponent shall report to DFO on whether the offsetting measures were conducted according to the conditions of this authorization by providing the following:

5.2.1 Related to Big Island Wetland complex habitat bank:

- 1) Photographic log to be submitted on or before, March 31st, 2020 and 2025;
- 2) Perimeter assessment technical report to be submitted on or before, March 31st, 2021 and 2025;
- 3) Vegetation encroachment technical report to be submitted on or before March 31st, 2019, 2021 and 2025;
- 4) HEAT parameter and modeling technical report to be submitted on or before March 31st, 2019 and 2025;
- 5) Boat electrofishing and larval fish tow survey results, and fish production estimates for effectiveness monitoring Big Island Wetland complex technical report submitted on or before, February 15th, 2019, 2020, and 2021.

5.2.2 Related to Simcoe Point Wetland restoration:

- 1) As built drawings and photographic log for the construction works to be submitted on or before March 31st, 2020;
- 2) Simcoe Point Wetland effectiveness monitoring technical report, which shall include the HEAT modeling and fall fish community results, to be submitted on or before March 31st, 2020, 2024 and 2025.

5.2.3 Related to the Lake Ontario Atlantic Salmon stocking program:

- 1) Summary technical report on the program to be submitted on or before December 31st, 2021.

5.3 Other monitoring and reporting conditions for offsetting: *Not applicable.*

Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this authorization and for all design, safety and workmanship aspects of all the works associated with this authorization.

The holder of this authorization is hereby authorized under the authority of Paragraph 35(2)(b) of the *Fisheries Act*, R.S.C., 1985, c.F. 14 to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in serious harm to fish as described herein. This authorization does not purport to release the applicant from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

This authorization does not permit the killing, harming, harassment, capture or taking of individuals of any aquatic species listed under the *Species at Risk Act* (SARA) (s. 32 of the SARA), or the damage or destruction of residence of individuals of such species (s. 33 of the SARA) or the destruction of the critical habitat of any such species (s. 58 of the SARA).

At the date of issuance of this authorization, no individuals of aquatic species listed under the *Species at Risk Act* (SARA) were identified as being impacted in the vicinity of the authorized works, undertakings or activities.

The failure to comply with any condition of this authorization constitutes an offence under Paragraph 40(3)(a) of the *Fisheries Act* and may result in charges being laid under the *Fisheries Act*. This authorization must be held on site and work crews must be made familiar with the conditions attached.

This authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this authorization shall advise DFO in advance.

Date of Issuance: 17 Jan 2018

Approved by:



Dale Nicholson
A/ Regional Director General
Central and Arctic Region
Fisheries and Oceans Canada