



## PORT HOPE PROJECT 2021 ANNUAL COMPLIANCE MONITORING REPORT EXECUTIVE SUMMARY

This annual compliance monitoring report for the 2021 calendar year has been prepared as per licence condition 2.3 of the *Port Hope Long-Term Low-Level Radioactive Waste Management Project Licence WNSL-W1-2310.02/2022* (PHP Licence) and of the *Port Hope Long-Term Low-Level Radioactive Waste Management Project Licence Conditions Handbook* (PHP LCH) as a summary report of annual compliance monitoring and operational performance.

CNL's Historic Waste Program Management Office and the Port Hope Area Initiative projects are situated on the treaty lands of the Williams Treaties First Nations, specifically the treaty signed with the Mississauga First Nations of Alderville, Curve Lake, Hiawatha and Scugog Island.

The Mississauga First Nations are also signatories to various 18th and 19th century treaties that covered lands in different parts of south-central Ontario. In 1923, the Mississauga First Nations and the Chippewa First Nations consisting of Rama, Beausoleil and Georgina Island signed the Williams Treaties and together, over 90 years later in June 2018, joined to ensure that their rights to and the relationship with these lands is respected through a renewed agreement with Canada and the Province of Ontario.

The area in which we are situated is also home to Indigenous Peoples from across the region and Canada. CNL is grateful to have the opportunity to work on these traditionally and culturally significant lands and waterways.

The Port Hope Long-Term Low-Level Radioactive Waste Management Project (PHP) is part of the larger Port Hope Area Initiative (PHAI). The PHAI is a community-based project designed to develop and implement a safe, local, long-term management solution for historic low-level radioactive waste (LLRW) within the Port Hope and Clarington municipalities. The PHAI is defined by *An Agreement for the Cleanup and Long-Term Safe Management of Low-Level Radioactive Waste Situated in The Town of Port Hope, The Township of Hope and the Municipality of Clarington* (Legal Agreement), which took effect on 2001 March 29, between the Government of Canada and the municipalities of Port Hope and Clarington for the management of the Low-Level Radioactive Waste (LLRW) within each of the communities. CNL is responsible for the direction and execution of the PHAI in compliance with the Legal Agreement, licences and Environmental Assessment decisions. CNL has overall responsibility for managing the PHAI on behalf of Atomic Energy of Canada Limited (AECL), a federal Crown corporation.

This report provides site-specific information to supplement information in the corporate *Annual Compliance Monitoring Report for Canadian Nuclear Laboratories* (ACMR for CNL), which provides corporate updates to 14 Safety and Control Areas as they are applied across all CNL. Performance highlights for 2021 activities are outlined below.



### *PHAI Communications and Engagement*

- Indigenous community relations, public consultation, and public stakeholder and activities continued to be conducted in accordance with the Port Hope Area Initiative Public Information Program.
- In 2021, twenty-two Tier 1 complaints were received and resolved at the CNL level. Five Tier 2 complaints were received and two were resolved at the CNL level. The remaining three complaints are on hold until spring of 2022 to be re-assessed at that time.

### *Management System*

- CNL completed all required reporting as outlined in section 3.2.3, PGP LCH [2].
- In 2020, an annual Self-Assessment Plan for FY 2020/2021 stemming from the CNL Integrated Assessment Plan, was developed and implemented for all HWP MO sites.
- There was one external audit conducted by SAI Global for the maintenance of CNL's ISO 9001:2015 certification specific to the PHP in 2021.

### *Human Performance Management*

- A wide range of mandatory and other job-specific training activities were carried out in 2021 to ensure that all PHP employees and contractors acquired mandated training (including refresher training) as appropriate for their duties to ensure the safe operation of the PHP facility and to conduct work under the PHP Licence [1].
- The Curriculum Review Committee continued to meet throughout 2021 to support the PHAI's Systematic Approach to Training program.

### *Facility and Equipment*

- Port Hope Long Term Waste Management Facility (PH LTWMF): In 2021 work continued with waste being placed within the mound.
- Small-Scale Sites: characterization and design of properties and roads continued throughout 2021; progress included work to confirm 4,609 properties with external lots have been characterized and 1,098 have been identified with LLRW.
  - 4,075 properties with interior spaces have been characterized and 218 have been identified with LLRW.
  - In 2021 a new contract was awarded (Road Allowance Contract 3) to characterize 56 high priority road allowance sites. Fieldwork began in 2012 October and 13 Road Allowance (RA) Sites under this contract were drilled in 2021.
  - Characterization of internal properties continued to be on hold during 2021 due to COVID-19 Pandemic restrictions.
  - 49 exterior property designs and five RA designs were completed with 127 exterior property designs and 11 RA designs in progress resulting in significant design production.



- Excavations of exterior historic LLRW and backfilling to existing grades was completed at 29 properties.
  - Interior remediation was completed at one property.
- Temporary Storage Sites:
  - No Temporary Storage Site (TSS) remediation activities were completed in 2021 as all TSS have proceeded through the remediation phase.
- Waterfront Area:
  - An enhanced delineation project was completed at the Viaducts site in spring 2021.
  - Remediation was completed on the 95 Mill Street site in summer 2021.
  - Remediation commenced at the Viaducts in 2021 October.
  - Remediation commenced at Strachan Street Consolidation site in summer 2021 and waste removal was completed in 2022 March.
  - Mechanical dredging of sediments from the Port Hope Harbour commenced in 2021 June.
  - Upgrades to the Harbour site water treatment system were commenced in spring 2021, and were nearing completion for commissioning in at the end of 2022 March.
  - The tender for the Waterworks West and Alexander Street ravine sites was posted to Merx in 2022 January.
- Highland Drive Area:
  - Finalized remediation design, technical specifications, and a statement of work for the remediation of the Highland Drive Landfill.
  - New conceptual plan was developed for the Highland Drive South Ravine remediation and Permeable Reactive Barrier installation.
  - A Designated Substance Survey (DSS) was conducted on the boathouse in the Highland Drive South Ravine.
  - The Highland Drive South Ravine property was approved by Municipality of Port Hope Council for severance to separate the house at 28 Bedford Street from the ravine lot associated with the Highland Drive South Ravine remediation.
- Industrial Sites:
  - Centre Pier: Additional Phase Two Environmental Site Assessment (ESA) sampling was completed.
  - Lions Park: Additional Phase Two Environmental Site Assessment (ESA) sampling was completed.
  - Coal Gasification Plant: Additional Phase Two Environmental Site Assessment (ESA) sampling was completed.
  - Chemetron Lagoon: Design for the remediation was updated in 2021 based on 2020 water and sediment sampling.
- Port Hope Waste Water Treatment Plant (PH WWTP) water treatment systems had an operational uptime of greater than 98%.
- 291,100 m<sup>3</sup> of influent was collected by the PH WWTP in 2021. This represents a decrease of 2% in volume from 2020 recorded volumes.



### *Physical Design*

- The PHP adheres to the Corporate Design Program and utilized CRL Design Engineering to implement modifications and upgrades to existing equipment following CNL's Engineering Change Control (ECC) process.
- Changes and planned upgrades included the following in 2021:
  - Optimization of the evaporator mechanical and process control systems in order to maximize operational efficiency.
  - Completed minor modifications to service water circulation process to improve performance of dependent sub-systems and to increase conservation of treated water usage.
  - Finalized planning and completed the installation of a supplemental Reverse Osmosis unit to increase water treatment capacity.
  - Continued planning for installation of larger storage tanks to hold an increased volume of soda-ash, sodium hydroxide, and sulphuric acid on site.
  - Implemented additional concentrate (brine) process modifications to further enhance salt removal and balance in pond return.
  - Completed installation and optimized the function of enhanced heat recovery processes. These changes have demonstrated very good results with respect to primary treatment efficiency and reduced fouling of the system in general.

### *Radiation Protection*

- As Low As Reasonably Achievable (ALARA) initiatives and activities continued to be at the forefront of the PHP Radiation Protection Program (RPP).
- Radiation Protection doses for workers remained ALARA and doses for the public remain well below regulatory limits.
- Provided refresher training on the efficacy of the radiation work planning process with inclusion of the Radiation Work Permitting process as applied under the Integrated Work Control (IWC) program.
- There were no exceedances of regulatory limits and action levels in the dose monitoring program.

### *Conventional Health and Safety*

- All licensed activities continued to be carried out safely and securely.
- The Historic Waste program Management Office Site Safety and Health Committee increased its focus on the importance of the COVID-19 Pandemic and the shift to remote work for a significant number of the workers at PHAI project sites.
- There was a project safety pause due to a series of heavy equipment near misses and rising trend of personal injury events. The pause involved a project-wide assessment and subsequent verification of equipment related hazards and controls.
- There were 310 site health and safety inspections completed in 2021.



### *Environmental Protection*

- Environmental protection and mitigation continues to be effective; changes from the baseline are minimal and generally within the EA predictions. EA follow-up and operational monitoring continued in 2021.

### *Emergency Management and Fire Protection*

- All required annual fire response drills, were completed as per program and regulatory requirements.
- Site emergency plans were updated in conjunction with changed personnel and processes impacted by COVID-19 Pandemic restrictions.
- A PHAI five-year Exercise and Drill Plan was developed to support improved planning and monitoring of annual drill expectations.
- Comprehensive retraining for CNL Emergency Stewards and Officer in Charge Personnel was completed in conjunction with updated emergency plans.
- Staff training on emergency procedures was completed in parallel to improved emergency notification infrastructure upgrades.
- Fire screening assessments were completed in support of CNL's ECC process for capital and maintenance/repair projects.

### *Waste Management*

- The PH LTWMF and PH WWTP continued to operate in conformance with the PHP LCH.
- On-site waste movement occurred from 2021 January 01 to 2021 December 31. Off-site waste deliveries to the PH LTWMF originated from various sites including Cameco, Waterfront Sites, Small-Scale Sites (SSS), the Harbour sediment, and other waste sources such as on-site waste transfers.
- 22 tonnes of process residual waste was received from the Port Granby Waste Water Treatment Plant (PG WWTP) for long term management.
- 4,446 tonnes of evaporator concentrate was received for treatment from PG WWTP at the PH WWTP.

### *Security*

- Contractors conducting work at the PGP site continued to be in compliance with CNL's corporate security policies and programs including those requirements mandated in the Port Hope Area Initiative Security Plan, as confirmed through CNL's oversight program.
- No reportable security events occurred at the PHP in 2021.

### *Safeguards and Non-Proliferation*

- The PHP continued to adhere to the Corporate Nuclear Materials and Safeguards Management (NM&SM) Program.



- The PH LTWMF (material balance area CNWF) received and placed approximately 25,428 kgU from Cameco.
- The inventory of nuclear materials in material balance area CN-2 decreased by three items in 2021 (two sources and one souvenir vial). Items were sent to Chalk River for long-term management/repurposing.
- The International Atomic Energy Agency (IAEA) conducted routine seal replacement on the IAEA Portal Monitor in 2021 August.

#### *Packaging and Transport*

- The PHAI Transportation of Dangerous Goods Program continued to operate the safe off-site transport and shipment of dangerous goods by conforming to all applicable laws and regulations, including company policies and procedures.
- Shipments of dangerous goods continued to be received at the PHP site from offsite vendors (consumable chemicals, diesel fuel, and propane).
- There were no reportable events related to the Transportation of Dangerous Goods Program in 2021.

CNL is committed to achieving high standards of operational safety and security. The information and data presented in this report support the conclusion that safe and secure performance was achieved at the Port Hope Project PHP) site in 2021, while enhancements were implemented to further improve results.

For a detailed description of CNL's robust mitigation initiatives and controls to protect its employees, contractors, visitors and Site operations from the COVID Pandemic, see the Executive Summary in the CNL ACMR.